Chapter 12: Social Insurance:The New Function of Government

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Topics

- What Is Insurance, and Why Do Individuals Value It?
- Why Have Social Insurance? Asymmetric Information and Adverse Selection
- Other Reasons for Government Intervention in Insurance Markets
- Social Insurance Versus Self-Insurance: How Much Consumption Smoothing?
- The Problem with Insurance: Moral Hazard
- Putting It All Together: Optimal Social Insurance
- Conclusion

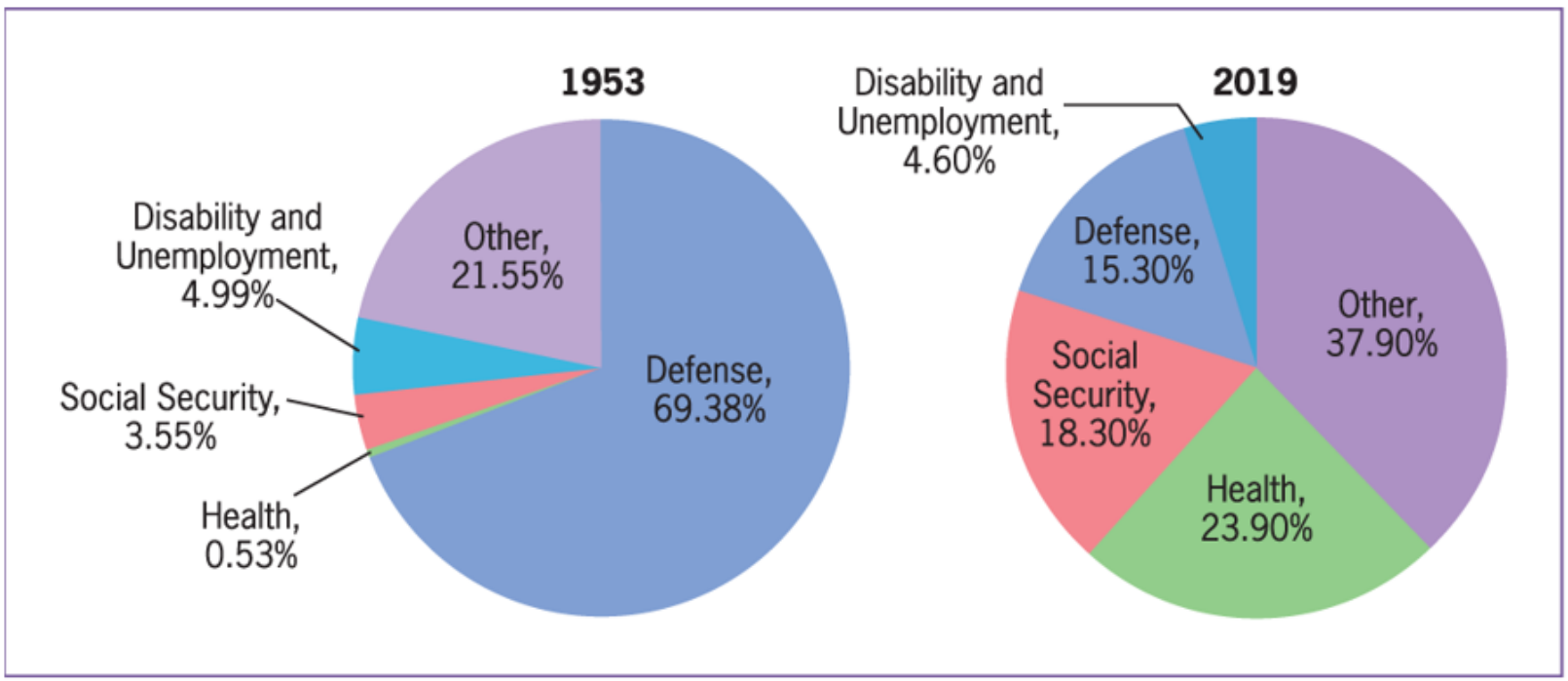
Social Insurance: Introduction

Pereamble to the U.S. Constitution:

- ". . . (E)stablish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity."
- For most of the country' s history, emphasis on "common defense.
- Since 1950 or so, shift toward + the general welfare."

Government Spending by Function, 1953 and 2014

- Government today devotes a much larger portion of its budget to social insurance than it did nearly 70 years ago.



Social Insurance: The New Function of Government 2

Government spending now focuses heavily on social insurance programs.

- Social insurance programs: Government interventions in the provision of insurance against adverse events.

For most programs, eligibility is not means-tested.

- Means-tested: Refers to programs in which eligibility depends on the level of one' s current income or assets.

What Is Insurance?

Insurance is a promise to make some payment in case of a particular event, in exchange for a payment, called a premium.

- Insurance premiums: Money that is paid to an insurer so that an individual will be insured against adverse events.

Insurance products in the United States include health insurance, auto insurance, life insurance, and casualty and property insurance.

Why Do Individuals Value Insurance?

Insurance is valuable because it helps individuals' insurance consumption across states of the world.

- Consumption smoothing: The transfer of consumption from periods when consumption is high, and thus has low marginal utility, to periods when consumption is low, and thus has high marginal utility.
- States of the world: The set of outcomes that are possible in an uncertain future.

Why Do Individuals Value Insurance?Diminishing Marginal Utility

- Diminishing marginal utility means that the fourth slice of pizza is less important than the first.
- Always having two slices is better than sometimes having four and sometimes having zero.
- Always a moderate amount of consumption for sure is better than a $50-50$ chance of having a lot or nothing.
- Individuals will demand full insurance in order to fully smooth their consumption across states of the world.

Formalizing This Intuition: Expected Utility Model

We formalize these ideas in the expected utility model.

- Expected utility model: The weighted sum of utilities across states of the world, where the weights are the probabilities of each state occurring.
- Suppose an adverse event occurs with probability . Expected utility (EU) is

$$EU = (1 - p) \cdot U + p \cdot U$$

- where p is the probability of an adverse event, U is utility with no adverse event, and U^* is utility with an adverse event.

The Expected Utility Model: Health insurance

- 1% chance that Mimi gets hit by a car, resulting in $ 30,000 in medical expenses.
- Insurance costs m for each dollar of coverage.
  - If Mimi buys $ b of coverage, her premium is $ mb.
- If she fully insures the risk, she pays $\$m \times 30,000$.
- To analyze Mimi's choice, assume $U = \sqrt{C}$ and that premiums are actuarially fair.
  - Actuarially fair premium: An insurance premium that is set equal to the insurer's expected payout.
  - In this case, the expected payout is $0.01 \times 30,000 = \$300$.

Full Insurance Is Optimal

If Mimi...	And Mimi is...	Consumption (C)	Utility $\sqrt{C}$	Expected Utility
Doesn't buy insurance	Not hit by a car ($p = 99\%$)	\$30,000	173.2	$0.99 \times 173.2 + 0.01 \times 0 = 171.5$
	Hit by a car ($p = 1\%$)	0	0	
Buys full insurance (for \$300)	Not hit by a car ($p = 99\%$)	\$29,700	172.34	$0.99 \times 172.34 + 0.01 \times 172.34 = 172.34$
	Hit by a car ($p = 1\%$)	\$29,700	172.34	
Buys partial insurance (for \$150)	Not hit by a car ($p = 99\%$)	\$29,850	172.77	$0.99 \times 172.77 + 0.01 \times 121.86 = 172.26$
	Hit by a car ($p = 1\%$)	\$14,850	121.86	

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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 Have Social Insurance? Asymmetric Information

Why should the government provide insurance?

- Information asymmetry can lead to a key market failure called adverse selection.
- *Information asymmetry*: The difference in information that is available to sellers and purchasers in a market.
- In the used car market, sellers are much more likely to know about potential defects than buyers are.
- In the insurance market, buyers may know more about their insurable risks than the seller (insurer) does.

Examples with Full or Asymmetric Information

Two kinds of people:

- Careless people, half the population, have a 5% chance of being hit by a car when crossing the street.
- Careful people, half the population, have a 0.5% chance.

If the insurance company knows each person's type, it can charge them separate prices.

If the insurance company doesn't know people's types, it could try charging a price that is fair on average or try charging separate prices.

Insurer Breaks Even with Full Information Pricing

What happens if the insurance company could charge each type their actuarially fair price?

- Charge careless people $\$1,500$.
- Charge careful people $\$150$.
- Earn $\$150,000$ per 100 careless people; pay out $\$150,000$.
- Earn $\$15,000$ per 100 careful people; pay out $\$15,000$.

Asymmetric Information Pricing: Separate Prices

What if the insurance company tries to charge different prices but cannot tell who is careless?

- Careless people pretend to be careful; pay \$150.
- Careful people pay \$150.
- Earn \$ 15,000 per 100 careless people; pay out \$150,000. Lose \$135,000.
- Earn \$15,000 per 100 careful people; pay out \$15,000.

Asymmetric Information Pricing: Average Price

What if the insurance company tries to charge the average price?

- Average price: \$825.
- Insurance is a great deal for careless people, so they buy it; pay \$825.
- Careful people decline it.
- Earn $\$82,500 per 100$ careless people; pay out \$ 150,000. **Lose \$ 67,500**.
- Earn nothing from careful people.

Adverse Selection Example

Information	Pricing Approach	Premium per Careless (100 people)	Premium per Careful (100 people)	Total Premiums Paid	Total Benefits Paid Out	Net Profits to Insurers
Full	Separate	$1,500	$150	$165,000 (100 x $1,500 + 100 x $150)	$165,000	0
Asymmetric	Separate	$1,500	$150	$30,000 (0 x $1,500 + 200 x $150)	$165,000	−$135,000
Asymmetric	Average	$825	$825	$82,500 (100 x $825 + 0 x $825)	$150,000	−$67,500

The Problem of Adverse Selection

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

- If the insurer sells to both low-risk and high-risk people, the former will subsidize the latter.
- Low-risk people may opt out of the insurance market, leaving only high-risk people with insurance.

Does Asymmetric Information Necessarily Lead to Market Failure?

If low-risk people have a high enough risk premium, they will subsidize high-risk people in a pooling equilibrium.

- Risk premium: The amount that risk-averse individuals will pay for insurance above and beyond the actuarially fair price.
- Pooling equilibrium: A market equilibrium in which all types of people buy full insurance, even though it is not fairly priced to all individuals.
- Separating equilibrium: A market equilibrium in which different types of people buy different kinds of insurance products designed to reveal their true types.

APPLICATION: Adverse Selection and Health Insurance "Death Spirals" 1

In 1995, Harvard stopped subsidizing its most generous plans, which were experience-rated.

- Experience rating: Charging a price for insurance that is a function of realized outcomes.
- Before 1995, there was a pooling equilibrium.
  - Healthy employees chose the cheap, generous plan.
- After 1995, there was a separating equilibrium.
  - Healthy employees dropped the now expensive generous plan.

APPLICATION: Adverse Selection and Health Insurance "Death Spirals" 2

Because the less healthy employees used much more medical care, the experience-rated premiums of the more generous plans increased substantially.

By 1998, the most generous plan had gotten so expensive that it was no longer offered.

- Adverse selection had led to a + death spiral" for this plan.
- It kept getting more expensive, and healthy people kept leaving, driving its price ever higher.

How Does the Government Address Adverse Selection?

Adverse selection leads to market failure, since healthy people may not be willing to buy insurance.

- The government can address adverse selection and improve market efficiency in a number of ways . . .
- but they all involve redistribution from the healthy to the sick, which may be unpopular.

Other Reasons for Government Intervention in Insurance Markets

- **Externalities**: Vaccines have positive spillovers, car crashes negative ones.
- Administrative costs: Government-run Medicare has much lower administrative costs than private insurance.
- Redistribution: Governments may want to redistribute from the healthy to the sick.
- Paternalism: Governments may feel that people would choose to buy too little insurance for themselves.

APPLICATION: Flood Insurance and the Samaritan's Dilemma 1

The samaritan's dilemma is another rationale for intervention.

- Compassionate governments want to bail out hard-hit citizens.
- But, knowing this, citizens may not buy insurance, making bailouts expensive.
- The Samaritan's dilemma in the case of flooding prompted Congress to establish the National Flood Insurance Program (NFIP) in 1968.
- The NFIP has paid out over $ 50 billion since 1969 and has led to improved building standards.

APPLICATION: Flood Insurance and the Samaritan's Dilemma 2

However, nearly half of the victims of Hurricane Katrina in 2005 did not have flood insurance, and the claims of people with insurance bankrupted the system.

- The NFIP failed in part because people avoid buying flood insurance if they are assured that the government will help individuals in disaster areas.
- Acts were passed in 2012 and 2014 to more accurately price flood insurance and control the rate adjustments for flood insurance premiums in vulnerable areas.
- Our ongoing problems with flood insurance remained manifest in the wake of Hurricane Harvey, which caused $ 125 billion in damage, often to properties at obvious risk of flooding.

Learn by Doing: Practice Question 1

Which of these statements is/are true?

(I) The chief role of the federal government has historically been "+"promoting the general welfare."
(II) People desire consumption smoothing because of diminishing marginal utility.
(III) Adverse selection invariably results in market failure.

- I only
- II only
- I & III only
- II & III only

Social Insurance Versus Self-Insurance: How Much Consumption Smoothing?

Even if private insurance markets do not function well, people may still be able to insure with self-insurance.

- **Self-insurance**: Private means of smoothing consumption over adverse events, such as through one ' s own savings, the labor supply of family members, or borrowing from friends.

Example: Unemployment Insurance 1

People can insure against unemployment in many ways:

- They can draw on their own savings.
- They can borrow, either in collateralized forms (such as borrowing against the equity they have in their homes) or in uncollateralized forms (such as on their credit card).
- Other family members can increase their labor earnings.
- They can receive transfers from their extended family, friends, or local organizations.

Example: Unemployment Insurance 2

How much self-insurance is in place determines how effective social insurance is.

- For an individual with no self-insurance, each dollar of unemployment insurance (UI) directly reduces the decline in consumption caused by unemployment.
  $\rightarrow$ No crowding out
- For an individual with complete self-insurance, each dollar of UI replaces a dollar of self-insurance.
  $\rightarrow$ Complete crowding out
- For an individual with partial self-insurance, each dollar is split between smoothing consumption and reducing self-insurance.
  $\rightarrow$ Partial crowding out

Lessons for Consumption-Smoothing Role of Social Insurance

The importance of social insurance for consumption smoothing depends on two factors:

- Predictability of the event: It is easier for people to self-insure against a predictable event by, for example, increasing their savings. More predictable risks reduce the benefits of providing social insurance.
- Cost of the event: It is more difficult to self-insure against high-cost events, such as becoming injured and unable to work. Costly risks increase the benefits of providing social insurance.

The Problem with Insurance: Moral Hazard

A cost of insurance is **moral hazard**.

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

$\rightarrow$ "Nothing emboldens sin so much as mercy."

- The existence of moral hazard means that it may not be optimal for the government to provide the full insurance that risk-averse consumers' demand.

APPLICATION: The Problems with Assessing Workers' Compensation Injuries

- Tuna fisherman Paul Hebert
    - Claimed a physical disability. Accepted $ 44,000 in Social Security over four years, two of which were spent on the reality TV show Wicked Tuna, which required heavy physical labor.
- Construction worker Donald Ray Simmons Jr.
- Claimed a severe arm injury. Received $ 52,000 in insurance payments before investigators discovered he was working as a tandem skydiving instructor.
- Office worker Sheyla Veronica White
- Hit herself on the head with a sprinkler that fell near her desk. She subsequently claimed that it had fallen directly on her and filed a workers' compensation claim. The whole episode was caught on tape.

What Determines Moral Hazard?

- How easy it is to observe whether the adverse event has happened.
- How easy it is to change behavior in order to establish the adverse event.

Moral Hazard Is Multidimensional

In examining the effects of social insurance, four types of moral hazard play a particularly important role.

- Reduced precaution against entering the adverse state.
  $\rightarrow$ Because you have medical insurance, you reduce efforts to protect your health.
- Increased odds of entering the adverse state.
  $\rightarrow$ Because you have workers' compensation, you are more likely to claim that you were injured on the job.
- Increased expenditures when in the adverse state.
  $\rightarrow$ Because you have medical insurance, you use more medical care.
- Supplier responses to insurance against the adverse state.
  $\rightarrow$ Because you have workers' compensation, firms aren't as careful about protecting you against workplace accidents.

The Consequences of Moral Hazard

Moral hazard is costly for two reasons.

- Adverse behavior that is encouraged by insurance lowers social efficiency; for example, workers' compensation reduces the provision of a socially efficient labor supply.
- When social insurance encourages adverse events, which raise the cost of social insurance programs, taxes rise, lowering social efficiency further.

Putting It All Together: Optimal Social Insurance

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

- The benefit of social insurance is the amount of consumption smoothing provided by social insurance programs.
- The cost of social insurance is the moral hazard caused by insuring against adverse events.

Learn by Doing: Practice Question 2

Which of these statements is/are true?

(I) Self-insurance often crowds out social insurance.
(II) Possession of insurance affects one's propensity to engage in risky behavior.
(III) Optimal social insurance partially insures individuals against adverse events.

a. I only
b. II only
c. I & III only
d. II & III only

Conclusion

- Asymmetric information in insurance markets has two important implications:

$\rightarrow$ It can cause adverse selection.

$\rightarrow$ It can cause moral hazard.

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