

## Chapter 10+: Taxes, Deficits, Surpluses and the Public Debt

### I. Your Paycheck

- A. Gross vs. Net pay
- B. Taxes and other deductions
  - 1. Withholding taxes: Federal, State, Local
  - 2. Payroll taxes:
    - a. Deducted from you: Social Security = 6.2%, Medicare = 1.45%
    - b. Employer matches 7.65%; Total is 15.3%, “Self Employment” tax
  - 3. Benefits
    - a. Medical/health insurance, including dental, eye care, etc. (pre-tax)
    - b. Retirement: Max out the employer matching
  - 4. Other
    - a. Savings
    - b. Charitable contributions
    - c. Judicial withholdings: IRS, alimony/child support
- C. Types of taxes
  - 1. Progressive: larger percentage taken out with higher earned income  
Our income tax system is designed as progressive: 15, 28, 36, 39.6%
  - 2. Proportional: constant percentage taken out with higher earned income  
Also known as “flat tax”: Malcolm Forbes
  - 3. Regressive: smaller percentage taken out with higher earned income  
Sales taxes, Social Security, lotteries, and in reality, federal income tax

### II. Compound Interest and the Rule of 72

- A. Simple vs. Compound Interest
  - 1. Borrow \$100 at 10% interest
  - 2. Simple interest is simply principal plus \$10 each year (\$110, 120, 130, 140 ....)
  - 3. Compound interest is interest on interest (\$110, \$121, \$133.10, \$146.41 ....)
- B. The Rule of 72 stated: The Rule of 72 will give you the number of years in which an original amount will double through compound interest growth.
  - 1. Calculations:  $72 / \text{rate of interest} = \text{number of years for doubling}$ 
    - a. Interest rate of 8% =  $72 / 8 = 9$  years of doubling time (mortgage interest)
    - b. Interest rate of 3% =  $72 / 3 = 24$  years of doubling time (savings accounts)
    - c. Interest rate of 18% =  $72 / 18 = 4$  years of doubling time (credit card debt!)
  - 2. The Rule of 72 works for or against you. If you're loaning money to someone else, it works for you, shows how quickly you can double your money. If you're borrowing money, it shows you how quickly your debt can double.
  - 3. The Rule of 72 works for any item that has a consistent growth rate.
    - a. Consider population growth rates of 1% or 2% or ZPG: How quickly will populations double? How many doublings in a century?
    - b. Infectious diseases: the Center for Disease Control in Atlanta
    - c. Cancer: It's why doctors can say, “You've got three months to live”
    - d. Retirement!!!
    - e. Bottom line: the faster the growth rate, the shorter the doubling time.

III. Spending: See text!

IV. Benefits (Surpluses) and Debt

- A. Definitions
- B. Deficit Issues
  - 1. Cyclical vs. Structural deficits
  - 2. Inflation
  - 3. Capital budgeting
  - 4. Fiscal Policy
- C. The Public Debt
  - 1. Public Debt vs. Net Public Debt
  - 2. Who owns the debt?
  - 3. The burden of the debt
  - 4. Net debt (debt compared to government assets)

V. Social Security: A Social Insurance Program

- A. Established in 1935, amended since
  - 1. More than just retirement: Survivors benefits, plus disabled and their dependents
  - 2. Medicare for Social Security recipients
- B. Social Security Taxes and Benefits
  - 1. Social Security Taxes are REGRESSIVE
    - a. Workers pay only on the first \$80,400 of their 2001 income
    - b. Only wage earnings are taxable
  - 2. Social Security Benefits are PROGRESSIVE
    - a. Higher “replacement rate” for lower income workers
    - b. Medicare benefits are identical for all covered Social Security recipients
- C. Problems and Issues
  - 1. The long-run problem is an aging population, especially “baby-boomers”: The number of retirees is growing faster and retiring earlier and earlier.
  - 2. Potential Solutions
    - a. Increased social security taxes
    - b. Reduced benefits
    - c. Find another source of funding
    - d. Increasing the normal retirement age
    - e. Building up Trust Fund balances for baby boomer benefits
    - f. Taxing Social Security retirement benefits
- D. Should Social Security be made voluntary? NO, it’s a bad idea.
  - 1. Some people would opt out and we would still have to care for them (welfare!)
  - 2. Adverse selection
  - 3. The poor can not afford private insurance
- E. Social Security’s treatment of women
  - 1. The widow’s income gap
  - 2. Unfair treatment of working wives
- F. Does Social Security Decrease Savings? Only if the “wealth effect” (more consumption during our working years) exceeds the “early retirement effect”.

#### IV. How Will You Retire?

##### A. Investing for Retirement

1. Different types of investments (primarily, **stocks** vs. **bonds**)
  - a. Stocks reflect **ownership**: to hold stocks is to own a share of a company
    - 1) The “stock market” (NYSE): buying and selling of stocks
      - a) Stocks increase and decrease in value: Stocks can be either high-risk, medium-risk, or low-risk. High-risk stocks can have huge returns, or you can lose it all -- examples include new companies (especially overseas) that can yield high returns or can quickly crash taking your money with it. Low risk stocks include utilities; well-established, older companies like GE, AT&T, etc that will always be around.
      - b) Additional items: Options, IPOs, stock “splits”
    - 2) Stock market indexes: Dow-Jones, S&P 500, NASDAQ
  - b. Bonds reflect **indebtedness**: If you own U.S. Savings Bonds you are loaning the government money. Likewise, Corporate bonds, Municipal bonds, ....
    - 1) Bonds always have (1) face value, (2) maturity date, (3) dividend (payout)
    - 2) Premium is typically paid every six months: You are paying today for the right to receive future income. Thus bonds are income-yielding assets that are bought and sold in a secondary market (like mortgages!).
    - 3) Bonds are particularly attractive as retirement income.
  - c. Mutual funds
    - 1) Mutual Funds are investment vehicles that (1) are “diversified”, (2) are professionally managed by an expert who buys and sells the assets in the fund, and (3) have a large number of investors buying into the fund.
    - 2) There are fundamentally two types of Mutual Funds: Growth and Income. Growth funds are heavily loaded with stocks, income funds with bonds.

##### B. Watching your money grow

1. Future Value (FV) of a growth asset
  - a. Value of a growth asset in one year is  $FV = PV(1 + r)$ , where  
FV = future value    PV = present value    r = interest rate
  - b. Value of a growth asset in N years is  $FV = PV(1 + r)^n$ ,    n=number of years
  - c. Value of \$20,000 at 4% interest in 5 years =  $20,000 * (1 + .04)^5 = \$24,333.06$   
That is, if I loan \$20,000 at 4% interest, in 5 years they'd pay me \$24,333.06
2. Present Value (PV) of a stream of future income
  - a. The question: If I am guaranteed a future stream of income (I win the lottery!), how much is that worth today?
  - b. How much would you take today if I promised to pay you \$100 in one year?  
\$100?    >\$100?    <\$100?
  - c. The calculation: If  $FV = PV(1 + r)$ , then  $PV = FV / (1 + r)$   
In general,    If  $FV = PV(1 + r)^n$ , then  $PV = FV / (1 + r)^n$
  - d. If someone says they will pay you \$20,000 in 10 years, they could put \$12,278 in the bank at 5% interest to get it. The balance would be interest. That is,  
 $PV = FV / (1 + r)^n = \$20,000 / (1.05)^{10} = \$12,278.27$
  - e. To calculate a stream of income, add up the discounted values for all N years:  
 $PV = FV / (1 + r)^0 + FV / (1 + r)^1 + FV / (1 + r)^2 + \dots + FV / (1 + r)^n$

Social Security benefits calculation:

Go to:

[www.ssa.gov](http://www.ssa.gov)

Click on:

electronic publications (top left)

compute your own benefit estimate (bottom)

quick

62; \$xx,000; current/inflated