II A. SOCIAL SECURITY

1. FINANCIAL RISK

We face risks every day that are both financial and non-financial. This discussion will be only about financial risks.

Examples?

People enter into some risky situations voluntarily, for fun. (Examples?)

Generally, people act as though they would prefer to avoid financial risk unless compensated to take it on. We say that most people in most circumstances are risk averse.

This is not the same as saying that most people would rather avoid loss. It means that they would rather accept a small, certain loss than risk a large loss even though it is very improbable.

E. g., errors and omissions insurance: Accountants and others can be sued if an error or omission in their report leads someone acting on their advice to a financial loss. Lloyds of London will insure against this, with a premium depending on the amount of business that the professional does. 40 reports per year with $1 million in coverage costs about $1,400. To accept that policy means that the professional would rather lose $1,400 (tax deductible as a business expense) for sure rather than face a very low risk of losing $1 million.

2. INSURANCE

Insurance is a device for sharing independent risks. If 10,000 people each face a 1% probability of losing (say) $1,000, and if their chances of losing the money are independent of each other, there will be roughly 100 people who will each lose $1,000; but the average loss per person, spread among the 10,000 who are all subject to the risk, is only $10. If each of them chipped in $10 to a pool that would compensate the losers, they would each be insuring themselves against losing $1,000 at a cost of $10. It is a bit more complicated, because there are some expenses to operate the arrangement, and the number of people who lose is not guaranteed to be 100 (though it can be predicted with confidence to be close to that if the risks are truly independent). See slides 5 – 7 for how the possible range of losses per capita shrinks as number insured climbs.

Independence of risks means that the chance that I will suffer a loss is independent of the chance that you will suffer a loss. If we each face a 1% chance of loss and the risks are independent, the chance that we will both suffer a loss is just 1% of 1%: .01%.

Why is independence of risks important? If the risks are not independent, the insurer can’t count on the law of averages to limit the total losses he might face. For example:

⇒ Insurance against earthquakes, if all of your insurance is in one earthquake-prone city.
⇒ Insurance against floods if all of your insureds live along the same river.
⇒ Insurance against property damage due to war.
Insurance is a contract to protect against financial risk. The insured agrees to pay a price (the premium) in exchange for a (larger) payment to be received only if the specified financial loss occurs.

The insurer is generally acting like the house in a casino, agreeing to pay in case a low probability event occurs, but betting on many such independent events so that the average payout per thousand dollars at risk is roughly constant.

Examples of kinds of insurance (discussed in class).

a. **Insurable risks**

Not all financial risks can be insured against. A list of criteria, according to one Internet source, for an insurable risk is:

1. The insured loss must have a definite time and place;
2. The insured event must be accidental;
3. The insured must have an insurable interest in the subject of coverage;
4. The insured risks must belong to a sufficiently large group of homogeneous exposure units to make losses predictable;
5. The risk must not be subject to a catastrophic loss where a large number of exposure units can be damaged or destroyed in a single event;
6. The coverage must be provided at a reasonable cost;
7. The chance of loss must be calculable.

(From Rupp's Insurance & Risk Management Glossary. © 2002, NILS Publishing. All rights reserved.)

That list should be treated with skepticism (for reasons to be discussed in class), but is roughly accurate.

b. **Private information and adverse selection**

For markets to work well (i.e., lead to efficiency in the allocation of resources) we assume that buyers know what they are buying and sellers know both what they are selling and exactly what they are getting in return. When either the buyer or seller has private information not available to the other side in the transaction, there is a danger that the market will be inefficient.

The issue of private information is particularly troublesome in insurance markets.

Suppose that I learn that I have a disease that will be expensive to treat and might shorten my life. I am much more likely to want to buy health insurance or life insurance, if I have a chance to buy it without taking a physical exam, after I learn that fact than I was before. That is an example of adverse selection. If insurance is offered and potential buyers know more about their risk than the seller knows, those who need the insurance most will buy it; those who need it least will not buy it. The result is that the population of those who buy the insurance faces on average a higher risk than the general population. This drives up the insurance premium, which drives away more of those with lowest risk.
We can end up with a situation in which a large fraction of the population who would benefit from insurance cannot buy it at a reasonable price. Private, individual health insurance in the U. S. faces that problem.

c. **Strategic behavior and moral hazard**

In any contract, both sides of the transaction have an incentive to renege on their responsibilities. A salesperson has an incentive to not work very hard at selling the employer’s product; the employer can guard against that either by monitoring (as in a store) or by using commissions as an incentive. A student who is not very interested in this course has an incentive to not read the assignments. I can guard against that by asking you details about the reading, especially in an exam. Economic studies have shown that enforced seat belt laws and air bags lead drivers to take more risks when driving. By strategic behavior I mean deliberately modifying your behavior depending on the nature of the environment you face.

In insurance markets and other financial contracts, the problems created by strategic behavior are called **moral hazard**: the person with fire insurance is more likely to store gasoline for his lawn mower in his basement than is one without fire insurance – the act of buying the insurance increases the risk of what is insured against.

With that background we can consider social insurance.

3. **SOCIAL INSURANCE**

a. **Background on social insurance**

- Programs financed by social security taxes in the US are abbreviated OASDHI. They include
  
  - **Old Age insurance (OAI)**
  - **Survivors insurance (SI)**
  - **Disability insurance (DI)** and
  - **Health insurance (HI, for Medicare)**

- Financed by 6.2% FICA tax on employee’s capped wages paid by employee (up to $102,000 in 2008) and 6.2% tax on capped wages paid by employer, for OASDI, and 1.45% on uncapped wages paid by employee and 1.45% paid by employer for Medicare. The self-employed pay double: 12.4% for OASDI, and 2.9% for Medicare.

FICA (Federal Insurance Contributions Act) is the legislation that sets the tax rates paid for OASDHI.

  - Does it make a difference who pays the tax? Economic theory says “no” though economic theory says that who ends up paying the tax depends on how much the benefit is worth to employees. If they think that each dollar of tax will deliver to them a benefit that is worth $1 today, the employees will pay the tax. If they value the benefit at less than $1 for each $1 of tax, they will treat the tax as a pay cut, and someone else (the employer or the employer’s customers) will pay at least part of it.
• Other elements of social insurance include
  ⇒ Unemployment insurance
  ⇒ Workers’ compensation

• Are these all insurable events, according to the criteria we saw earlier?
  • (Note: accidental means no moral hazard)

b. Why should government be involved in social insurance?

• Does it meet the normal criteria? Which of following reasons would justify government intervention in the market?
  ⇒ Public good
  ⇒ (as special case) imperfect information
    Is there a problem of adverse selection that could justify social insurance, rather than private insurance?
    What about indexing to inflation?
    Are consumers knowledgeable when they decide how much to save for retirement and where to invest the money?
  ⇒ External benefits or cost
  ⇒ Monopoly
  ⇒ Equity (distribution of income)
  ⇒ Protect children
  ⇒ Other reasons? (Transaction costs: 1% vs. 6%)

• Level of government that regulates or finances or provides services
  ⇒ Local
  ⇒ State
  ⇒ Federal

c. Pay-as-you-go vs. fully-funded insurance

• Private insurance and retirement annuities are fully funded.

• This means that each buyer pays enough so that on average each one will pay for their own benefits,
  ⇒ combining the premiums that they pay with the interest earned on their accumulated savings.
• How does the economy afford to pay the interest that helps to accumulate the insurance or pension funds?
  ⇒ The insurance company lends or invests the premiums to finance new investment projects (roughly speaking).
  ⇒ The investment projects increase total output in the economy, generating the funds to pay the insurance or pension.
  ⇒ The interest earnings are the earnings generated by the increase in capital that the premiums represent.
  ⇒ The policy holders on the average get back more than they put in through premiums as a result of these interest earnings.

• Social insurance, and the U. S. social security program in particular, is (roughly speaking) pay-as-you-go.
  ⇒ Pay-as-you-go means that no new capital is created by the premiums (i.e., FICA taxes) that are paid by workers.
  ⇒ Instead those funds are immediately paid out to retired people (under OAI), to survivors (under SI) or to the disabled (under DI).
  ⇒ There is no fund created from premiums plus accumulated interest.
  ⇒ There is no increase in total output in the economy created as new capital is accumulated through these premiums.

• We will see that workers can still get back more than they put in as long as the total wage bill is growing, because
  the number of covered workers is increasing, or
  the covered wages are increasing (or both).

• Numerical exercises will demonstrate this.

4. GRAMLICH, DIFFERENT APPROACHES FOR DEALING WITH SOCIAL SECURITY

a. 1995 Trustees’ Report

• Financial problems for social security system result from 2 trends:
  ⇒ First is “actuarial balance” (represented by accounting identity below).
  ⇒ Rate of return (also discussed below).

i. Actuarial balance

• Accounting identity for stable system with pay-as-you-go financing:
\[ t = \frac{(B \times S)}{(W \times N)} \]

tax rate on taxable wages = \( \frac{\text{avg benefit} \times \text{no. of SS recipients}}{\text{avg. taxable wage} \times \text{no. of workers}} \)

\[ = \frac{\text{total SS benefits}}{\text{total taxable wages}} \]

\[ = \frac{B}{W \times S / N} \]

= replacement rate \times dependency ratio.

replacement rate is average SS benefit as \% of earnings while working.

- In US, population is aging so dependency ratio is rising (.29 in ‘95 to .50 in 2030, when the last of the baby boomers reach “normal retirement age”, to .56 in 2070).

- If aggregate replacement rate does not change, combined tax rate needs to increase from 12\% in 1995 to 17\% in 2030 and 19\% in 2070, continuing to rise thereafter.

ii. Rate of return

- (Real) rate of return for stable system with pay-as-you-go financing is equal to the economy’s real wage bill (real wage \times \text{no. of workers}).

  ⇒ “Real” means taking out the effect of inflation.

  E.g., with inflation of 3\%, wages have to grow by 3\% just to keep buying power constant. If wages in fact grow by 5\%, the real rate of growth is

  \[ 5\% - 3\% = 2\%. \]

  If wages in fact grow by only 1\% when inflation is 3\%, the real rate of growth is

  \[ 1\% - 3\% = -2\%. \]

- Long run real wage bill is anticipated to grow at 1\% per year.

- Trustees’ projection of tax payments into the system and benefits out of the system use an interest rate of 2.3\% per year.

- Implies that for younger cohorts, discounted future benefits will fall relative to discounted future tax payments.

  ⇒ Ratio of discounted future benefits to discounted future tax payments is called the “money’s worth” ratio; this ratio will fall. Figures 1 and 2 in his paper show change.

- Question of how to balance rise in tax with declines in benefits while preserving popularity of system was problem addressed by the council chaired by Gramllich in 1996.

- Brief definitions for following discussion of the alternatives under consideration.

  ⇒ Defined benefit v. defined contribution:

  A defined benefit pension program ties the size of the benefit to the beneficiary’s earnings while working. In private pensions, the link is typically to the average earnings
in the five years where earnings were highest. In the social security system, the size of the benefit is based on earnings over a 35-year period, but earnings from earlier years are adjusted upward by the average increase in covered wages. This is like an adjustment for inflation but is typically higher because wages generally grow faster than prices. We have been getting better off over time, at about 1% per year; on the average, your parents are better off than your grandparents were, and if that growth is maintained, on the average you will be better off than your parents.

*Risk, in a defined benefit program, falls to the employer (or financer of the program) to make sure that funds grow fast enough to keep up with rise in wages.*

A defined contribution pension program does not commit to any particular level of benefits; it commits to a level of contribution into a fund each year, with that fund to be invested, typically with the investments chosen by the beneficiary from a range of alternatives. Whatever the fund accumulates to by the age of retirement is what you get for retirement funds, perhaps to be converted into a life annuity to help assure that you won’t run out of money.

*Risk, in a defined contribution program, falls to the beneficiary to make sure that funds grow fast enough to keep up with rise in wages.*

⇒ Investment of retirement funds in equities (stocks)

Stocks have earned a higher rate of return than bonds over many years, though at the price of higher risk: the returns are more variable. It is usually argued that retirement funds should be invested at least partly in stocks to take advantage of the higher growth. (Later readings will expand on this issue).

- Three alternative approaches considered by Gramlich council:
  i. Increase taxes on SS benefits; invest some SS funds in equities.
  ii. Add small, mandatory *defined contribution* individual accounts added to current SS system, with the individual accounts held by SS and invested in index funds until retirement.
  iii. Gradually replace the present system with a large-scale defined contribution system, held outside the Social Security trust fund, which could again be invested in equities.

b. 1st alternative: Maintain benefits

- This approach tries to preserve present system as much as possible.

  ⇒ Only small changes in replacement rates, but more of the benefits will be taxed.

  ⇒ The taxes so collected would be diverted to the Social Security trust funds (as current taxes on SS receipts are). Bad economics (to tie tax receipts to any particular program) but good politics.
⇒ Contrast with private pensions: now benefits are taxed when received but contributions are tax deductible. Social security taxes are not tax deductible, so this change would be harsher tax treatment than is true for private pensions.
⇒ But as Gramlich points out, this is one way to make current beneficiaries, who have a fairly good money’s worth return, pay for part of the current actuarial imbalance.
⇒ Expansion of revenue by expanding the income base on which social security taxes are levied.
⇒ Hope to increase return on trust fund by gradually investing in equities, up to 40% of assets. (Now, entirely invested in U. S. Treasury securities).
  ⇒ Will equity premium hold up?
  ⇒ Who decides what equities to invest in? Scope for much political mischief, and bad investments that transfer funds from social security to corporations. Investment pool would be huge, about $1 trillion at today’s rates.

c. 2nd alternative: Individual accounts

- Scales back benefits to eliminate the long-term actuarial deficit.
  ⇒ Raise “normal retirement age” to receive full benefits, through next century.
  ⇒ Reduce replacement rates for high-wage workers.
  ⇒ Create mandatory individual (defined contribution) accounts, 1.6% of covered payrolls.
    ⇒ Held by Social Security System
    ⇒ Owner can choose bonds, stocks (index accounts) or combination
    ⇒ Compared to proposal i, decentralizes the investment decision
    ⇒ May be more palatable than raising FICA payroll tax rates.

d. 3rd alternative: Personal security accounts

- Large step toward privatizing SS.
  ⇒ 2.4% of the 12.4% FICA tax would continue to be used for survivor and disability insurance.
  ⇒ Employer share of the remainder (5% of covered payroll) would in long run equilibrium finance a flat pension benefit of about 2/3 poverty level of income.
  ⇒ Employee share of the remainder (also 5%) would go into an individual retirement account held by private investment companies with broader choice over kinds of investments and (undoubtedly) with higher fees. Actual proposal would allow
owner to withdraw all of these funds on retirement with no guarantee that any
would be kept for future need.

⇒ Transition problem would be serious. Because we are now on essentially a pay-
as-you-go system, in a transition period some workers would be paying both
for the current retired and also putting away money for their own retirement,
since after the transition workers will no longer be supporting the retired.
Requires a transition tax, of roughly 1.5% of total payrolls or 1% of total
consumption.

• See Figures from paper for money’s worth ratios for the 3 alternatives (with future
benefits and taxes discounted at 2.3% real interest rate). Figures are shown only for
single taxpayers and for married couples with only one working spouse.

⇒ Benefits are much higher for those couples because of a spousal benefit equal to
50% of the worker’s benefit if single.
Figure 1

Present Value of Benefits as a Percentage of Present Value of Taxes:
Single Workers

Panel a: Single workers with steady low earnings

Panel b: Single workers with steady average earnings

Panel c: Single workers with steady maximum earnings
Figure 2
Present Value of Benefits as a Percentage of Present Value of Taxes: Married with One Earner

Panel a: Married with one steady low earner

Panel b: Married with one steady average earner

Panel c: Married with one steady maximum earner
5. A FOURTH ALTERNATIVE: RAISE RETIREMENT AGE

The main reason that social security trust fund will be in deficit is that the dependency ratio is forecast to rise, due to increase in life expectancy and increase in disability ratio. See Table below, from Lawrence H. Thompson, “The Implications of Social Security’s Long-Range Financial Projections” (Urban Institute Brief Series, No. 6, July 1999):

TABLE 2. Impact of Alternative Demographic Assumptions on Cost Projections: Difference between the Present Value of Income and the Present Value of Costs by 25-Year Subperiod under Different Demographic Assumptions (percentage of taxable payroll)

<table>
<thead>
<tr>
<th>Assumption</th>
<th>1999-2023</th>
<th>2024-2048</th>
<th>2049-2073</th>
<th>1999-2073</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baseline: Intermediate projection</td>
<td>+0.28</td>
<td>-4.67</td>
<td>-5.71</td>
<td>-2.45</td>
</tr>
<tr>
<td>2. No mortality improvements</td>
<td>+0.58</td>
<td>-3.13</td>
<td>-3.01</td>
<td>-1.28</td>
</tr>
<tr>
<td>3. No mortality improvements and little increase in disability</td>
<td>+0.78</td>
<td>-2.75</td>
<td>-2.62</td>
<td>-0.99</td>
</tr>
<tr>
<td>4. Row 3 &amp; fertility rate of 2.2</td>
<td>+0.76</td>
<td>-2.44</td>
<td>-1.60</td>
<td>-0.65</td>
</tr>
<tr>
<td>5. Row 3 &amp; real wage of 1.4%</td>
<td>+1.15</td>
<td>-1.61</td>
<td>-1.32</td>
<td>-0.39</td>
</tr>
</tbody>
</table>

Baseline assumes 34% drop in mortality rates for the aged over the 75 years from 1998 to 2073. Line 2 above shows that about half of the deficit is due to that assumption.

Baseline assumes 25% increase in disability rates for men and 47% for women. That accounts for another 10% of deficit.

Baseline assumes drop in fertility rate from about 2.1 today to 1.9, 75 years from now. Line 4 shows effect of fertility rate of 2.2% instead.

Baseline assumes that real wage increases will fall to 0.9%. Line 5 shows effect of real wage increase of 1.4% instead.

Alternatives explored by Gramlich commission did not include a further increase in the “full” retirement age. When SS was started, the full retirement age was 65, and not many people lived longer than that, so pension cost was low. As life expectancies increased, cost increased, and finally SS made an adjustment to the retirement age for those born in 1938 and later, so that for those born in 1960 and later it will be 67 (though reduced benefits will still be available at 62). But there is no reason to stop there; if people live longer, it is not obvious that all of the extra time should be in retirement; it could be divided between work and retirement. Roughly speaking, retirement at 69 in 2050 would give about the same ratio of working years to retirement as was true in 1965.

However we would need to factor in a requirement that early retirement start somewhat later than 62. Today, about 60% of new retirees file for retirement at 62 (despite a 25% reduction in benefits compared to retiring at 65), and 80% file for retirement before 65. It would not help the fund much if full retirement were extended to 69 and benefits were still available at 62.

6. KRUGMAN, CONFUSIONS ABOUT SOCIAL SECURITY

a. The Trust Fund

Krugman reminds us that the tax to finance OASDI is a regressive tax, falling more on the poor than the rich. [The tax base has been increased to $102,000 for 2008, though, so it is proportional
up to that point, and is only regressive when earners with $102,000 or less are compared to those earning more].

He argues that the SSA projections of the Trust Fund are fairly conservative, and that with more optimistic assumptions about economic growth the fund will not ever be exhausted.

“Privatizers” (those who want to either substitute private retirement accounts for social security or supplement social security with private accounts) argue that the SS Trust Fund is meaningless, since it holds only government bonds. But (he argues) that means that the concept of walloff social security from the rest of the government is meaningless. The “crisis” in social security occurs only if one assumes that there is a firewall between social security funds and the rest of the government. Once it is acknowledged that the firewall is a fiction, the notion of a SS funding crisis is also seen to be a fiction. There can be a general budget crisis, but not a SS funding crisis.

It can be argued that SS has been run more responsibly than the rest of the Federal budget. The government focuses on the “unified budget” in which the surplus run by social security is used to offset the deficit run in the rest of the government, making it appear that government has been more responsible than it has. If the rest of the government had maintained a balanced budget while social security trust fund was increasing, the Federal budget would now not have the interest burden that it has, the total budget would be lower, and the prospect of dealing with possible funding shortfalls in social security would be a much smaller problem than it is.

b. Rates of return on private accounts

Average rates of return on stocks should be higher than rates of returns on bonds, because they are riskier. For the past several decades it has appeared that they were higher than necessary to compensate for the level of risk. Krugman says that the rates of return on stocks have been about 7% in real terms (that is, 7% plus the rate of inflation), which seems higher than needed for the extra risk.

In fact price-earnings ratio, that averaged 14 over many years, is now 20. The P/E ratio is roughly the inverse of the rate of return, so this means that the rate of return has fallen from about 7% to 5%.

[Note: The person who first identified the “equity premium puzzle” – Nobel laureate Ed Prescott, formerly at MN and now at Arizona – also says that the equity premium seems to have vanished, just as economic theory would lead us to expect.]

Must also keep in mind that private accounts would need a mix of stocks and bonds, probably about 40% bonds, with real rate of return of about 2% for safe bonds. Lowers average return from 5% on stocks to 3.8% on whole portfolio. And must account for management fees, which run 1.1% in Great Britain. Lowers return to 2.7% – barely above return currently provided by Social Security, with a lot more risk.

c. The Distant Future

Privatizers argue for borrowing trillions of dollars today, to fund transition to private accounts, arguing that savings from social security 50 years from now will make up for the huge loans needed, allowing government to retire debt. We have already seen that the savings are highly suspect.
Krugman objections:

i. Most of projected future deficits are for Medicare, for medical procedures not yet developed, to be applied to people not yet born. We don’t need to finance that starting today.

ii. Social security losses also are projected to be high 100 years in the future. But we don’t know what the economy will be like that far in future. No justification to project beyond the 75-year window that SS has always used.

iii. Can we really count on future changes in benefits to offset the required borrowing today? No, because today’s government cannot bind future governments.

Argues that the current drive to privatize is simply the attempt of right–wing to do away with a government program that they have never liked. And some competent, politically conservative economists support it for 1 of 2 reasons: (1) they hope to get administration appointments or (2) they think that the current saving rate is too low in the US, and this plan might be shaped into one that would increase national saving. (Krugman argues that based on past, this is unlikely).

7. LAZEAR, THE VIRTUES OF PERSONAL ACCOUNTS

Real issue is not whether private accounts would give greater returns. Real issue is what should goals of system be, and would private accounts achieve desired goals more efficiently?

a. The Current Social Security System: Its Three Functions

i. Forces savings, because some would put aside less than social security requires.

ii. Provides insurance, pooling risks across individuals and making benefits independent of return to securities.

iii. Redistributes income. Those with shorter life expectancies transfer income to those with longer life expectancies (blacks to whites, men to women, smokers to non-smokers). Caps on benefits mean that incomes are transferred from rich to poor, and caps on contributions mean that income is redistributed from middle class to rich.

b. The Goals of the Social Security System: Which Functions Are Proper?

i. Forced saving is at the heart of the system, so that everyone will have some basic standard of living throughout retirement.

ii. Implicit in the notion of a base level of income for all is desire for insurance, putting a floor under amount of benefits.

iii. The redistribution feature of social security is more problematic; some is capricious.

c. Some Initial Advantages of Private Accounts

i. Consistent with fundamental economic principles – consumer sovereignty, and keep market free of big distortions.

ii. Private accounts enhance likelihood that contributors will receive what they expect. Benefits are more secure (not changeable by Congress).
iii. Removes temptation from Congress to spend revenues that are collected from social security taxes (via the device of the unified budget).

d. Can Private Accounts Serve the Proper Goals of the Soc. Sec. System?

i. Primary goal is to force individuals to save. Private accounts do this, with additional advantage of allowing consumer sovereignty, especially for those who would not save much on their own, and with more security, since return isn’t subject to whim of Congress.

ii. Income insurance: We can supplement private accounts with a base level of pension from a government-funded program. Or could guarantee a minimum return or a minimum annuity for those who had put aside the funds as required. Would require regulation of the kind of investments (because the guarantee would encourage very risky investments: if you win, you win, and if you lose, the government picks up the tab for you.

e. The Transition to Private Accounts

Argues that the cost would not be great, but he does not back up the assertion with numbers. I have not seen any calculations that support Lazear’s conclusion that the cost would be relatively low.