

On the Relatively Recent Origins of Tax-Financed Insurance and Insurance-Like Government Services

Contemporary democracies all provide a variety of tax financed insurance and insurance like products, which requires an explanation. First, it is clear that they are not pure public goods because they are both excludable and the benefits available for the insured event fall with the number of persons insured other things being equal. Nonetheless these products and various risk management services (some of which are pure public goods such as national defense) are the most popular and most expensive of the services that governments provide.

By insurance, it is meant a reimbursement for damages borne with respect to a random event such as fire insurance, and other products that share risks such as life-long annuities, which distribute the risks of living longer than expected and so run out of savings.

These public services are relatively new at the national level. They emerged gradually in Western Europe in the late nineteenth century and gradually increased in support (what might be called “higher safety net”). Prior to that time modest social insurance was often produced by local governments, churches, and families. Other insurance was available from private markets, where one can still by many insurance products. And individuals and families could self-insure by “saving for a rainy day.”

One explanation for the emergence of voter support for tax-financed insurance products is that many economic risks are highly correlated in the sense that a large number of persons tend to be simultaneously affected by an economic problem (recession) that occurs. Such events may be random or caused by failures in macroeconomic policy..

As industrialization and urbanization increased in the late nineteenth century, there were a number of “business cycles” that caused large numbers of individuals to be unemployed for a year or two during the low points of those cycles.

Such business cycle effects were less associated with life on farms. Problems with weather (droughts) might cause similar problems, but

often it was possible for individuals to temporarily move to one of their family members living in places not affected by a drought or flood, who would take care of them for a while, until they could “get back on their feet.”

This was less true for workers living in cities where family ties (at least initially) were less often present and reserves (savings) difficult to accumulate for folks that had only recently shifted from lives on farms to lives in cities and towns as employees of commercial firms rather than farms.

Private insurance was to some extent available, but when many people became unemployed at the same time, a sudden rush of claims would bankrupt all but the very largest of insurance companies.

These sorts of problems led to various movements in Europe (often initially among labor unions and their affiliated political parties) to lobby for new tax-financed insurance programs to be created by their regional (state) and national governments.

The first of these were first adopted by conservative-liberal coalitions in Germany and western Europe, but gradually spread round the world—at least within democracies.

These programs were not intended to be “transfer programs,” programs where money is explicitly taken from the rich and given to the poor in some way—but simply ways to provide insurance products that were absent or unreliable when privately provided.

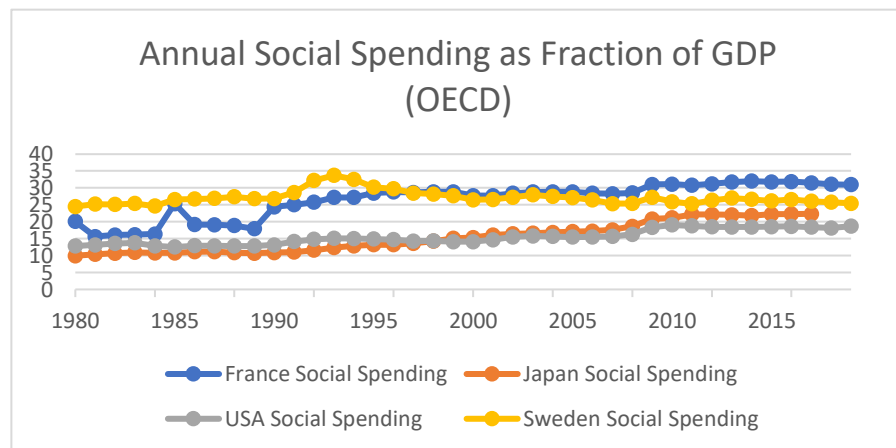
However, as a consequence of tax finance, such programs do have a redistributive aspect in that high income persons typically paid a higher price for their government provided insurance than low-income persons. Health insurance and unemployment insurance, for example, in effect, took from the healthy and employed and gave to the sick and unemployed, but this was simply a form of risk sharing common among insurance products. No one wanted to be sick, injured, or unemployed.

In the USA there was a good deal of lobbying for “social insurance” programs, but none were adopted at the national level until the great depression of the 1930s, and the programs that were adopted were not fully implemented for a decade. National medical insurance for the poor and elderly was not provided until the 1960s.

This delay reflected differences in the politics of the US and, probably, also that the private alternatives worked better in the US than in Europe—the working class was generally wealthier in the US than in Europe during this period and so better able to self-insure.

These programs were initially quite small and remained quite small until after WWII.

In the period between 1960 and 1985, these social insurance programs greatly expanded throughout the West partly because of changes in the ideology of pivotal voters and partly because of the rising income of such voters. (We discussed this a bit during the first lecture and additional data on the size and growth of these programs is provided in the webnotes associated with that lecture.)



The Economics of Social Security in the USA

I. The Economics of the Social Security Program

A. The tools developed in this course can be used to analyze the effects and origins of the US social security (OASDI) and Medicare programs.

- These are by now the two largest programs (based on expenditures) in the US budget.
- Both are funded by their own earmarked taxes on wage income.

- (An ear-marked tax is a tax that raises revenue for one specific program.)
- In both these cases, the programs can be regarded as tax financed insurance programs, and the tax can be considered the tax price of one's benefits under those programs.

B. The social security program has been a "pay as you go" system from its first days, with benefits paid from a flat tax on labor, "half" paid by labor and "half" by employers.

- Similar funding schemes were common among the European varieties of such programs and, often, still are.
- The "earmarks" make it look like simply a way to purchase insurance from the government.
- Since median income is below average income, it implies that the median voter gets a discount on the price that similar insurance products would cost in the private sector and so demands more of it than he or she would demand from private insurance markets—even if insurance markets worked perfectly.
- (See the Social Security Administration website for the general increases in those taxes during the past fifty years, most of which were committed by program reforms adopted during the early 1980s.)

C. Of course the **actual distribution of the burden** of the social security tax varies with the slopes (elasticities) of the supply and demand curves for labor in the markets of interest for reasons worked out in the part of this course that covered tax burdens..

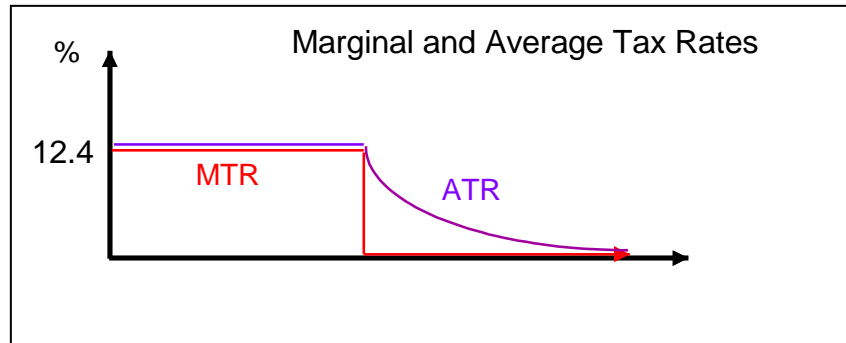
- Thus, in some markets essentially all of the tax burden of social security taxes may be shifted to workers (employees), in some it will be shared, and in others the entire tax might be absorbed by firms.

(Draw a few supply and demand curves for labor to illustrate how a flat tax (treat it like an excise tax in your diagrams) is distributed among those supplying and demanding labor in a variety of specialized labor markets.)

D. The tax schedule for social security benefits is "**digressive**," a flat tax

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on the first B dollars of labor income, but zero taxes on income above B. The upper bound on taxes is now approximately \$180,000.



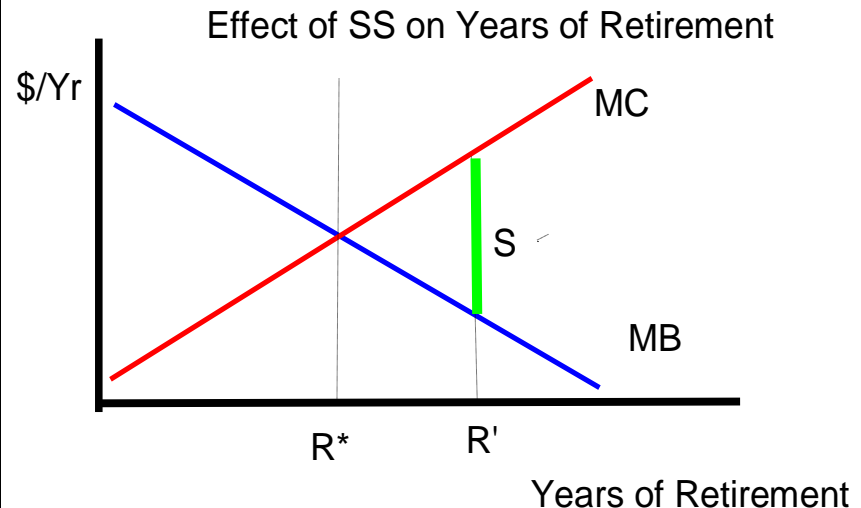
E. (Tax rates for the past 40 years have been pretty stable, but the tax base has gradually been expanded to increase tax revenue. because the “cap” is indexed to inflation (via a wage index)

F. Benefits have principally been tied to the age of retirement (62-70) and to pre-retirement income since the programs beginning.

- i. Recipients get a larger annuity if they are older when they apply for benefits (usually at the point of retirement) and had higher income the past several years before they retired.
 - However, the benefit schedule has always been "progressive" in the sense that the income-replacement rate falls as income rises for recipients.
- ii. Benefits have also been "indexed" so that inflation does not affect the purchasing power of the social security pension
 - In fact, benefits have been indexed to wages rather than prices, so the purchasing power of benefits actually tends to INCREASE through time.
 - (Wages generally increase faster than prices, because of productivity growth associated with increased in capital per labor and better education.)
- iii. The combination of higher taxes and “rewards” for retirement encourage many persons to retire earlier and to work fewer hours over

the course of their lifetimes than they otherwise would have.

- iv. The availability of the “guaranteed” pension also tends to reduce incentives to save for retirement, because personal savings makes up less of one’s retirement income than it did in the days before social security programs were created.
 - Estimates vary on this, but Martin Feldstein and others find that reductions in savings of between 50 and 25%, which tends to reduce capital formation and economic growth rates.
 - A surprisingly large fraction of "baby boomers" are counting entirely on social security for their retirement income. The median person approach retirement has just 17K of savings, although the average is 163K.



G. Both Social Security and Medicare can be thought of as subsidies for retirement. Social security increases retirement income and Medicare subsidizes health care for retired persons.

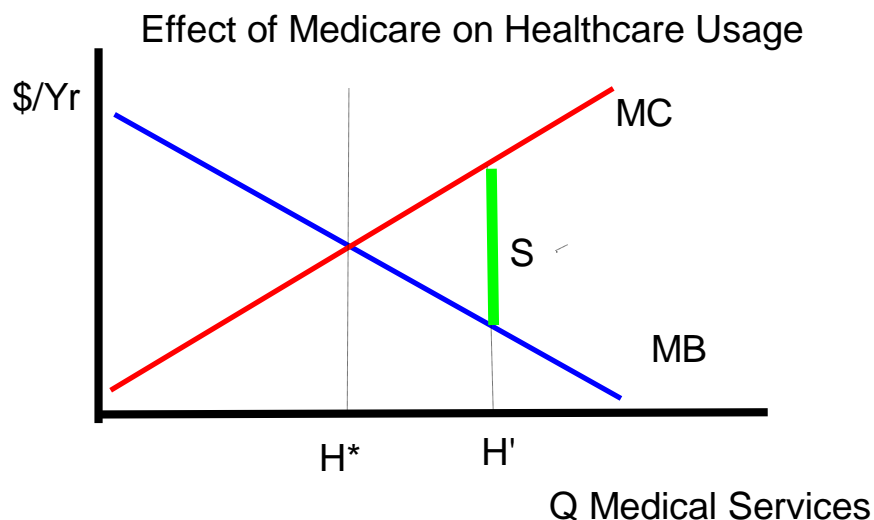
- This implies that we can use our tools from the first part of the course to analyze the effects of these programs on persons that are eligible for them.

- To illustrate the effect of social security on the age of retirement, we just draw a standard marginal cost marginal benefit diagram and add a subsidy for years of retirement--which is the benefit associated with the social security (OASI) and the Medicare programs
- As with any other good, there are marginal benefits (additional leisure, less stress, and so forth) and marginal costs (opportunity costs: e.g. foregone wages, loss of prestige, and other job-related opportunities) associated time spent retired
- To simplify just a bit, the diagram ignores illness and disability as reasons for retiring and assuming more or less good health.

II. Tax Financed Health Insurance: Medicare and Medicaid

A. Our analysis of subsidies earlier in the course can be used to analyze the short run and long run price effects of Medicare and Medicaid.

- Thus, the manner in which the benefits of subsidized health care are distributed between the purchasers of health care (the patients or taxpayers) and the suppliers of health care (the doctors, nurses, hospital owners, drug companies etc) depends on the slopes of the demand and supply curves.
- The diagram below illustrates a person's plans for retirement.



- Medicare subsidizes health insurance and thereby healthcare in a manner similar to a targeted subsidy.
- Thus the quantity of health care purchased by retired persons tends to increase, other things being equal.
- Our previous analysis of taxes and subsidies implies that the short and long run effects of subsidies differ.

In the long run, more adjustments to new demands for services can be adopted. Thus, the long run supply is more price elastic than its short run supply and so flatter. This implies that more of the benefits from the Medicare program should shift to patients and taxpayers in the long run than in the short run--other things being equal.

- However, since the market for most medical services are not truly perfectly competitive in the sense that prices are posted and well-known by both suppliers and demanders of health care, this long run effect is probably smaller than in ordinary competitive markets.
 - In general, such subsidies tend to increase doctor and nurse incomes, and prices for hospital services and medicines.
 - It also tends to increase the price of private health insurance for these and other reasons.
 - How much depends on how "flat" the long run supply curve for medical services is.

B. In addition to the standard effects of health care subsidies, higher prices and incomes tend to encourage innovations.

- Some of these innovations reduce health care costs as in ordinary markets.
- Other innovations increase their quality or bring entirely new treatments to the menu of services provided.
- These latter innovations tend to increase the cost of health care** and so far have increased health care costs per patient--albeit while providing them with higher quality treatments.

C. These various supply effects may induce medical lobbying groups to lobby in favor of extending such programs, because their profits and income tend to increase as the effective subsidy increases. This may happen

by expanding coverage or by expanding years of coverage.

D. Because of the effects of aging, innovation, and interest group activities, tax-financed health insurance (Medicare and Medicaid) is currently the largest budget items for the US central government.

E. As a result of all of these factors, **expenditures on healthcare** in the United States rose from about 5% of GNP in 1960 to about 17.5% of GNP in 2022 (after peaking at 19.5% in 2020 during the covid 19 pandemic). Medicare and Medicaid expenditures exceeded 1.7 trillion dollars in 2022, about 7% of GNP.

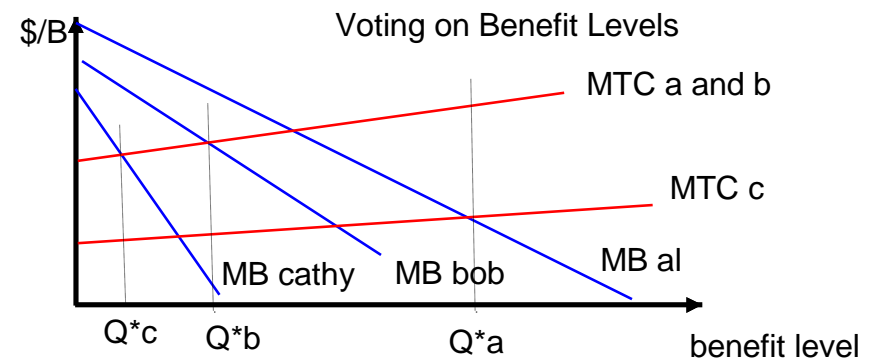
III. On the Politics of Tax Financed Retirement Programs

A. We can also use our tools from earlier in the class to analyze the politics of social security.

- Social security and medicare are among the most popular programs.
- Everyone expects to gains from it to the same extent, although the extent of the gains vary with income and longevity.
- Because it is paid for (mainly) with an income tax, the net benefits are quite a bit lower for high income persons than low income persons..

B. Generally, the older and poorer one is, the greater is the present value (or present discounted value) of their net benefits (future benefits less current and future taxes)

- For students unfamiliar with present discounted values, see the third appendix of this chapter.
 - Because of the effects of discounting, the closer one is to retirement the more valuable are the benefits and the lower are the current and future tax costs.
 - Thus older persons tend to have higher demands for social security than younger persons.
- iv. This variation in demands can be used within a median voter model to characterize the average benefits (in real or constant dollar terms) that the program confers on retirees.



- v. As drawn, Bob is the median voter and Q^*b will be the benefit level chosen by Congress.
- The difference in benefits among the three types of voters may be explained in a number of ways.
 - The differences in preferred benefit levels reflect differences in age and expected longevity, and may also be affected by differences in ideology.
- vi. The simplest interpretation of the relative position of the three curves is that Al is poorer and older than Bob or Cathy, and that Cathy is the youngest and poorest. She has relatively lower marginal tax price for her benefits because her future income is anticipated to be lower than for the other two types of voters.
- vii. Bob as the median voter is approximately median aged and has approximately median income.

C. If the Social Security program's parameters are determined by electoral pressures, SS taxes and benefits will change only when median demands for benefits change.

- Increases may occur because the median voter becomes older, richer, or expects to live longer.

- Changes may also occur because of changes in altruistic impulses or ideology of the median voter.

IV. On the Sustainability of Tax-Financed Retirement Programs

A. All the above helps to explain why tax-financed retirement programs tend to be supported by a majority of voters.

B. However, there is a problem with these programs. Namely none of them are being financed at levels that will pay for future benefits.

- This is partly because medical costs have been rising at rates faster than inflation and economic growth. This is partly because innovation that extend life, and as people live longer they often die of more costly maladies.
- It is also because the persons born in the two decades after WWII ended are now retiring or retired. They are very numerous cohort group, which has increased the number of retirees to be supported by the ear-marked taxes collected.
- As a consequence Medicare has run deficits for years and Social Security is or is about to be running deficits as well.
- Since these programs, according to law, are supposed to be financed by their earmarked tax systems and interest on their loans to the rest of the government, these deficits are not supposed to be made up from revenues from the other tax systems in the US.
- **Thus reforms of some kind are necessary if tax-financed retirement programs are to continue into the future.**

C. The possible solutions to this financial problem are simple matters of arithmetic. Either taxes have to be raised, benefits reduced, or some combination of the two have to be adopted.

- All these reforms are, however, unpopular.
- No one likes paying more taxes
- No one likes receiving lower or shorter benefits
- It is for these reasons that no reforms have yet been adopted.

D. **Significant reforms** will evidently require either (i) a crisis or (ii) a significantly younger median voter.

- Both were true at the time of the last major reform—the Greenspan reforms adopted during the Reagan Presidency.
 - The former—a crisis—is likely to be present in the next decade or so in the US and also in many of the European programs.
- i. Fiscal crises with respect to retirement programs naturally increase a voter's interest in reforms that make the program sustainable.
- Overall, it is difficult to see any other path to reform based on median voter interests, given their increasing age.
 - These fiscal problems have been obvious for many years, and very little if anything has been done to address them so far (except those already specified in the Greenspan reforms of Social Security in the mid-1980s, which planned for tax increases and slightly higher retirement ages).

V. Social Security, Medicare, and Deficits

A. The Reagan-Greenspan reforms to Social Security and Medicare adopted in the early 1980s replaced the deficits of the program with surpluses-. It did so by raising the tax rates and taxable income for the ear-marked taxes and by committing to a future trajectory of program benefits that was more or less constant in real terms for the various income classes who receive the benefits.

- i. 40 years later, after running surpluses for most of that period, the tax systems of both Social Security and Medicare are no longer producing surplus revenues.
- The tax surpluses caused “reserves” to be built up during for more than three decades after the Reagan-Greenspan were adopted.
- ii. **That surplus was loaned to Congress** for use on other programs in exchange for special “government bonds” that could be redeemed by the Social Security Administration for cash from the treasury.
- Now, 40 years later, the bonds (trust funds) are gradually being cashed in and used to pay out benefits to retired persons.
 - That is, the bonds sold to the Treasury are being cashed in.

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- This requires the Congress to either raise taxes or allow the needed funds to be borrowed on international bond markets.
- iii. The bonds held by the social security administration do not really change the problem faced by Congress—although they do require that Congress pay off the bonds somehow.
- **In order to pay back the loans from the social security administration, Congress has to raise other taxes or borrow money on the national and international bond markets.**
- **This effect increases the “external” deficits of the national budget, unless taxes are raised to pay for off the Social Security and similar loans from the other trust funds.**
- Unless benefits levels are reduced or their earmarked taxes are increased, both **Social Security and Medicare reserves will run out** in the near future (2134 and 2124 respectively) and the benefit levels will either have to be significantly reduced (some say by about 20%) or they will have to be funded in a new way—with higher social security taxes or higher “ordinary taxes” that are used to fund the “promised” benefits to retirees..

B. Social Security and Medicare are presently contributing to deficits in two ways.

- i. First, because their loans to the treasury are being repaid (their bonds are being cashed in), this increases the revenues that the Congress needs to raise to pay off its debt to the social security administration.
- ii. Second, after all the bonds (reserves) are “paid back,” if the implicit governmental promises to the persons retiring are to be kept, those programs will have to be reformed in some way.
- iii. If the basic structure is kept, that will require raising the payroll taxes that fund those programs.
- iv. If retirement ages are pushed back to reflect the increase in longevity that has occurred since the programs were started, that would reduce the payouts and required tax increase.
- v. Bringing the programs back into the normal budget would make both social security and medicare more subject to year to year politics than the current structure, which insulates these programs to a substantial degree from politics.

- vi. If social security benefits are not changed and taxes are simply adjusted to keep up with expenditures, tax rates for social security would have to rise from about 12.6% today to around 17% in 2034.
- vii. Medicare deficits are projected to be much higher and projected tax rates would have to raise a good deal. Current estimates imply that they would have to be raised by about 6%..

C. Any new SS and Medicare taxes would be on top of the ordinary income tax and state sales and federal taxes.

- Keep in mind that these ear-marked taxes are currently pretty flat and deduction free.
- Wages are about 66% of GDP so to raise 1% of gdp requires a 1.5% increase in tax rates on wages (ignoring DWL).
- Marginal tax rates in the US for middle class persons could thus rise to the Swedish or Danish range.
- They would become on the order of $(20) + [17] + [6] = 43\%$, the long-term federal average plus new SS and Medicare taxes. An additional 6% or income tax is being paid to state and local governments, which brings the overall marginal tax rate to approximately 49%.

iv. As noted several times in this course, how such new income taxes would be divided between employees and employers depends on the slopes of the supply and demand for labor curves as analyzed earlier in this course and in previous web notes.

- (The above estimates of Social Security and Medicare taxes assume that they would continue to be the main sources of revenue for Social Security and Medicare. The calculations also assume that other government spending remains the same fraction of GNP as the present one.)
- Of course, the other part of the budget is likely to increase as well, which is the historical trend. Such increases imply that rates will be still higher.

Appendix I: A More Detailed History of Social Security in the USA

- A. Poverty programs of various kinds extend well back into antiquity.
- i. However, the history of national social insurance programs is much younger.
 - ii. The first nationwide social security and public pension program was adopted in 1889 when Germany enacted an old age social insurance program.
 - These programs were adopted by a conservative coalition, in part, to undermine the opposition--eg for electoral purposes.
 - They attempted to remove or blunt a popular issue from the social democratic party's platform.
 - The first German programs were organized a lot like the present U.S. system and, like that in the U.S., it did not initially cover everyone.
 - iii. **Many** other countries in Europe adopted similar programs over the next twenty years.
 - For example, Great Britain adopted an Old Age Pensions Act in 1908 and Sweden adopted a similar program in 1913.
 - (Other accident programs and health insurance programs were also adopted in Europe, and for public employees in various US cities and states.)
 - iv. Many of these programs were financed with taxes on labor income (or similar income based fees) and had benefits that varied with income, as the present U.S. system does.

In many cases, the tax was formally "paid" partly by workers and partly by their employers.

They were among the first ear-marked income taxes.

As in the case of Germany, the programs were usually adopted by right of center political coalitions, rather than left of center programs.

(Left of center coalitions had not at that time won enough votes to be the dominant party.)

- B. In the US, the first proposal for a nationwide old age pension program legislation was introduced at about the same time--in 1909, but it did not pass
- i. In 1915, Alaska adopted the first old age pension that was not challenged in the Supreme Court on grounds of constitutionality.

(Alaska was territory rather than a state at this time.)

Transfer programs were challenged and over turned on the basis of equal protection of the law in the period up to and into the great depression.

An "old age" pension program naturally treats old people different than young, and insofar as payments vary by income, they discriminate on the basis of income as well.

(At that time, laws were supposed to treat everyone in the same way, without respect to age, race or income.--although they did not always do so.)
 - ii. In the US, the progressive movement attempted to pass various pension, accident, and health insurance programs at the state level, but most failed or were over turned by the Supreme Court.

"Self-financed" state sponsored insurance programs were, however, generally allowed.

State laws for workman's compensation were adopted by all but one state by 1929.

(Workman's compensation insures workers for injuries they receive while working.)

(In 1920, the American medical association declared its opposition to any compulsory medical insurance program.
 - iii. In 1930, California and Wyoming adopted Old age pension laws.

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C. On April 19, 1935, the social security bill (HR 7260) passed in the House 372 to 33 (25 not voting). On August 9, the bill cleared the Senate and went to the President Roosevelt for signing. On August 14, 19 President Roosevelt signs the bill, and social security becomes law.

- i. The program has been amazingly stable. Although benefit levels and coverage has expanded through time, the basic structure of the program has not changed very much.
- ii. The programs initial conditions for qualifying for benefits were:
 - beneficiaries have to be more than 65 years of age
 - wages > 0 earned in each of the five years before the age of 65 (totaling at least \$2000). [This would be about 36,000 dollars adjusted for inflation.]
 - Monthly benefits were 1/2% on the first \$3000 of income, plus 1/12% of next \$42,000, plus 1/24% on the remaining income.
(Note the declining replacement rates, which is still a property of the program.)
- iii. Taxes were initially paid at the rate of 1% each by employees and employers.
 - It was to be increased to 3% each after 1950.
 - However, the planned tax increases were reduced before they actually came into effect. Rates have, however, been slowly increasing during the ever since 1935. See below.
 - The current tax rate for social security is 6.2% each for employees and employers.
 - The current rates for Medicare are 1.45% each for employees and employers.
- iv. The social security act also includes provisions to encourage states to create **unemployment insurance programs**, through federal **matching grants**, partly funded by a 1% federal unemployment tax..

This aspect of the program is neglected in this lecture, although it was an important shift in public policy and at the time may have been the most important part of the program.

Unemployment insurance was a joint state-federal program and states gradually signed up for it.

- v. **Life expectancy in 1900 was only 47 years for men at birth**, so not too many folks were expected to reach the age at which they were eligible for benefits. (Women lived a couple of years longer.)
 - Life expectancy in 1940 was 62 years (for men at birth) and it is now 77 years for men and 81 years for women. So, relatively few persons were initially expected to qualify for the full retirement benefits provided.

D. Implementation and Reforms of the Social Security program.

- i. Although the program was in large part motivated by the collapse in savings and wealth associated with the Great Depression of the 1930s, it did not come into effect immediately, but rather was phased in over a number of years.
 - It included the national unemployment insurance program as well as the public pension (Old Age Insurance) program that came to be known as social security.
 - The entire plan was not fully implemented until after the Great Depression was over.
 - The public pension program (OAI) did not pay out benefits until 1940.
- ii. **Social Security (OAI) Dates:** on June 2, 1936 the social security account number was created by the Social Security Board.
 - (On August 17, 1936 an unemployed worker in Wisconsin received the first unemployment benefit under state law.)
 - On January 1, 1937, workers began to acquire credits toward old-age insurance benefits.
 - September 1937, the name Old Age Benefit Program was changed to the "Old Age Insurance Program." (OAI)

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- **1939 survivors benefits added**, the social security program becomes the Old Age and Survivors Insurance (OASI).

(1939, Unemployment benefits became payable in 26 additional states bring the number of jurisdictions to 51 = 48 states + 2 territories + DC.)

- 1940, first person receives a monthly old age benefit check, \$22.54.
- In 1950 the social security tax was increased to 1.5% each for employees and employers.
- **1955 Disability provisions are added** and the program's official name changed to the **Old Age, Survivors and Disability Insurance, OASDI**, program--which is still its formal name.
- The wage base of the social security tax in 1955 was \$4200.
- 1956, Social security benefits become payable for women at age 62.
- 1956, first computer goes into service at the Social Security Administration.)
- A tax increase was implemented in January 1957, with tax rates increasing to 2.25% for employees and employers. (The self-employed paid 3.375%).

iii. For its first 40-50 years, social security was always barely self-sustaining. Reserves would be accumulated and then depleted by increases in benefits (and longevity).

E. Medicare Benefits Are Added to the OASDI program during the 1960s.

- On June 30, 1960, the first bill to provide medical services for aged people not on public assistance but unable to meet their medical expenses was introduced in the Senate (S 3784).
- September 1960, a program of federal grants to states for venter medical care programs for aged people enacted. (Early form of Medicare.)
- January 1966, States were authorized to set up medical assistance and medical assistance to the aged programs with the Federal Government to pay **50 to 80% of the costs**.

(Note that Medicare is initially done via matching grants.)

- July 1, 1966, all persons over 65 were covered under the hospital insurance provisions of the new legislation.

Benefits for the voluntary medical insurance program begins (for other medical expenses).

- Thus the Medicare program was initially a mix of central government, state government, and private insurance, which remains the case today.

(1967 the Freedom of Information Act became effective.)

F. The Greenspan/Reagan Reforms of Social Security Funding and Trajectory of Benefits in the 1980s

- The social security's "trust fund" (reserve) was established in January 1940 as a separate account in the United States Treasury.
- As noted above, for the first forty years, benefits and tax rates were adjusted fairly frequently, with both benefits and tax rates increasing.
- During this period, the trust fund had relatively small reserves and tax receipts generally exceeded expenditures by a small amount.
- However, the program was often in a state of "crisis" in that promised benefits often grew faster than tax revenues, which required last minute tax increases.
- In the early 1980s the trust fund was projected to run out of funds within just a few years.

G. This changed shortly after 1981, when President Reagan promulgated Executive Order 12335 which established a Commission on Social Security Reform (aka: Greenspan Commission).

- This commission was to make recommendations to assure the financial integrity of the social security program.
- On January 20, 1983, the Commission sends its recommendations to the President and Congress.

i. On April 20, 1983 President Reagan signed into law the social securi-

ty amendments of 1983.

- It raised the eligibility of retirement to 67 in two steps by 2027.
- It raised social security tax rates for employees and employers
- They rise to 7% in 1984 and then gradually to 7.65% in 1990. (15.3% in total, since employers and employees each “pay” this tax.)
- It reauthorized inter trust fund borrowing among the social security trust funds.
- It makes self-employed tax equal to the sum of the employer and employee shares. (The self employed had previously paid about three quarters of the total rate borne by salaried employees, see above.)
- It made social security income taxable (*half of it*) for taxpayers earning more than 25K if single and 32K if married.
- It linked benefit levels to increases in wage rates (wage indexed for inflation)
- It slightly raised retirement ages in the 21st century
- ii. Overall, the Greenspan reforms adopted during president Reagan's term of office reforms increased taxes significantly and reduced benefits slightly (mostly through a very gradual increase in retirement age).
- iii. The social security program began accumulating huge "reserves" from that point onward.
 - In the next thirty years, the trust fund rose to more than 2.5 TRILLION dollars.
 - The reserves were held as US government bonds.
 - These were often formally kept in a large file cabinet in the social security administration (the true “lock box”)
 - The reserves were, thus, “borrowed” from the Social Security Administration and used to pay for other federal government programs, such as defense spending, health care (medicaid), roads,

grants to states and interest on the debt.

- The treasury (e.g. tax payers) pay the social security administration interest on its debt holdings (about a 100 billion per year in 2012).
- Unfortunately, as developed below, for the purposes of government finance, the existence of reserves held in government bonds is essentially the same thing as not having any reserves at all !!!

H. Why the reserves do not really matter much as far as the economics public finance is concerned.

- i. Fiscally, it turns out that the size of reserves does not really matter very much, although you would not know this from reading news accounts of Social Security's impending bankruptcy.
- ii. Note that when the social security administration attempts to “cash in” its government bonds, the Congress or Treasury can do 3 things.
- iii. It can raise taxes, it can borrow in the world market, and reduce expenditures on other government provided goods, services, and transfers.
- iv. Now imagine what the government would have to do if there were no reserves.

In order to make good on its promises, the Congress or treasury would have to:

raise taxes

borrow more on world markets

or reduce other expenditures.

- v. In other words, exactly the same steps would have to be taken with reserves in the form of government bonds as without those reserves.
 - In reality, the social security tax surplus has been simply another source of tax revenue for ordinary (non social security) expenditures.
 - If the trust fund had "cash" in a great vault instead of bonds, not much would be different.

This would be cash that was not in circulation, and thus when brought out and given to retired folks, it would inject new money into the economy., generating inflation

I. During the 21st century, Social Security's trust fund reserves (and the formal commitment of the Congress to pay back the amounts borrowed from the program) is expected to run out around 2034.

- The Medicare trust fund is much smaller (320 billion vs 2,677 billion in 2013), but is also entirely invested in government bonds and funded with an labor income based tax. Those surpluses were also used to pay for "ordinary" government services.
- Medicare is the government provided health-care insurance for retired persons.
- Funding Medicare--given its cost trajectories is much more difficult than funding social security.
- The Medicare trust fund runs out in the very short run, in approximately 2024.

Appendix II: Links to Graphical and other Data on the Growth of Social Security, Medicare, Medicare and Healthcare Generally in the US

A. Link to Social Security Program payments to individuals

<https://fred.stlouisfed.org/series/W823RC1Q027SBEA#0>

B. Link to Medicare Payouts to individuals

<https://fred.stlouisfed.org/series/W824RC1>

C. Link to total healthcare expenditures as fraction of GNP

<https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/historical>

D. Link to Social Security Reserves

<https://www.ssa.gov/oact/progdata/assets.html>

Appendix III: Present Discounted Values.

A. Once begun, the social security program has always been very popular with voters, especially older voters. In 1975, Edgar Browning published a paper that explained why support for the program tends to be so strong and stable through time.

His analysis was based on an "overlapping generations model," and relies upon some of ideas from finance, especially the idea of present discounted value.

B. To calculate and compare streams of benefits or costs that flow through time, most economists use a concept called "present discounted value."

- The present value of a series of benefits and/or costs through time is the amount, P , that you could deposit in a bank at interest rate r and used to replicate the entire stream of future benefits or costs, $F_1, F_2, F_3, \dots F_T$.
- That is to say, if you deposit amount P today, you could go to the bank in year 1, and withdraw the amount (F_1) a year later, return again in year 2, pull out the relevant amount for that year (F_2) and so on...

C. All the **present discounted value formulas** can be calculated from the "compound interest" formula that you learned long ago in middle school or high school.

- Compound interest implies that if you put amount P into a bank today at interest rate r , that after t years, you will have amount F_t in the bank.

where, $F_t = P(1+r)^t$

- The calculation of present values asks a different question than addressed by the compound interest formula.
- Suppose that you know F_t and want to know how large a deposit you would have to make today to have amount F in t years.
- To answer that question we just solve the compound interest formula for P , given F_t .
- So, the **present value of F_t** is $P(t,r,F_t) = F_t/(1+r)^t$

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- It is the amount, **P**, that you could invest today at interest rate **r** which would generate **Ft** after **t** years.
- (Note that **r** is entered into the formula as a fraction, e. g. 4%=.04)

- To find the present discounted value of a series of amounts in the future $F_1, F_2, F_3, \dots F_T$, one simply **adds up the present values for each of the future amounts**.

$$P = \sum_{t=0}^T (F_t / (1+r)^t)$$

- That is to say the present discounted value of any series of values is the sum of the individual present values of each element of the series.
- In cases where a constant value is received through time, e.g. $F_t = F_{t+1} = F$, a bit of algebra allows the above formula to be reduced to:

$$P = F [((1+r)^T - 1) / [r (1+r)^T]]$$

- These formulae have many uses in ordinary personal finance.

D. Browning realized that they can also be used to calculate the present value of "Al's" tax payments for social security and the benefits they will receive.

- **i.** As an illustration of how this calculation might be done, suppose that Al pays an annual tax of \$10,000/year to the social security administration and plans to retire after 20 more years of work at age 62.
- The present discounted value of this series of tax payments is:

$$(10,000) [(1.05)^{20} - 1] / (.05 (1.05)^{20})]$$

$$= (10,000)(12.4622) = \$124,622$$

if the current interest rate is 5%/year.

- Suppose that at that point, Al retires and collects social security benefits of 15,000/year for the next twenty years:

The present value of those benefits at Al's retirement is:

$$(15,000) [(1.05)^{20} - 1] / (.05 (1.05)^{20})]$$

$$= (15,000)(12.4622) = \$186,933$$

if the current interest rate is 5%/year.

- However, at age 42, those benefits do not start for 20 years then that amount (\$186,933) has to be discounted back to today:

Recall that $P = F_T / (1+r)^T$, so the present value of Al's future social security benefits when he-she is 42 is actually:

$$(\$186,933) / [1.05]^{20} = \$70,453.08$$

- **iv.** Since the present value of benefits is less than the present value of the costs, it implies that the rate of return on social security tax payments is less than 5%/year.
- (In other words, "Al" would be better off investing his or her OASDI payments in long term treasury bonds as 5% than investing them in the program.)
- The **rate of return from this program** is personally greater than zero if and only if the sum of the benefits is larger than the sum of the costs (in constant dollars)--which is true in this case.
- [The **internal rate of return** earned on one's tax payments is the

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"r" (discount rate or interest rate) that sets the present value of benefits exactly equal to the present value of costs.]

- Using a spread sheet program to search for the rates of return that sets the pv of benefits = pv of costs determines that Al earns approximately 2% per year on his or her tax payments to the Social Security Administration.
- Note that **the time to retirement is the main factor** in this illustration that determines whether a person's rate of return is greater than the discount rate or not.
- The implicit rate of return is increase as one approaches retirement age, other things being equal.
- Thus, a person of 25 does much worse under the program in present value terms than a 55 year old person.
- A young person has to pay a lot more taxes before retiring and their benefits are much further off in the future and so have a lower present value (because they are more "discounted").

E. Browning noted that in present value terms, self-interested voters would vote for the program only if they earn a good rate of return on their tax payments

- i. That is to say, narrowly self interested voters support the program if and only if the present value of their retirement benefits is larger than the present value of their remaining tax payments.
 - ii. Sustained political support for social security in a democracy requires that the median voter favor the program.
 - iii. Note that the median voter in this case is approximately the voter of median age and income.
- The present value of the benefits realized by a middle aged voter of more or less median income is sufficient (or so Browning argued) to induce the median voter to favor the program.
 - As people age, a new median voter arises every year, but since the median voter is about the same age as before, he or she still favors the program--even though they may have personally opposed the programs in previous years.

- (Congleton and Shugart 1990 show that the Browning model fits the data quite well for the US--although they also show that interest group models of social security also work quite well..)
- (It should be noted, however, that completely self-interested models of social security demand probably understate true demands because of altruistic and other goals voters may advance through social security programs.)

F. Browning and other public choice models of social security benefit levels also shed light on the kinds of reforms that are most likely to be adopted in the future.

Clearly reforms must improve the present value of net benefits for a majority of the voters, given their expectations about the future of the program.

Only a few countries have managed to find solutions to their social security dilemma thus far.

(Perhaps surprisingly, Sweden has done so by partially privatizing and fully funding its public pension program.)