Chapter 12
Social Insurance: The New Function of Government

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Public Finance and Public Policy

Introduction

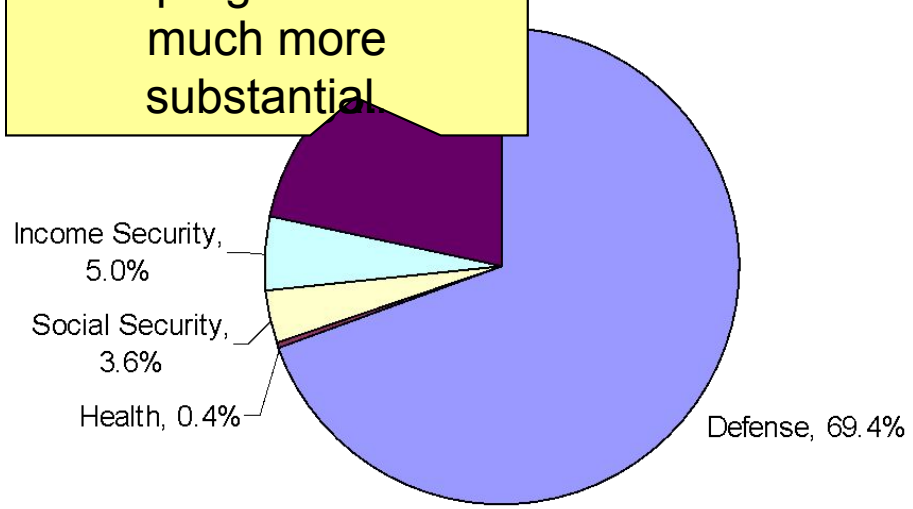
- There has been a radical change in the nature and scope of government spending in the last half century.
- A set of programs known as ***social insurance programs*** have become a much larger share of the federal budget.
- **Figure 1** illustrates this.

Figure 1

The proportion of federal spending on defense has declined over time.

While spending on those programs now is much more substantial.

n of Federal Government Spending



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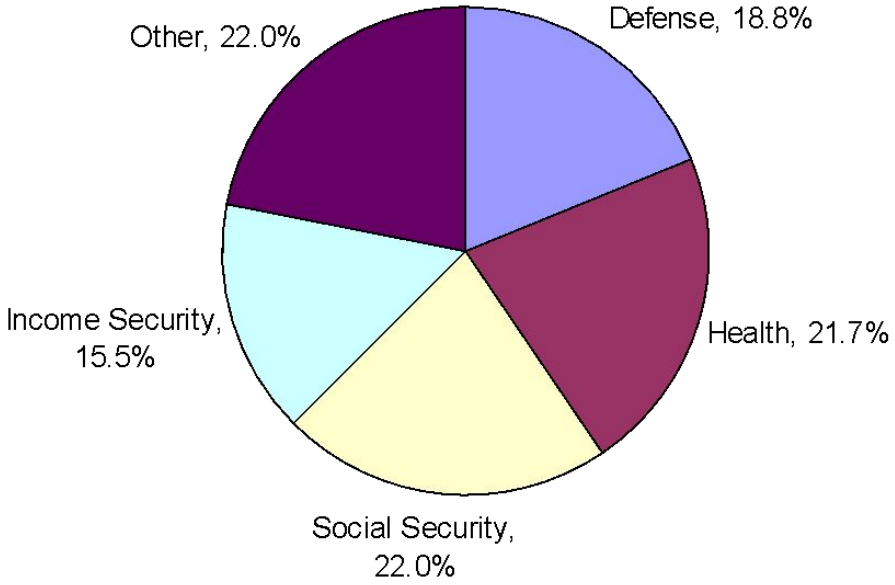

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Introduction

- Beberapa program asuransi sosial yang penting:
  - Jaminan Sosial
    Asuransi Pengangguran
    Asuransi Disabilitas
    Kompensasi Pekerja
    Medicare

Introduction

- Program-program ini memiliki beberapa fitur keunggulan antara lain:
  - Sifatnya adalah wajib.
    Ada kejadian yang terukur dan memungkinkan.
    Manfaat yang diterima tidak terkait dengan pendapatan atau aset seseorang

Introduction

- Untuk membahas program-program ini, kita perlu memahami konsep ekonomi pada pasar asuransi..
  - Mengapa asuransi dihargai oleh konsumen?
    Kekuatan apa yang dapat menyebabkan pasar asuransi gagal? Apa itu **adverse selection**?
    Apa yang terjadi dengan efisiensi sosial? Apa itu **moral hazard**?
    Adakah *tradeoffs* dalam merancang program asuransi sosial?

Introduction

- Inti dari diskusi ini adalah dua konsep utama.:
  - ***Adverse selection:*** fakta bahwa individu yang diasuransikan tahu lebih banyak tentang tingkat risikonya sendiri daripada perusahaan asuransi.
    Moral hazard: ketika anda mengasuransikan adverse events, anda dapat mendorong adverse behavior.

WHAT IS INSURANCE AND WHY DO INDIVIDUALS VALUE IT?: What Is Insurance?

- Asuransi memiliki struktur yang sama.:
  - Individu membayar uang ke perusahaan asuransi, Disebut **premi asuransi**.
  - Sebagai imbalannya, perusahaan asuransi berjanji untuk melakukan pembayaran kepada pihak yang diasuransikan (atau mereka yang menyediakan layanan) jika terjadi kejadian buruk.
- Contoh: asuransi kesehatan, asuransi mobil, asuransi jiwa, dan asuransi korban dan properti.

Why Do Individuals Value Insurance?

- Asuransi sangat berharga bagi individu karena prinsip *diminishing marginal utility*.
- Prinsip ini menyiratkan bahwa jika diberi pilihan antara
  - (a) dua tahun konsumsi "rata-rata" atau,
  - (b) satu tahun konsumsi berlebihan dan satu tahun kelaparan,
- Individu akan lebih memilih mana? Tentu yang pertama.

Why Do Individuals Value Insurance?

- Alasan orang lebih memilih pilihan (a) adalah bahwa konsumsi berlebihan tidak meningkatkan utilitas mereka sebanyak ketika kelaparan menurunkan utilitasnya..
- Dengan demikian, individu ingin ***smooth their consumption***, atau memindahkan konsumsi dari periode ketika tinggi ke periode ketika rendah.

Why Do Individuals Value Insurance?

- Ketika hasilnya tidak pasti, Individu-individu ingin smooth their consumption atas kemungkinan adanya *states of the world*.
  - Misalnya, dua kemungkinan terjadinya *states of the world* pada tahun depan yaitu "tertabrak mobil" atau "tidak tertabrak mobil"
  - Tujuannya adalah untuk membuat pilihan hari ini yang menentukan konsumsi di masa depan di masing-masing *states of the world*.

Why Do Individuals Value Insurance?

- Individu memilih konsumsi antar *states of the world* dengan menggunakan beberapa pendapatan hari ini untuk membeli asuransi atas kemungkinan kejadian yang merugikan di masa depan.
  - By buying insurance, individuals commit to make a payment if the uncertain outcome is positive (no accident), in return for getting a benefit in the negative outcome case (the insurance payout).

Why Do Individuals Value Insurance?

- Teori asuransi dasar menunjukkan bahwa individu akan melakukan permintaan atas *full insurance* dalam rangka *smooth their consumption* antar *states of the world*.
- Artinya, tingkat konsumsinya sama terlepas dari apakah kecelakaan itu terjadi atau tidak.

Formalizing This Intuition: Expected Utility Model

- Let p stand for the probability of an adverse event. Then expected utility is:

$$EU = (1 - p)U(C_0) + pU(C_1)$$

- Where C_0 and C_1 stand for consumption in the good and bad states of the world, respectively.

Formalizing This Intuition: Expected Utility Model

- Model ini dapat digunakan untuk menghitung permintaan individu untuk asuransi.
  Bayangkan, misalnya, bahwa ada 1% kemungkinan Sam akan mengalami kecelakaan yang menyebabkan kerusakan senilai $30.000.
  - Sam dapat mengasuransikan beberapa, tidak mengasuransikan sama sekali, atau mengasuransikan semua biaya pengobatan ini.
  - The policy costs *m*¢ per $1 of coverage. If Sam buys a policy that pays him $*b* in an accident, his premium is $*mb*.
  - Asuransi penuh dalam hal ini ber-biaya *m* x $30,000.
    - Pada *state of the world* ketika Sam tertabrak mobil, dia akan menjadi lebih kaya senilai $*b*-$*mb* dari pada Jika dia tidak membeli asuransi.
    - Jika dia tidak tertabrak mobil, dia akan menjadi lebih miskin senilai $*mb* daripada jika dia tertabrak mobil.

Formalizing This Intuition: Expected Utility Model

- Artinya, polis asuransi mengganti konsumsi Sam dari periode ketika tinggi ke periode ketika rendah. Keinginan Sam untuk membeli polis tergantung pada harga yang dibebankan.
  Actuarially fair premium menetapkan harga yang harus dibayar akan setara dengan klaim yang di harapkan.

Formalizing This Intuition: Expected Utility Model

- Dalam hal ini, pembayaran yang diharapkan adalah $ 30.000 x 1%, atau $ 300 per plos asuransi. Jadi premi $ 300 adalah adil.
  Dengan harga yang adil secara aktuaria, individu akan ingin sepenuhnya mengasuransikan diri mereka untuk menyamakan konsumsi pada semua *states of the world*.

Formalizing This Intuition: Expected Utility Model

- Consider the case, for example, when the utility function is:

$$U\left(C\right)=\sqrt{C}$$

- Also assume that C_0=30,000. Then expected utility *without* insurance is:

$$0.99\sqrt{30,000}+0.01\sqrt{0}=171.5$$

Formalizing This Intuition: Expected Utility Model

- If, instead, you bought actuarially fair insurance for $300, expected utility is:

$$0.99\sqrt{29{,}700} + 0.01\sqrt{29{,}700} = 172.3$$

- Utility is *higher*, even though the odds are that the premium was paid for nothing. This is because you would rather have equal consumption regardless of the accident, rather than a very low level in the bad state of the world. This is illustrated in **Table 1**.

Table 1

The expected utility model

If Sam …	And Sam is …	Consumption	Utility $\sqrt{C}$	Expected utility
Doesn't buy insurance	Not hit by a car (D=99%)	$30,000	173.2	0.99x173.2 + 0.01x0 = 171.5
	Hit by a car (D=1%)	0	0	
Buys full insurance (for $300)	Not hit by a car (D=99%)	$29,700	172.3	0.99x172.3 + 0.01x172.3 = 172.3
	Hit by a car (D=1%)	$29,700	172.3	
Buys partial insurance (for $150)	Not hit by a car (D=99%)	$29,850	172.8	0.99x172.8 + 0.01x121.8 = 172.2
	Hit by a car (D=1%)	$14,850	121.8	

Formalizing This Intuition: Expected Utility Model

- The central result of expected utility theory is that with actuarially fair pricing, individuals will want to fully insure themselves to equalize consumption in all states of the world.
- Clearly Sam's utility is higher in row 2, with full insurance, than in row 1, with no insurance.
- Yet, Sam also prefers full insurance to *any other level of benefits*. Row 3, which shows coverage for half of the costs of the accident, gives lower expected utility.

Formalizing This Intuition: Expected Utility Model

- Jadi, bahkan jika asuransi mahal, selama harga (premi) secara aktuaria adil, individu akan ingin sepenuhnya mengasuransikan diri terhadap kejadian yang merugikan.
- Implikasinya: hasil pasar yang efisien adalah full-asuransi, hal itu dapat memastikan adanya pemerataan konsumsi penuh.

Peran penghindaran risiko

- **Risk aversion** - Penghindaran risiko adalah sejauh mana seorang individu bersedia menanggung risiko.
  - Individu yang menghindari risiko memiliki utilitas konsumsi marjinal yang berkurang dengan cepat; mereka sangat takut konsumsi jatuh.
  - Individu, yang memiliki tingkat penghindaran risiko berapapun nilainnya, akan membeli asuransi ketika harganya secara aktuaria cukup adil. Tetapi ketika asuransi tidak adil, beberapa akan memilih untuk tidak membeli asuransi.

WHY HAVE SOCIAL INSURANCE?: Asymmetric Information

- Pasar asuransi dicirikan oleh asimetri informasi antara individu dan perusahaan asuransi mereka.
- Individu tahu lebih banyak tentang kemungkinan terjadinya kejadian buruk daripada perusahaan asuransi.

Asymmetric Information

- Misalnya, di pasar asuransi kesehatan, ada kemungkinan bahwa orang yang membeli asuransi tau lebih banyak tentang masalah kesehatannya dan pemanfaatan yang diharapkan daripada perusahaan asuransi..
- Perusahaan asuransi akan enggan untuk menjual kepada individu orang tersebut polis asuransi dengan harga yang adil sesuai aktuaria, karena mereka cenderung menjadi "risiko tinggi."

Asymmetric Information

- Assume there are 2 groups, each with 100 people. The first group has 5% chance of getting injured, and the second group has a 0.5% chance.
- The payout is $30,000 when injured.
- **Table 2** shows how information affects the insurance market in this context.

Table 1

Insu

Information						
Full	Separate					
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

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Again, the company loses money, so it will *not* offer insurance. Thus, the market fails again with a pooling equilibrium.

Asymmetric Information

- This example illustrates how the problem of adverse selection plagues the insurance market.
- People have the *option* of buying insurance, and will only do so if it is a fair deal for them. Only the high risks take-up the policy so it loses money.

The Problem of Adverse Selection

- The insurance market failed because of ***adverse selection***–the fact that insured individuals know more about their risk level than does the insurer.
  - This might cause those most likely to have an adverse outcome to select insurance, leading insurers to lose money if they offer insurance.
  - Only those for whom insurance is a fair deal will buy that insurance.

The Problem of Adverse Selection

- For example, in the 1980s, the California health insurer HealthAmerica Corporation was rejecting all applicants to its individual health insurance enrollment program who lived in San Francisco.
  - The company's belief was that AIDS was too prevalent there.
  - The company would pretend to review the applications, but would actually place them in a drawer for several weeks before sending rejection letters.
- This is a market failure because, with full information, individuals were likely to buy insurance at the actuarially fair premium, even if the premium were higher due to AIDS.

Does Asymmetric Information Necessarily Lead to Market Failure?

- Will adverse selection *always* lead to market failure? Not if:
  - Most individuals are fairly *risk averse*, such that they will buy an actuarially unfair policy.
    - The policy entails a ***risk premium***, the amount that risk-averse individuals will pay for insurance above and beyond the actuarially fair price.
    - This leads to a ***pooling equilibrium***, which is a market equilibrium in which all types buy full insurance even though it is not fairly priced to all individuals.

Does Asymmetric Information Necessarily Lead to Market Failure?

- Will adverse selection *always* lead to market failure?
  - In addition, the insurance company can offer separate products at separate prices, causing consumers to reveal their true types (careless or careful).
    - This leads to a ***separating equilibrium***, which is a market equilibrium in which different types buy different kinds of insurance products.

Does Asymmetric Information Necessarily Lead to Market Failure?

- The separating equilibrium still represents a market failure.
- Insurers can force the low risks to make a choice between full insurance at a high price, or partial insurance at a lower price.
- Although insurance is offered to both groups in this case, the low risks do not get full insurance, which is suboptimal.

Application

Adverse selection and health insurance "death spirals"

- One fascinating example of adverse selection is a study of Harvard University employees by Cutler and Reber (1998).
- Before 1995, the out-of-pocket cost to employees was very similar across generous and less generous health insurance plans.
- In 1995, Harvard moved to a system where the employee was responsible for much more of the costs of the generous plans.
  - This greatly increased the extent of adverse selection–the healthy individuals moved into less generous plans.

Application

Adverse selection and health insurance "death spirals"

- This corresponded to moving from a pooling equilibrium to a separating equilibrium.
- The remaining employees in the generous plan were less healthy; this ultimately lead to an adverse selection "death spiral" where premiums increased, leading to even more switches, leading to even higher costs.

How Does The Government Address Adverse Selection?

- The government can help correct this kind of market failure. It could:
  - Impose an individual mandate that everyone buy insurance at $825 per policy from the private company.
  - It could offer the insurance directly, which would have similar effects.
- Both policies would lead to the low risks subsidizing the high risks.

OTHER REASONS FOR GOVERNMENT INTERVENTION IN INSURANCE MARKETS

- Although adverse selection is a compelling motivation for government intervention in insurance markets, there are also motivations related to:
  - Externalities
  - Administrative costs
  - Redistribution
  - Paternalism

Externalities and Administrative Costs

- For example, there are *negative externalities* from underinsurance, such as the health externalities discussed in Lesson 1.
- There are also economies of scale in administrative costs, such as for the Medicare program. Of course, this just suggests that *one large firm*, not necessarily the government, should provide the coverage.

Redistribution and Paternalism

- Perhaps more interesting are the notions of redistribution and paternalism.
- With full information, insurance premiums are vastly different across individuals. For example, genetic testing may ultimately allow insurers to more accurately predict health care costs. This raises various questions related to fairness.

Redistribution and Paternalism

- A final motivation relates to paternalism. Individuals may simply not adequately insure themselves unless the government forces them to do so.
  - The market failure here is the government's own inability to commit to not helping a person who is in trouble.

SOCIAL INSURANCE VERSUS SELF-INSURANCE: HOW MUCH CONSUMPTION SMOOTHING?

- There are ways for individuals to consumption-smooth in the absence of insurance markets.
- ***Self-insurance*** is a private means of smoothing consumption over adverse events, such as one's own savings, labor supply of family members, or borrowing from friends.

Example: Unemployment Insurance

- Consider unemployment insurance (UI), which provides income to workers who have lost their jobs.
- Although private unemployment insurance does not exist to smooth consumption, a person could:
  - Draw on their savings
  - Borrow, either in collateralized forms or uncollateralized forms.
  - Have other family members increase their earnings
  - Receive transfers from outside their extended family, friends, or local organizations.

Example: Unemployment Insurance

- Once we have mechanisms like these, we run into the problem that public intervention can *crowd out* private provision.
- If social insurance simply crowds out these other mechanisms, there may be no consumption smoothing gain or justification for government intervention.
- This is important, since there are efficiency costs of raising government revenue.

Example: Unemployment Insurance

- The ***UI replacement rate*** is the ratio of unemployment insurance benefits to pre-unemployment earnings.
- **Figure 2a** shows some examples of the possible relationship between the UI replacement rate and the drop in consumption when a person becomes unemployed.
- A larger fall in consumption means less consumption smoothing.

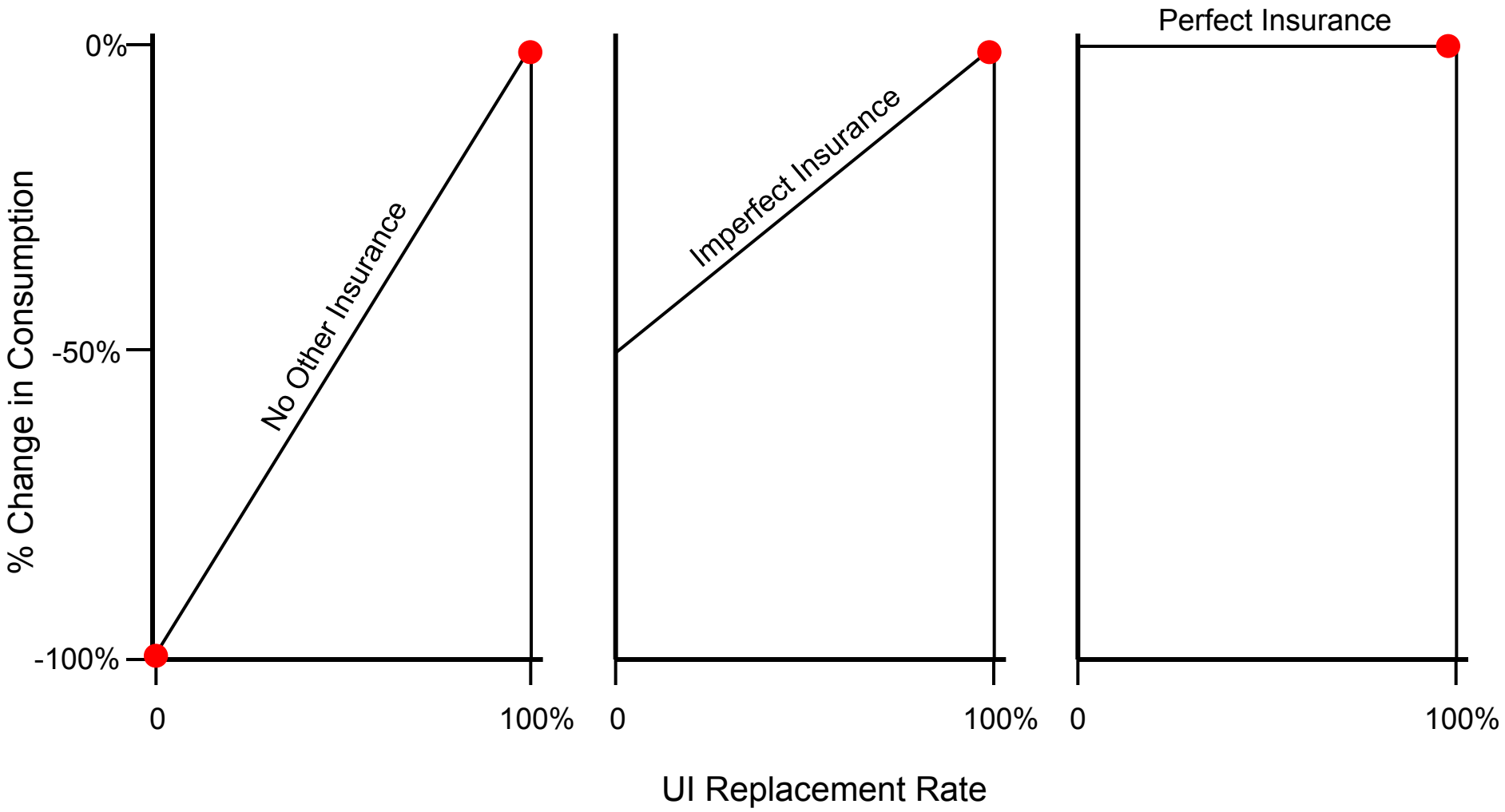
Fig

In all of these cases, it

UI plays a *full consumpti* *smoothing* role here. There is no crowd out.

UI plays a *partia* *consumption smoot* role here; it crowds spousal labor supply

With full insurance, UI plays no consumption smoothing role. E.g., UI may crowd out savings.



Example: Unemployment Insurace

- Panel *A* shows the scenario in which a person has no self-insurance (e.g., no savings, credit cards, or friends who can loan money to her).
  - With no UI, consumption falls by 100%.
  - Each percent of wages replaced by UI benefits reduces the fall in consumption by 1%, shown by the slope equal to 1 in panel *A*.
- In this case, UI plays a full consumption smoothing role: there is no crowd-out of self-insurance (because there is no self-insurance).
- Each $1 of UI goes directly to reducing the decline in consumption from unemployment.

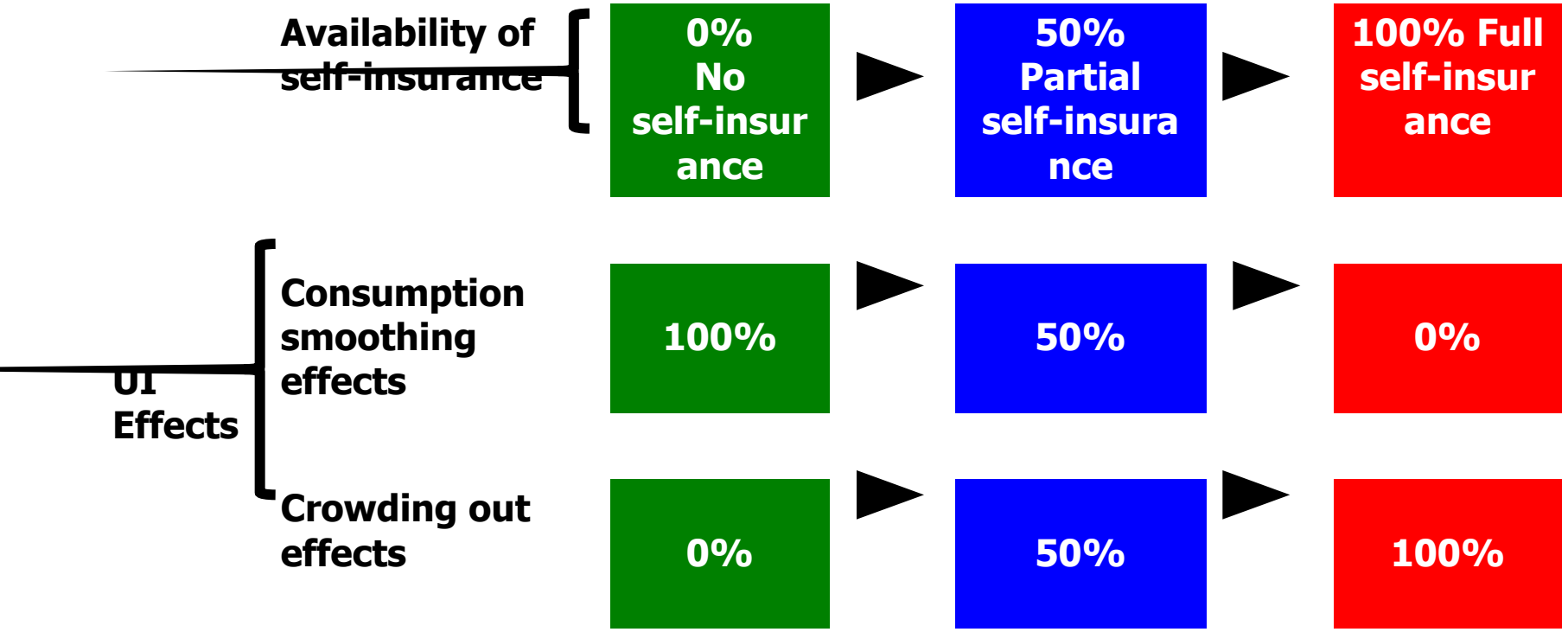
Example: Unemployment Insurance

- Consider the other extreme, in panel *C*. A person has full insurance (perhaps private UI or rich parents).
  - With no UI, consumption falls by 0%.
  - Each percent of wages replaced by UI benefits does not reduce the fall in consumption at all, as shown by the slope equal to 0 in panel *C*.
- In this case, UI plays no full consumption smoothing role, and plays only a crowd-out role.
- Each $1 of UI simply means that there is one less dollar of self-insurance.

Example: Unemployment Insurance

- In a middle-ground case (Panel *B*), UI plays a partial consumption-smoothing role.
- It is both smoothing consumption and crowding out the use of self-insurance.
- **Figure 2b** summarizes these lessons. The UI consumption smoothing and crowding-out effects depend on the availability of self-insurance.

Figure 2b


Availability of self-insurance
0% No self-insurance
50% Partial self-insurance
100% Full self-insurance
UI Effects
Consumption smoothing effects
100%
50%
0%
Crowding out effects
0%
50%
100%

Lessons for Consumption-Smoothing Role of Social Insurance

- In summary, the importance of social insurance programs for consumption smoothing depends on:
  - The predictability of the event.
  - The cost of the event.
  - The availability of other forms of consumption smoothing.

THE PROBLEM WITH INSURANCE: MORAL HAZARD

- When governments intervene in insurance markets, the analysis is complicated by ***moral hazard***, the adverse behavior that is encouraged by insuring against an adverse event.

THE PROBLEM WITH INSURANCE: MORAL HAZARD

- Consider the Worker's Compensation program, for example.
  - Clearly, getting injured on the job is the kind of event we want to insure against.
  - It is difficult, however, to determine whether the injury was really on-the-job or not.
  - The insurance payouts include both medical costs of treating the injury, and cash compensation for lost wages.
  - Under these circumstances, being "injured" on the "job" starts to look attractive.

THE PROBLEM WITH INSURANCE: MORAL HAZARD

- By trying to insure against a legitimate event, the program may actually encourage individuals to fake injury.
- Nonetheless, moral hazard is an inevitable cost of insurance, either private or social. Because of optimizing behavior, we increase the incidence of bad events simply by insuring against them.

What Determines Moral Hazard?

- The factors that determine moral hazard include how easy it is to detect whether the adverse event happened and how easy is it to change one's behavior to establish the adverse event.

Moral Hazard Is Multidimensional

- Moral hazard can arise along many dimensions. In examining the effects of social insurance, four types of moral hazard play a particularly important role:
  - Reduced precaution against entering the adverse state.
  - Increased odds of entering the adverse state.
  - Increased expenditure when in the adverse state.
  - Supplier responses to insurance against the adverse state.

PUTTING IT ALL TOGETHER: OPTIMAL SOCIAL INSURANCE

- There are four basic lessons:
  - First, individuals value insurance and would ideally like to smooth consumption.
  - Second, insurance markets may fail to emerge, primarily because of adverse selection.
  - Third, private consumption smoothing mechanisms may be available; to the extent they are, one must examine new consumption smoothing versus crowding out of existing self-insurance.
  - Fourth, expanding insurance encourages moral hazard.

PUTTING IT ALL TOGETHER: OPTIMAL SOCIAL INSURANCE

- These lessons have policy implications.
- First, social insurance should be partial.
  - Full insurance will almost always encourage adverse behavior.
- Second, social insurance should be more generous for unpredictable, long-term events where there is less room for private consumption smoothing.
- Third, more moral hazard should lead to less insurance.

Recap of Social Insurance: The New Function of Government

- What is Insurance and Why Do Individuals Value it?
- Why Have Social Insurance?
- Social Insurance versus Self Insurance: How Much Consumption Smoothing
- The Problem with Insurance: Moral Hazard
- Putting it All Together: Optimal Social Insurance