

# **PERSONAL FINANCE**

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# Why Do We Invest?



- We invest to accumulate wealth.
- We accumulate wealth because at some point we will stop working.
- That means no more income.
- But we still want to live well, so we need wealth to fund our retirement income.
- Pension income may not be sufficient (likely) or may not exist! (unlikely)

# Time Value of Money

$$F = pmt \frac{\left(1 + \frac{r}{n}\right)^{nt} - 1}{r/n}$$

- Future Value = Present Value \*  $(1 + r)^t$
- Lump sum
- Annuity
- Series of payments



# How to Accumulate \$2M

- So if we have 30 years to get \$2M, how much do we need to save each month?
- $FV = 2,000,000$
- What is the rate of return?  
Let's be conservative and say 8%.
- $I = 8/12$  or  $.67$ ,  $N = 360$ ,  $PMT = ?$  [\$1,342]
- Can we find \$1,342 to save? Not easily!
- Of course we don't need to save as much if our return is higher.



# Real Estate



- Our home is usually the first major asset we own.
- Most Americans' wealth is in their houses.
- In spite of three very bad years (2007-2009) in real estate, housing prices have moved upwards with inflation over the last 100 years.
- Real estate is a fixed, secure asset.
- If you own a home now worth \$100,000 and it grows at a rate of 5% per year, in thirty years it is worth \$432,194. (and likely paid off!)



# Some Basic Real Estate Tips

- Financial planners have given me some guidelines for owning a home.
- Spend no more than 30% of your take-home pay on your rent/mortgage.
- Spend no more than 2.5 times your annual salary on your mortgage. (total borrowing)
- That means if I made \$60K per year, I would aim for a mortgage less than \$150,000 and a monthly payment of less than \$1,050. (if I take home 70% of pay)

# Total Cost of a Mortgage



- It's time to think about amortization.
- For a 30-year mortgage, PRIN= \$150,000, and INT= 6%, \$173,757.28, monthly payment= \$900
- So the total cost (prin + int) is \$323,757.28.
- For a 15-year mortgage, the monthly payment is \$1,265.79. (PV= -150,000, I= .5, N= 180, PMT=?)
- You pay more per month, but what about total cost?  $150,000 + 77,841.35 = \$227,841.35$



# The Cost of a 15-Year Mortgage

- You save nearly \$96,000 in interest costs.
- Rather than paying interest, you could invest that money and earn interest.
- Refinancing is very important.
- Compounding interest is a key point in the mathematics of finance!





# Other Ways to Accumulate Wealth

- Investing in tax-sheltered accounts
- 401(k), 403(b), IRAs are popular
- The tax burden will likely rise in coming years.
- That means tax-free growth becomes even more valuable.
- Monthly, consistent payments are key!
- The investments discussed in this workshop are the tools we need to build wealth.



# Is “Debt” a Bad Word?

- Some debt is not a bad thing.
- A system of credit is important for a capitalist society.
- Too much debt is a bad thing.  
(Leverage can be deadly; just ask any firm in bankruptcy.)
- If you understand the mathematics of finance (time value of money), you can compute your borrowing costs for all loans and investments.

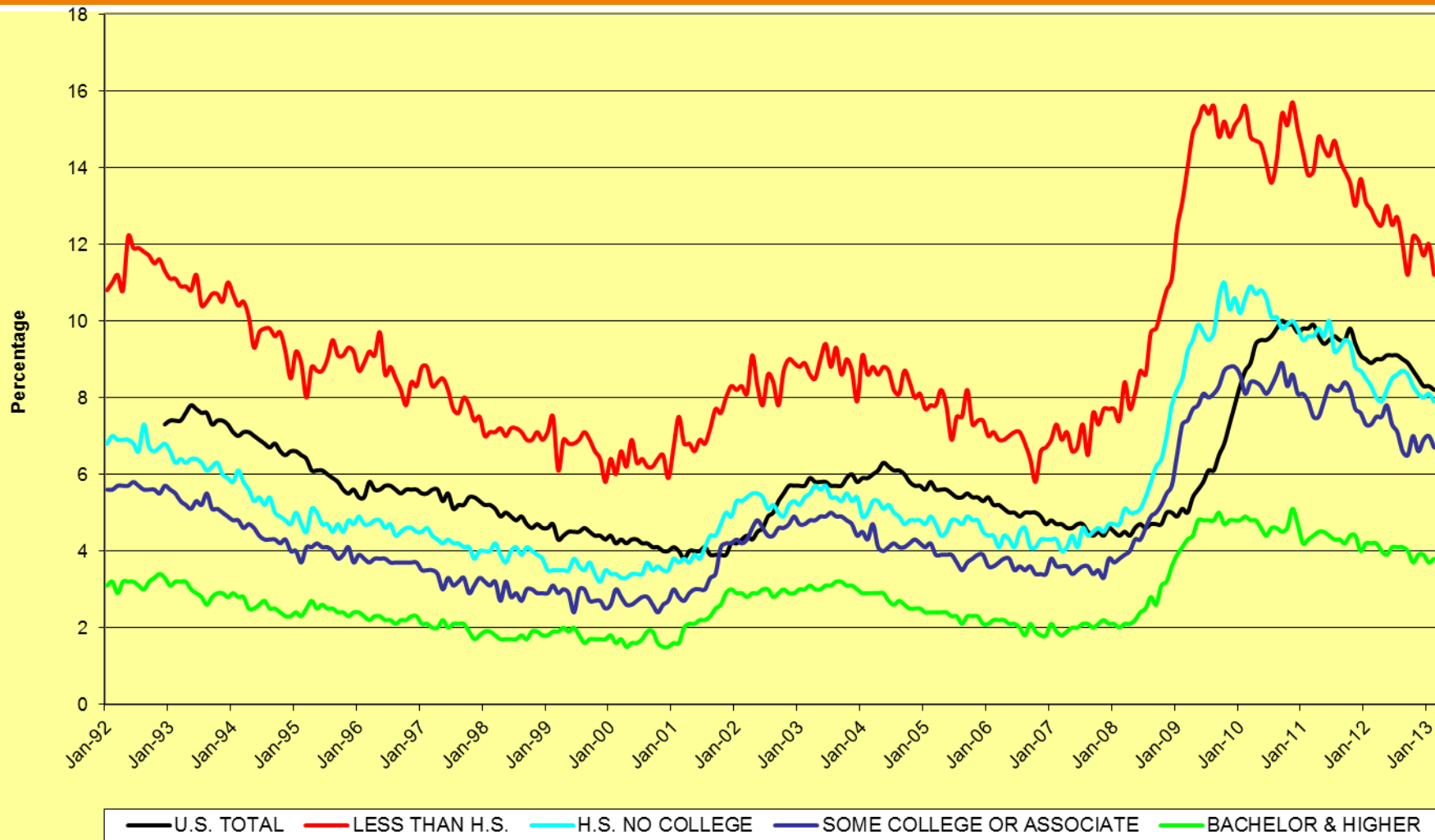


# Other Financial Instruments

- Insurance products
- Rental properties
- YOU!! That's called "human capital."



# Unemployment Rate and Education Level



# Other Personal Finance Topics

- Household Budgets

Do you know how much you spend?



- Education



- Technology

How much is it worth to you?



- Difference between needs and wants

- Healthcare costs

