

HANDOUT 1

About Your TA

- **Haoche (Howard) Hsu**
- Discussion Section: Tue. 7:00-7:50pm
- Office Hour: Wed. 3:30-5:00pm only by appointment via Calendly: <https://calendly.com/howardhsu/econ134a>
- My Website: <http://www.haochehsu.com> (Handout can be found at the *Teaching* section)
- Email: haoche.hsu@uci.edu

1 Logistics

- Midterm Exam: 7/9
- Final Exam: 7/28
- Any comments feel free to use the anonymous *Feedback Survey* (on my website)

Key Equations

- $FV_t = PV \cdot (1 + r)^t$
- Geometric Series: $S_n = \sum_{n=1}^t a_n = a_1 + \underbrace{a_1\beta}_{a_2} + \underbrace{a_1\beta^2}_{a_3} + \cdots + \underbrace{a_1\beta^{t-1}}_{a_t} = \frac{a_1 - a_1\beta^t}{1 - \beta} = a_1 \cdot \left(\frac{1 - \beta^t}{1 - \beta} \right)$
- Infinite Series: $S = \sum_{n=1}^{\infty} a_n = a_1 + a_2 + a_3 + \cdots = a_1 + a_1\beta + a_1\beta^2 + \cdots = \frac{a_1}{1 - \beta}$
- Annual percentage rate (APR): period interest rate \times periods in a year (no compound effect)
- Effective annual rate (EAR) = $\left[1 + \frac{\text{quoted rate (APR)}}{m} \right]^m - 1$, m : compound periods in a year
- Unless specified, we assume cash flows occur at the end of each period.

2 Exercises

1. What are the advantages of proprietorship and partnership as opposed to corporate form?
2. What is the goal of financial management?

3. What is the rate of return per quarter of an investment that offers to triple your money in a year?

4. You want to buy a house, price is \$240,000, interest rate is 6.35% per year, the loan is for 30 years, and you can afford \$1150 per month. What is the balloon payment?

5. Which one of the following statements correctly states a relationship?
 - (a) Interest rates and time are positively related, all else held constant.
 - (b) Time and future values are inversely related, all else held constant.
 - (c) An increase in time increases the future value given a zero rate of interest.
 - (d) Time and present value are inversely related, all else held constant.
 - (e) An increase in the discount rate increases the present value, given positive rates.

6. Suppose you win a lottery over a 20-year period. The first payment, made one year from now, will be \$200,000. Then every year thereafter, the payment will grow by 5%. What is the value of this lottery if the discount rate is 11%? If the payments continue forever, what is the value of the lottery?

7. True or False? The managers should not focus on the current stock value because this will lead to overemphasis on short-term profits at the expense of long-term profits.

8. As you increase the length of time involved, what happens to future values and the present values?

9. If you decrease the rate r , what happens to future values and the present values?

10. If you want to become a millionaire when you retire in 40 years, given an annual return of 10.5 percent, how much do you have to save each month if you wait 10 years before you begin your deposits.

11. You borrow \$165,000 to buy a house. The mortgage rate is 7.5% and the loan period is 30 years. Payments are made monthly. If you pay the mortgage according to the loan agreement, how much total interest will you pay?

12. State the “agency problem” and illustrate the condition of occurrence.

13. What are the three types of financial management decisions?

14. Alexa plans on saving \$3,000 a year and expects to earn an annual rate of 10.25%. How much will she have in her account at the end of 45 years?

15. Which one of the following actions by a financial manager is most apt to create an agency problem?
 - (a) refusing to borrow money when doing so will create losses for the firm
 - (b) agreeing to pay bonuses based on the market value of the company stock rather than on the firm's level of sales
 - (c) refusing to lower selling prices if doing so will reduce the net profits
 - (d) increasing current profits when doing so lowers the value of the firm's equity
 - (e) refusing to expand the company if doing so will lower the value of the equity

16. At 7.3% annual interest, how long does it take to quadruple your money?

17. An investment offers \$5,500 per year forever. What is the value of the investment if the required return is 6%?

18. Twelve years from now, you wish to have \$50,000 in your account. If you wish to make equal annual deposits into the account, what amount must you deposit each year if the account pays 6.2% interest?

19. A Tesla Model 3 Standard Range Plus cost \$37,990. You have \$10,000 today that can be invested at your bank. The bank pays 2.4% annual interest on the account. How long will it be before you have enough to buy the car?
20. You expect to receive \$15,000 at graduation in two years. You plan on investing it at 9% until you have \$75,000. How long will you wait from now?
21. Investment X offers to pay you \$4,700 per year for 8 years. What is the value of this cash flow stream if the discount rate is 5%?
22. You buy an annuity that will pay you \$14,000 a year for 20 years. The payments are paid on the first day of each year. What is the value of this annuity today if the discount rate is 5.5%?
23. What is the corresponding APR of a EAR of 11.7 % compounded monthly?
24. What is the EAR of a loan if you get \$3 today and replay \$4 when you get your paycheck in one week?
25. You are 20-year-old, and want to retire at age 70. You want to have monthly income of \$15000 per month from age 70 to 95. How much you need to save every month between age 20 to 70 to achieve your goal. Assume the interest rate is 10% per year.