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L1

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ASESSMENTS

- Tutorial quizzes 15%
- mid-sem exam (25% or 0%, discussed later on in term) - material from lectures 1 to 5. If you fuck this up, it doesn't count.
- final (60% or 85% depending on what happens with the mid-sem). Covers whole course, but focuses on later half.

Tutorial sign-ups available ten minutes after *this* lecture (Wednesday 3pm ideal)

No workshop this week! (so we're both free on Friday this week!)

Extra practice questions available on WATTLE for self study

Calculator: (tests closed book, no cheat sheet) should be fine

One week difference between tutorial and lecture

Past exams and answers available on course page on WATTLE
“Dollar today worth more than a dollar tomorrow

Types of Financial Markets

- Money markets: short term (< 1 year)
- Capital markets: medium- to long-term
- Derivatives markets: transference of risk
- Foreign exchange markets: facilitates international trade, supports money and capital markets

L2

Quiz in tutorial next week on THIS stuff

Bond: contract between lender and borrower

Present and Future Value

Answers and shit to 2DP

If choice between \$1 today or in the future, then ALWAYS choose today, as you can invest it and it will be have grown in a year.

Percentages expressed in decimal form i.e. $[0.1 \times 2] = 10$ percent times 2

SIMPLE: $FV = F_0 + F_0 r_s n$

$$= F + (1 + r_s n)$$

$$= \$1 (1 + [0.1 \times 2])$$

$$= \$1.20$$

$$PV = FV / (1 + r_s n)$$

COMPOUND:

$FV = PV / (1 + r)^n$????? fix this (by reading the book, amazing!)

Future Value of Multiple Cash Flows: Treated like single cash flows and added up.

Timelines are handy for all questions.

Annuities: A finite number of cash flows that are equal in their amounts and are evenly spaced. 3 types:

- Ordinary Annuities: when time between now and first payment is the same as all other times.
- Annuities Due: first cash flow occurs immediately.
- Deferred Annuities: first cash flow starts at some time in the future.

FV of Annuities:

FV of Ordinary Annuities/Deferred Annuities = $FV = F \left[\frac{(1+r)^n - 1}{r} \right]$

Remember that test is closed book, so need to **MEMORISE** these.

FV of Annuity Due = $FV = F \left[\frac{(1+r)^n - 1}{r} \right] (1+r)$

Present Value of Multiple Cash Flows

Can either:

- Discount each cash flow individually and sum the resultant values to calculate the present value
or
- In the case of **identical evenly** spaced cash flows, we can use the present value of an annuity formula

$$PV = 300/(1.10) + 290/(1.10)^2 + 500/(1.10)^3 + 580/(1.10)^4$$

(Need to do this this way because although these are evenly spaced, not of the same value)

$$PV \text{ of OA} = F \left[\frac{1 - (1+r)^{-n}}{r} \right]$$

$$PV \text{ of AD} = F + F \left[\frac{1 - (1+r)^{-(n-1)}}{r} \right]$$

PV of DA = $\left(F \left[\frac{1 - (1+r)^{-n}}{r} \right] \right) / (1+r)^{(m-1)}$, where m is the number of periods before commencement

Make a formula sheet to learn. Ask anna for paper tonight??

Perpetuities: Cash flows that go on forever.

$$\text{PV of OP} = F/r$$

$$\text{PV of PD} = F + (F/r)$$

$$\text{PV of DP} = ((F/r))/(1+r)^{(m-1)}$$

Create a formula book, so that I can get these formulas looking much nicer and in an actually readable format

Cash flow period **MUST** match the interest rate, i.e. monthly payments needs interest per month

Types of Interest Rates:

1. **Annual Effective Rate:** per annum (p.a.) with nothing afterwards
2. **Annual Nominal Interest Rate:** p.a. comp. semiannual (2), quarterly (4), monthly (12), fortnightly (26), weekly (52), daily (365)
3. **Periodic Interest Rate:** per month, per fortnight, per week. No p.a., much nicer!

Need to be able to convert between these 3

For **all** non-annual cash flows, use the *periodic interest rate*.

Print/write out this wheel thing

Go through some examples for this later, to help get it right, Need to do lots of questions to get these formulae memorised.

Don't round until final answer

If the question doesn't state when it starts, assume it's an ordinary annuity

L3

THE TIME VALUE OF MONEY: VALUING SHARES

read 169–190, making sure to skip over the stuff that we don't need to read

Shareholders OWN part of the company, but they have nothing to do with the running of the company

Shareholders elect the Board of Directors, who hire the management team (CEO, CFO, CMO, CIO, etc.), and then the BoD reports to the shareholders on current events to do with the company.

Ordinary Shares: An equity security that gives the holder the right to vote and the right to any variable dividend.

Preference Shares: Given priority over ordinary shareholders and gives the rights to fixed dividends, generally have no voting rights.

3 steps to asset valuation:

1. Identify all the cash flows generated by the asset as well as when they occur
2. Find the present value of each cash flow that was identified in 1
3. Sum the values of all cash flows calculated in 2

W2

Actually do these questions...

Remember to use a timeline for ALL time value of money questions

Another quiz next week (so actually know your shit by then)

Qn. 1 - use the D_1 formula, as it's for one year from today

Qn. 2 - deferred perpetuity formula $P_2/(1 + r_e)^2$? should 398.60. So get P_2 from the OP formula, then use that with this one as well.

Qn. 3 - echo?

Qn. 4 - book

Qn. 5 - transposition

Qn. 6 -

L4

Valuing Debt Instruments

Debt is a *contractual* agreement, it MUST be paid. Often a cause of bankruptcy.

Coupon-paying Bond: a contract in which the borrower (writer of the bond that is sold) agrees to pay the lender periodic interest (c) for a pre-defined number (n) periods. More specifically, the periodic interest payment is known as a coupon payment (C), which is equal to the coupon rate multiplied by the face value (or cF); and,

Coupons are almost always paid on a semi-annual basis.

Repay the face value, F of the instrument at a pre-defined maturity date.

Zero-coupon Bonds: Does not pay coupons during its life. Instead, only the face value (F) is repaid at the end of n periods. Issued for a price below their face value, known as *discount securities*.

Four major types of corp. bonds:

- Bank Accepted Bills
- Mortgage Bonds
- Debentures:
- Convertible Bonds: can be exchanged for shares in the corporation

Unless told otherwise, ALWAYS assume semi-annually and face value is \$100 for coupon-paying bonds.

If coupons are other than semi-annual, quoted as annual nominal rates with compounding frequency to match the frequency of coupon payments.

Unless told otherwise, zero-coupon bonds with maturities > 1 year assume yield is quoted as an annual effective rate. Where < 1 year, assume an annual nominal rate with a compounding frequency that matches the time until bond maturity.

L5

Making Investment Decisions

Mid-sem april 1st, in the morning? Melville hall we think

From week one to week 5

Capital Budgeting: Using time value of money concepts to identify the projects a firm should undertake.

Using annuities, because nearly all projects have an end date.

When considering a project, important to note we are only concerned with the *incremental* cash flows associated with the project. The incremental net cash flow of a project is defined as the difference between the firm's cash flows if the project is undertaken and the firm's cash flows if the project is not undertaken.

Depreciation is *tax deductible*.

Assume \$0 for ESV if not told

If an asset is sold for a price greater than its depreciated value, the excess is a taxable gain. If sold for less, the difference is an allowable deduction for tax purposes.

g

L6

DIVERSIFICATION

Room opens at 8:35 (Melville Hall/JD102) Friday 1st, hour and a half

Week one stuff not on exam, not that that really matters that much. The maths stuff is what the questions are going to be on

Defining Risk and Understanding its Relationship with Return

Kurtosis: A measure of the “tallness” or “flatness” of the distribution. Normal distribution has zero excess kurtosis.

Default risk: Company-specific risk that is *different for each stock*. Company goes bankrupt due to its own actions

Systematic risk (β): Risk caused by factors that influence all stocks. Cannot remove this risk through diversification

Investors prefer more wealth to less, and

Investors are risk averse

Risk averse utility maximiser

L7

Diversification: a means of reducing risk faced by investors without sacrificing expected return by combining assets that don't move perfectly together in a portfolio.

Total risk decreases as the number of risky assets increases, decreases to average covariance

Systematic risk always present

- Economic factors
- Influence at risky assets
- Cannot diversify away

The covariance in portfolio of n assets = $n(n-1)/2$

Correlation coefficient: $\rho_{xy} = \sigma_{xy} / \sigma_x \sigma_y$

Expected Return of a Portfolio: $E(R_p) = w_1 E(R_1) + w_2 E(R_2)$

Where:

w_1 = Proportion invested in Asset 1

w_2 = Proportion invested in Asset 2

$E(R_1)$ = Expected Return on Asset 1

$E(R_2)$ = Expected Return on Asset 2

L8

Quiz in Tutorials, for week 7 material

It's "gonna be rushed", so prepare for it

Practice doing more questions, that seems like the only way for you to improve because you're fucking retarded

Redo exam??

Workshop this week

The Capital Asset Pricing Model and the Required Rate of Return for Risk

$E(R) = r_f + \# \text{ units risk} * \text{risk premium}$

Systematic Risk = avg. of all covariances

$E(r_i) = r_f + \sigma_{i,m}[\text{risk premium/risk}]$

Grab the formulas from the ppt, and then write them down because they're shit in this form.

*CAPM does not provide **any** compensation for diversifiable risk*

L9

Arbitrage: Forwards and Futures Contracts (Part A)

These contracts are, in the most basic form, insurance

Forward and futures contracts belong to a larger class known as derivatives

Forward Contract: contract made today for delivery of an asset at a pre-specified time in the future at a price agreed upon today

Traded *over the counter*, “private”, no middle man

Futures contract: similar to a forward contract except for:

- Futures contracts traded on organised exchanges with standardised terms
- Intermediate gains or losses are recorded each day during the life of the futures contract, a feature known as *marking the market*. This feature is designed to reduce the risk faced by each party, with the manner in which this occurs made obvious in examples included later in lecture.

Standardisation of Futures Contracts: In order to create liquidity, futures contracts are standardized with respect to three characteristics:

1. The type of asset underlying the contract, with futures contracts not available over every type of asset.
2. The amount of a particular asset traded under 1 contract.
3. The expiry date, or the time when the contract ceases to exist (or when the asset is actually traded, if applicable).

Futures contracts have a “clearing house”, which steps in should one of the parties go bankrupt

Margin accounts do some shit

Two types of settlement:

1. Cash
2. Physical delivery

L10

Arbitrage

If two assets provide identical payoffs, they must also have the same price. This is an idea we can use in the valuation of derivatives such as forwards, futures and options contracts.

Forwards and Futures Contracts (Part B)

A futures contract has the same value as an otherwise identical forward contract.

Both can be valued by recognizing the two following ideas:

1. Their payoff can be replicated by taking positions in the spot market
2. If there are two ways to get the same outcome, they must have the same price, otherwise an arbitrage opportunity exists and a positive risk-free profit can be made by simultaneously buying low and selling high

see book for valuation equations for forwards and futures contracts

Short Selling: The process of borrowing an asset from its owner at time 0, selling it and repurchasing it at a later date to return to the owner.

Options Contracts (Part A)

An **option** is a contract that gives the buyer the *right*, but *not* the obligation to buy (call option) or sell (put option) to the seller of the option. i.e. the buyer (holder) has a right to exercise, but the seller (writer) has to comply with the decision.

Normally specifies :

- The amount of the asset that may be bought or sold under the option contract
- Whether the option is *American* (can be exercised at any time before or on expiry) or *European* (can only be exercised at maturity).
Holder will only decide to exercise when it benefits them (*in the money*, ITM)

L11

Arbitrage: Options Contracts (Part B)

Profit (long position) = payoff (long position) - premium

Holder:

Call option profit(long) = $\max(S_T - X, 0)$ - c

Put option profit(long) = $\max(X - S_T, 0)$ - p

Writer:

Call option profit(short) = $\min(X - S_T, 0) + c$

Check if asking for a payoff or a profit diagram'

Label **everything** in the graphs

Josef recommends to rearrange the formula (see book)

Put option profit(short) = $\min(S_T - X, 0) + p$

L12

Exams are coming up very quickly, make sure to study PLEASE, or else yo'll get fucked up and it will all have benn a wste of time

Options, Forwards and Futures Contracts as Tools for Risk Management

again, each index worth \$25, but 50 for SMP (american exchaneg===**

Short in futures: payoff = $F - S_T$, so

- if spot price falls, gain
- if spot price risise, loss

If you want to hedge with options, you would always want to be long as ist is in the long position that you get to choos whether or not to exercise the option contract

For futures, forwards and options, always think in terms of buying and selling units of the **foreign** currency (i.e. think of the foreign currency as the underlying asset)

never go short when hedging

read the document about BAB on Wattle before the workshog on friday, which you **will** actually be attending

L13

Extra exam consultations available, check on wattle for when these are. Should probs go to these...

No workshop on Friday, but still have tutorial

no multiple choice questions on the exam

everything assessed

go through the self study questions as extra practice

5 questions, not equally valued or equally difficult, multiple parts

10% theory, 90% calculation

Q1 will be a valuation question, bonds **or** shares

Q2 will be NPV question

Q3 will be derivatives, (Futures/Forwards/Options)

Q4 will be a hedging question

Q5 will be very difficult (time value of money)

first 4 questions, study = success

check how to do dividends/anything really that has a break at some point (i.e. no dividends paid for two years, then resume paying)

remember that shares don't have an end date, so use perpetuities formula

grab the bank accepted bill formula from this week's lecture slides

also get how to do standard deviation in finance, so that you don't get fucked up

cost of carry shit

both for physical assets and for stocks (it's the SO stuff)

TOTALLY UNRELATED BUT VULTR IS LOOKING PRETTY COOL