

Social Security

I. History of Social Security and Similar Public Pension Programs

- A. Poverty programs of various kinds extend well back into antiquity.
- i. However, the first nationwide social security and public pension programs were begun in 1889 when Germany enacted an old age social insurance program.
 - ii. 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 in 1913.
 - (Other accident programs and health insurance programs were also adopted in Europe, and for public employees in various US cities and states.)
- B. In 1909, the first nationwide old age pension program legislation was introduced in Congress.
- i. In 1915, Alaska adopted the first old age pension that was not challenged in court on grounds of constitutionality.
 - (Alaska was territory rather than a state at this time.)
 - ii. In the US, the progressive movement attempted to pass various accident and health insurance programs at the state level, but most failed.
 - (In 1920, the American medical association declared its opposition to any compulsory medical insurance program.
 - State laws for workman's compensation were adopted in all states except 1929.)
 - iii. In 1930, California and Wyoming adopted Old age pension laws.
- 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 clears the Senate and goes to the President for signing. On August 14, President Roosevelt signs the bill, and social security becomes law.
- i. The programs first 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).
 - Monthly benefits are 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.)

- ii. Taxes were paid at the rate of 1% each by employees and employees, increasing to 3% each after 1950.
 - (The planned tax increases were reduced before they actually came into effect. See below.)
 - iii. The social security act also includes provisions to encourage states to create unemployment insurance programs, through federal grants, partly funded by a 1% federal unemployment tax..
 - This aspect of the program is neglected in this lecture, although it also was an important shift in public policy.
- D. Implementation 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.
 - In fact, it was not fully implemented until after the Great Depression was over.
 - ii. 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.
 - iii. September 1937, the name Old Age Benefit Program was changed to the "Old Age Insurance Program." (OAI)
 - 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.)
 - iv. 1940, first person receives a monthly old age benefit check, \$22.54.
 - v. In 1950 the social security tax was increased to 1.5% each for employees and employers.
- E. 1955 Disability provisions are added and the program's official name changed to the **Old Age, Survivors and Disability Insurance, OASDI**, program.
- i. 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.)

ii. (During its first fifteen year period tax rates on eligible income rose from 1% to 2.25% each for employees and employers.)

- This tax increase was implemented January 1957, tax rates increased to 2.25% for employees and employers. (The self employed paid 3.375%).

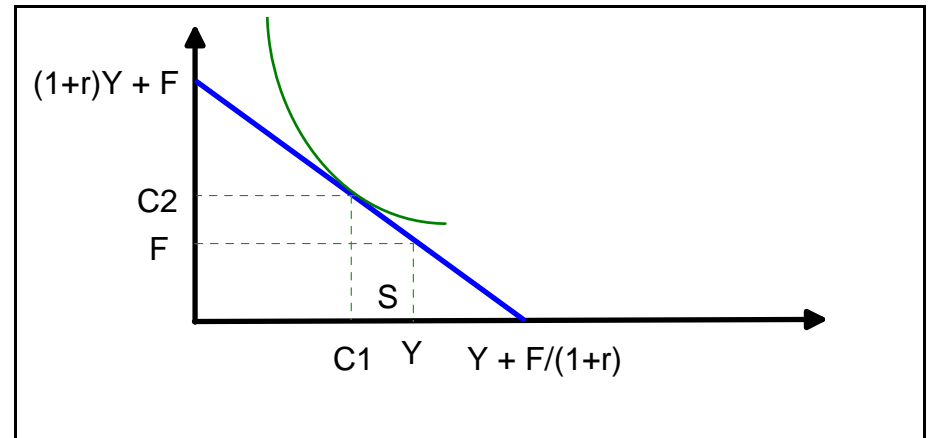
F. Medicare Benefits were added to the OASDI program during the 1960s.

- On June 30, 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, program of federal grants to states for vander 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.)

II. Private Demand for Saving and the Difficulty of Avoiding Risks

To begin our analysis of why social security systems are so widely supported, first consider the demand for savings.

- Suppose that Al has Y dollars of income in the present and expects to have F dollars of income in the next (future) period. Suppose also that the risk adjusted interest of interest to Al is r .
- The figure above illustrates Al's choice.
 - Al choose to save S dollars in period 1 and spend it [and extra $S(1+r)$ dollars] in period 2.
 - That is Al consumes less in period 1 than he or she earns and spends more than he or she earns in period F .
 - The slope of Al's budget line is $1/(1+r)$.
 - At the tangency, the slope of Al's indifference curve is also $1/(1+r)$
 - [Obviously, the math behind this choice is easy:
 $\max U = u(C1, C2)$ subject to $Y + F/(1+r) = C1 + C2/(1+r)$]



- Now consider the case when there are a variety of savings instruments with different rates of return ($r1, r2, \dots, rN$). In this case, there is a third choice, namely of the method of savings.
 - Naturally, Al will prefer the investment with the highest risk-adjusted rate of return.
 - The final choice will reflect Al's risk preference: cash, savings accounts, bonds, stocks, gold, land, housing, human capital etc..
- Unfortunately, there are no risk-free investments.
 - During recessions, prices of many financial assets go down.
 - During inflationary periods, the value of cash, savings accounts, and government bonds tend to decline.
 - The price of gold and wages for various specializations, rise and fall, etc.
 - This makes the activity of saving an inherently risky decision. There are no risk free assets!
- Many possible savings instruments are correlated with business cycles that emerged as commercialization, industrialization, and urbanization took place in the 19th century.
 - That so many possible savings instruments are correlated with the business cycle (rising in good times and falling in bad times) suggests that savings may be wiped out during a deep recession.
 - Of course, not all assets lose all of their value, but many become less liquid and lose significant parts of their value, say 20-30% of their value.
 - As a consequence, it tends to be difficult to diversify enough to provide completely safe private investments.

- iv. Government bonds are normally an exception to this rule, but even government bonds may be affected by recessions in countries that operate near the end of their international lines of credit, as with Greece, Portugal, Italy etc. in 2011.
- F. One reason AI may prefer government provided (pensions) or insured assets (like savings accounts) is that his or her government can borrow more easily during times of recessions than ordinary people and most firms.
 - i. This gives a pension “purchased” from the government has some advantages over a pension purchased from a private insurance company.
 - ii. If cash flow problems arise, the government can borrow to cover the short falls associated with a recession.
 - iii. Moreover, a government is less likely to have cash flow problems, because a government’s revenue source (taxes) is very diversified. When sales, VATs, and/or income taxes are used, it is essentially a national economy which is a very diversified “asset.”
- G. For both these reasons, voters may ask the government to “save” for them, or to insure their savings in order to reduce their risks.
 - i. Whether risks can actually be reduced in this way, however, depends in part on the government’s future choices, which depends on voter preferences.
 - ii. In a democracy, future median voters may renege on the promises of past median voters.
 - iii. (Again, there are no risk free assets, although some assets are less risky than others.)
- H. Some voters may also prefer public pensions over private pensions because they may get high rates of return on those investments.
 - i. For example, they may receive a “bargain” on government pensions, because of the fiscal system used to finance it.
 - Poor people typically pay less for a public pension than rich people, because there is an explicit or implicit transfer component to the program.
 - State employees often get pensions at a lower cost than private employees.
 - ii. Such voters may prefer public pensions for reasons similar to those in the Meltzer Richards model, that is because they receive transfers from other tax payers.
- I. These two rationales--better risk pooling and transfers probably account for most of the broad support government pension plans have.
- J. The next question is whether an elected government can be “trusted” to provide a stable pension system.

III. Public Choice Foundations for Electoral Support of Social Security

- A. Once begun, the social security program has always been very popular with voters, especially among older voters.
- B. 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 "over lapping generations model"
 - And relies upon some of ideas from finance, especially the idea of present discounted value.
- C. To calculate and compare streams of benefits or costs that flow through time, most economists use a concept called "present discounted value."
 - i. 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, $F_1, F_2, F_3, \dots F_T$.
 - ii. 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...
- D. 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.
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 - 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, $F_t = P(1+r)^t$**
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 - i. 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 your 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 $P(t,r,F_t) = F_t/(1+r)^t$**
 - ii. It is the amount, **P**, that you could invest today at interest rate **r** which would generate F_t after **t** years.
 - (Note that **r** is entered into the formula as a fraction, e. g. 4%=.04)

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E. 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.

F. 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.

G. 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:

$$\begin{aligned} (10,000) [(1.05)^{20} - 1] / (.05 (1.05)^{20}) \\ = (10,000)(12.4622) = \$124,622 \end{aligned}$$

- if the current interest rate is 5%/year.

- ii. 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:

$$\begin{aligned} (15,000) [(1.05)^{20} - 1] / (.05 (1.05)^{20}) \\ = (15,000)(12.4622) = \$186,933 \end{aligned}$$

- if the current interest rate is 5%/year.

- iii. 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.

- v. [The **internal rate of return** earned on one's tax payments is the "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.

- vi. 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").

H. Browning notes that in present value terms, self-interested voters would vote for the program if they earn a better rate of return on their tax payments than they do from (risk adjusted) private investments.

- 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**.

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- 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.)
- I. 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.)

IV. General Features of the Social Security Program

- A. 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.
- (See the Social Security Administration website for the general increase in those taxes during the past fifty years.)
 - Of course the **actual distribution of the burden** of the social security varies with the slopes (elasticities) of the supply and demand curves for labor in the markets of interest.
 - Thus, in some markets all of the burden may be shifted to workers (employees), and in other labor markets the entire tax might be absorbed by firms.
 - (Use supply and demand curves to illustrate these possibilities, as well as intermediate ones where the burden is shared.)

- B. The tax schedule for social security benefits is "digressive," a flat tax on the first B dollars of labor income, but zero taxes on income above B.
- (Show that this implies that the tax is proportional up to B dollars, but regressive thereafter.)
- C. Benefits have principally been tied to age (65) since the programs beginning, and the benefit schedule has always been "progressive" in the sense that the replacement rate falls as income rises for recipients.
- 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.)
- D. Analysis of Social Security using our tools:
- Use diagrams to analyze the effect of social security on employment levels?
 - Show how it affect decisions to retire using indifference curves and an intertemporal budget line.

V. The Social Security Trust Fund: the Mythic "Lockbox"

- A. The trust fund was established in January 1940 as a separate account in the United States Treasury.
- For most of its history, the trust fund carried relatively small balances insofar as tax receipts exceeded expenditures for most of this period.
- B. This changed shortly after 1981, when President Reagan promulgated Executive Order 12335 which established a Commission on Social Security Reform.
- 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.
- On April 20, 1983 President Reagan signed into law the social security 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 rise to 7% in 1984 and then gradually to 7.65% in 1990. (15.3% in total)
 - It reauthorized inter trust fund borrowing among the social security trust funds.

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- 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.
- ii. Overall, taxes are significantly increased and benefits are reduced.
- C. The social security program began accumulating substantial "reserves" from that point onward and the trust fund began accumulating very substantial surpluses (as measured by its accounting balance sheet).
- (See handouts and/or Social Security Administration's website.)
- D. However, it is not really possible for the government to amass a large trust fund!**
- i. This is largely a property of the size of the trust fund and partly a consequence of the decision to use special government bonds as the trust fund's "asset."
- ii. Government can finance its services in three ways: it can tax, it can borrow, and it can print money.
- iii. Notice that the government will have to use one of these three mechanisms to fund social security expenditures regardless of whether there is a trust fund or not.
- If the trust fund had "cash" in a great vault, 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.
 - If the trust fund consists of treasury IOUs or US government bonds, as it does; it would have to sell those in order to generate the "cash" necessary to pay for retirement benefits.
- iv. Notice, that **if there were no trust fund**, the government would still have to either print money (iv), borrow (v) or raise taxes.
- In effect the surplus tax receipts have been a way of funding other government services with a broad-based digressive tax on labor income!

VI. Necessity for Future Reforms of the Social Security System

- A. The Reagan era reforms were the last major reforms of the social security system.
- i. The increase in taxes allowed the program to provide the promised benefits to retired persons for the next twenty years, but did not completely solve the long term problems.
- ii. The **basic problems are demographic:**

- Retired persons are living longer today than they did in 1950.
 - A very large group of persons (the baby boomers) are beginning to retire.
 - Families are having fewer children now than they did in the past, which reduces the number of tax payers relative to benefit recipients.
- iii. It bears noting that essentially all Western countries face similar problems with their current social security programs.
- Indeed Europe and Japan have even more serious demographic problems.
 - And, many European countries have promised larger pensions at earlier ages for their aging populations.
- B. The future imbalance between promised payments to retired folks and tax payments by those still working can be addressed in essentially three ways.
- i. Program benefits can be reduced: by reducing cash payments or delaying the age at which folks qualify for the program. (Both these were done in the 1983 reforms.)
- ii. Program funding can be increased:
- Tax rates can be increased to generate more revenue.
 - (This has historically been the main solution, as tax rates have increased from 2 to 15.3 percent over the past seventy years.)
 - The cap on eligible earnings could be eliminated.
 - New debt can be issued to pay for the benefits, which implicitly increases future tax obligations.
- iii. Some other way of funding the future benefits may be attempted.
- If the trust fund held stocks or non governmental bonds, it would have, in effect, "socialized" the stock market as the social security program would own a substantial fraction of the resources in that market.
 - The use of "forced" savings accounts has similar effects, but insofar as ownership remains private, this reduces the "socialization" effect, but may also reduce benefits because it transfer the financial risk to those with the accounts. (There would no longer be a government guaranteed future retirement payment.)
 - Many countries have experimented with "b," the partial privatization of social security--including Sweden and Chili.

VII. Medicare, another major program in deficit and in need of reform.

- A. The Medicare program established in the 1960s has also been expanding ever since its creation for demographic, technological, and political reasons.

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- B. Currently hospital benefits are paid for by a payroll tax (part A) and currently is in deficit, as noted.
- Part B is more or less paid for (out-patient) doctor's fees, lab tests, and so forth. It is paid from general revenue, rather than the payroll tax.
 - The remainder--and uncovered medical expenses--are paid through private "top up" insurance policies.
 - In 1997, medicare recipients were made eligible to receive their benefits through a private HMO--in effect the government (tax payers) would pay for their HMO policies.
 - In 2003, expanded coverage of prescription drugs was added to the program.
- C. The Medicare system for retired persons has been drawing down its "trust fund" since 2009, which of course is just another way of saying that the Medicare tax deficit (for part A) is presently being paid out of other funds or borrowed. (See [2011 CMS report on trust funds](#), page 51).
- Insofar as health expenditures have been rising much faster than GDP, this deficit is likely to be more important than the social security deficit in the future, although it has received less attention.
- D. The demographic problems of publicly funded medical programs are basically similar to those of social security programs because eligibility is based on age.
- However, the problems are worse because health costs have been rising at rates far greater than inflation (or wages).
 - Total medical expenditures as a fraction of GDP have increased from about 3 percent of GDP in 1950 to about 12 percent today (Laitner 2005 and US Stat. Abstract, see below).
 - A sizable portion of that increase paid using tax dollars for the old age and poverty programs.
 - To put just the part A portion of the program in balance, the payroll tax for Medicare (which is not capped as the OASDI tax is) from about 2.9 percent to **over 7 percent** (Ferrara, CATO).
 - This increase is due partly to the increased number of retired persons (as true of Social Security) and partly to advances in medical technology that increase the range of relatively expensive treatments that persons receive, especially in the last two years of their lives, and partly to expanded coverage of persons and medical practices (without the latter technology would not affect costs).
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 - From the statistical abstract 2012:
 - Social security outlays in 2010 were 800 billion dollars.
 - Medicare expenditures in 2010 were 566 billion dollars.
 - Medicaid expenditures in 2010 were 276 billion dollars.
 - Total federal budget outlays in 2010 were 3.45 trillion dollars.
 - Total medical outlays in 2009 were 1.8 trillion dollars
 - GNP in 2010 was 14.6 trillion dollars.
- These numbers imply that:
 - About 47% of the US Federal Government's budget in 2010 was spent on retirement benefits (and medical aid to the poor)
 - About 45% of all health care expenditures are paid for through public revenues.
 - Government provided pensions and medial insurance account for about 11 percent of GNP in 2010.
 - Total medical revenues accounted for about 12% of GNP in 2010.
 - Recall that a significant part of private insurance programs are encouraged by **tax preferences** granted firms for purchase of medical insurance for their employees.
 - Use demand and supply of insurance and labor to illustrate some of the effects of the medical insurance tax preference.
 - Use indifference curves to analyze the effects of "in kind" subsidies of medical insurance.
 - How would you estimate the effect of tax preferences on private health insurance demand?
 - Part of this increase is driven by demographics.
 - Older persons generally require more health care than younger persons.
 - But, the increase is also partly a consequence of medical advances that have increased the capital and labor resources used in health care.
 - (As the quality of a service increases, demand tends to increase as well.)
- E. Political support for Medicare (and Medicaid) tends to increase with age for the same reasons as social security.
- Many elderly persons qualify for both** the Medicare (age based) and Medicaid (income based) public health insurance programs.
- It is a program whose benefits are received only after retirement.
 - Tax payments are partly earmarked and partly financed out of general revenues.
 - But, it is still the case that future tax payments required before receiving benefits tend to be larger for young persons than for old persons.
 - Thus, support tend to increase as the median voter's age increases.
 - (Note the recent increase in Medicare benefits during a Republican governance. Part D, the prescription drug benefit, went into effect on January 1, 2006)

- (It bears noting the US currently **spends a larger portion** of its GDP on health care than all other Western countries, while at the same time having a somewhat lower longevity than most other Western countries.)
 - iii. Reforms of taxpayer supported medical insurance, however, are more difficult to manage in part because electoral demand for medical insurance ALSO tend to increase as technology improves.
 - Thus, capping medical expenses tends to be politically very difficult to manage.
 - iv. None the less, the government provided health care insurance system and/or funding have to be reformed in one way or another, whether by benefit reductions or significant tax increases.
- F. For an overview of the fiscal effects of SS and medicare deficits see CBO's latest budget projections, an analysis of which is provided by the PG Peterson Foundation.
(<http://www.pgpf.org/Issues/Fiscal-Outlook/2011/02/CBOs-Latest-Budget-Projections-A-Deteriorating-Fiscal-Outlook.aspx>)

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