Financial Accounting Recitation: Finals

Dian Jiao

Columbia Business School

Dec 8, 2023

Housekeeping

- 12:00 pm - 13:35 pm: Review session
  - A high-level review of the key issues covered in the course (25 min)
  - Sample finals Question 2 (10 min)
  - Sample finals Question 3 (15 min)
  - Sample finals Question 4 (10 min)
  - Sample finals Question 5 (15 min)
  - Sample finals Question 6 (20 min)
- 13:40 pm - 14:10 pm: Office hour
- This review is a *fast* and *non-exhaustive* recap (some topics are left out...)
- You are advised to use this as a side reference and focus on the core materials in class
- Everything used in this session is available on Canvas under folder "*09 Review Sessions*"

Table on Contents

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)
- Accounting equation: Assets = Liabilities + Equity (+ Revenue - Expense)

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)
- Accounting equation: Assets $=$ Liabilities $+$ Equity ($+$ Revenue - Expense)
- Double-entry accounting: the recording of an economic event affects at least two accounts

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)
- Accounting equation: Assets = Liabilities + Equity (+ Revenue - Expense)
- Double-entry accounting: the recording of an economic event affects at least two accounts
  - Identify the accounts -> identify the effects -> balance the accounting equation

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)
- Accounting equation: Assets = Liabilities + Equity (+ Revenue - Expense)
- Double-entry accounting: the recording of an economic event affects at least two accounts
    - Identify the accounts -> identify the effects -> balance the accounting equation
    - Debits (+A/-L/-OE) and credits (-A/+L/+OE): recall the accounting equation...

Basics

- Financial statements: Balance sheet, income statement (reconciles retained earnings across years in B/S), cash flow statement (explains the change in cash in B/S)
- Accounting equation: Assets = Liabilities + Equity (+ Revenue - Expense)
- Double-entry accounting: the recording of an economic event affects at least two accounts
  - Identify the accounts -> identify the effects -> balance the accounting equation
  - Debits (+A/-L/-OE) and credits (-A/+L/+OE): recall the accounting equation...
  - T-accounts: DEBITS on the left, CREDITS on the right

Balance Sheet

- Accounting equation: Assets = Liabilities + Equity (use of funds = sources of funds)

Balance Sheet

- Accounting equation: Assets = Liabilities + Equity (use of funds = sources of funds)
- Balance sheet items: Assets (current, non-current), liabilities (current, non-current), owners' equity (paid-in capital, retained earnings)

Balance Sheet

- Accounting equation: Assets = Liabilities + Equity (use of funds = sources of funds)
- Balance sheet items: Assets (current, non-current), liabilities (current, non-current), owners' equity (paid-in capital, retained earnings)
- Intertemporal relationship: EB = BB + inflow - outflow

Balance Sheet

- Accounting equation: Assets = Liabilities + Equity (use of funds = sources of funds)
- Balance sheet items: Assets (current, non-current), liabilities (current, non-current), owners' equity (paid-in capital, retained earnings)
- Intertemporal relationship: EB = BB + inflow - outflow
  - Ending Bad Debt Allowance = Beginning + BDE - Write-offs
  - Ending Book Value of Bonds = Beginning + Int Exp - Coupon Payments
  - Refer to the midterm review slides for more examples...

Balance Sheet

- Accounting equation: Assets = Liabilities + Equity (use of funds = sources of funds)
- Balance sheet items: Assets (current, non-current), liabilities (current, non-current), owners' equity (paid-in capital, retained earnings)
- Intertemporal relationship: EB = BB + inflow - outflow
  - Ending Bad Debt Allowance = Beginning + BDE - Write-offs
  - Ending Book Value of Bonds = Beginning + Int Exp - Coupon Payments
  - Refer to the midterm review slides for more examples...
- Two sides of the same coin: Wage payable vs wage prepaid, unearned revenue vs advances from customers, deferred tax assets vs deferred tax liabilities...

Income Statement

- Reconcile R/E in B/S: Ending R/E = beginning R/E + N/I - dividends

Income Statement

- Reconcile R/E in B/S: Ending R/E = beginning R/E + N/I - dividends
- The hierarchical structure of the income statement: Sales revenue - cost of sales -> gross profit - operating expense -> operating profit +/- other income -> net income before income taxes - tax provisions -> net income

Income Statement

- Reconcile R/E in B/S: Ending R/E = beginning R/E + N/I - dividends
- The hierarchical structure of the income statement: Sales revenue - cost of sales -> gross profit - operating expense -> operating profit +/- other income -> net income before income taxes - tax provisions -> net income
- Two approaches to aggregate expenses: By nature/by function

Income Statement

- Reconcile R/E in B/S: Ending R/E = beginning R/E + N/I - dividends
- The hierarchical structure of the income statement: Sales revenue - cost of sales -> gross profit - operating expense -> operating profit +/- other income -> net income before income taxes - tax provisions -> net income
- Two approaches to aggregate expenses: By nature/by function
- Accrual-basis income: Revenue recognition, matching principle

Cash Flow Statement

- Structure: Operating, investing, financing; Approaches: direct, **indirect**

Cash Flow Statement

- Structure: Operating, investing, financing; Approaches: direct, **indirect**
- Operating activities
  - (+) depreciation and amortization
  - Adjust for non-cash income and non-operating income items
  - (-) change in operating assets and (+) change in operating liabilities

Cash Flow Statement

- Structure: Operating, investing, financing; Approaches: direct, **indirect**
- Operating activities
  - (+) depreciation and amortization
  - Adjust for non-cash income and non-operating income items
  - (-) change in operating assets and (+) change in operating liabilities
- Investing activities
  - Adjust for cash changes from purchases/sales of long-term assets (e.g., PP&E, intangibles), purchases/sales of other firms' securities/debts, etc.

Cash Flow Statement

- Structure: Operating, investing, financing; Approaches: direct, **indirect**
- Operating activities
  - (+) depreciation and amortization
  - Adjust for non-cash income and non-operating income items
  - (-) change in operating assets and (+) change in operating liabilities
- Investing activities
  - Adjust for cash changes from purchases/sales of long-term assets (e.g., PP&E, intangibles), purchases/sales of other firms' securities/debts, etc.
- Financing activities
  - Adjust for issuance of common stock/bonds, payment of dividends, stock repurchases, etc.

Receivables

- Recognition: At the time of sale (matching principle); B/S and I/S approaches
  Dr. bad debt expense
  Cr. allowance for doubtful accounts

Receivables

- Recognition: At the time of sale (matching principle); B/S and I/S approaches
  Dr. bad debt expense
      Cr. allowance for doubtful accounts
- Write-offs: The net realizable value is unchanged
  Dr. allowance for doubtful accounts
      Cr. accounts receivable

Receivables

- Recognition: At the time of sale (matching principle); B/S and I/S approaches
  Dr. bad debt expense
  Cr. allowance for doubtful accounts
- Write-offs: The net realizable value is unchanged
  Dr. allowance for doubtful accounts
  Cr. accounts receivable
- Reinstatement: Book value of A/R and total assets unchanged, cash and bad debt allowance $\uparrow$, net value of A/R $\downarrow$ (Conservatism: more allowance reserved for future...)
  Dr. accounts receivable
  Cr. allowance for doubtful accounts
  Dr. cash
  Cr. accounts receivable

Receivables

- Recognition: At the time of sale (matching principle); B/S and I/S approaches
  Dr. bad debt expense
    Cr. allowance for doubtful accounts
- Write-offs: The net realizable value is unchanged
  Dr. allowance for doubtful accounts
    Cr. accounts receivable
- Reinstatement: Book value of A/R and total assets unchanged, cash and bad debt allowance $\uparrow$, net value of A/R $\downarrow$ (Conservatism: more allowance reserved for future...)
  Dr. accounts receivable
    Cr. allowance for doubtful accounts
  Dr. cash
    Cr. accounts receivable
- See slides for the recitation on Nov 10 for a graphic illustration...

Intertemporal Relationship of Bad Debt Allowance

- Ending Balance = Beginning Balance + Bad Debt Expense - Write-offs

Intertemporal Relationship of Bad Debt Allowance

- Ending Balance = Beginning Balance + Bad Debt Expense - Write-offs
- It might be useful to analogize to depreciation expense and PP&E...

Intertemporal Relationship of Bad Debt Allowance

- Ending Balance = Beginning Balance + Bad Debt Expense - Write-offs
- It might be useful to analogize to depreciation expense and PP&E...
- If we work with the B/S approach, *usually*...
  - BB and EB can be inferred from the B/S based on the recognition principles
  - Write-offs are known
  - BDE needs to be backed out by the relationship

Intertemporal Relationship of Bad Debt Allowance

- Ending Balance = Beginning Balance + Bad Debt Expense - Write-offs
- It might be useful to analogize to depreciation expense and PP&E...
- If we work with the B/S approach, *usually*...
  - BB and EB can be inferred from the B/S based on the recognition principles
  - Write-offs are known
  - BDE needs to be backed out by the relationship
- If we work with the I/S approach, *usually*...
  - BB is inherited from the last period
  - Write-offs are known
  - BDE is determined from the credit sales (increase in A/R) in the current period
  - EB will be determined by BB, write-offs, and BDE

Bond Valuation

- The time value of money and the present value of bonds

$$PV = \frac{Face\ Value}{(1 + Yield)^n} + \sum_{k=1}^{n} \frac{Coupon}{(1 + Yield)^k}$$

Bond Valuation

- The time value of money and the present value of bonds

$$PV = \frac{Face\ Value}{(1 + Yield)^n} + \sum_{k=1}^{n} \frac{Coupon}{(1 + Yield)^k}$$

- The relationship depends on the market yield and the coupon rate

ⓐ At a discount	Price $<$ Face value	Market yield $>$ Coupon rate
ⓑ At a premium	Price $>$ Face value	Market yield $<$ Coupon rate
ⓒ At par	Price $=$ Face value	Market yield $=$ Coupon rate

Bond Valuation

- The time value of money and the present value of bonds

$$PV = \frac{Face\ Value}{(1 + Yield)^n} + \sum_{k=1}^{n} \frac{Coupon}{(1 + Yield)^k}$$

- The relationship depends on the market yield and the coupon rate

ⓐ At a discount	Price $<$ Face value	Market yield $>$ Coupon rate
ⓑ At a premium	Price $>$ Face value	Market yield $<$ Coupon rate
ⓒ At par	Price $=$ Face value	Market yield $=$ Coupon rate

- ⓐ the company pays LESS than the market does (a discount is therefore offered)

Bond Valuation

- The time value of money and the present value of bonds

$$PV = \frac{Face\ Value}{(1 + Yield)^n} + \sum_{k=1}^{n} \frac{Coupon}{(1 + Yield)^k}$$

- The relationship depends on the market yield and the coupon rate

ⓐ At a discount	Price $<$ Face value	Market yield $>$ Coupon rate
ⓑ At a premium	Price $>$ Face value	Market yield $<$ Coupon rate
ⓒ At par	Price $=$ Face value	Market yield $=$ Coupon rate

- ⓐ the company pays LESS than the market does (a discount is therefore offered)
- ⓑ the company pays MORE than the market does (a premium is therefore charged)

Bond Valuation

- The time value of money and the present value of bonds

$$PV = \frac{Face\ Value}{(1 + Yield)^n} + \sum_{k=1}^{n} \frac{Coupon}{(1 + Yield)^k}$$

- The relationship depends on the market yield and the coupon rate

ⓐ At a discount	Price < Face value	Market yield > Coupon rate
ⓑ At a premium	Price > Face value	Market yield < Coupon rate
ⓒ At par	Price = Face value	Market yield = Coupon rate

- ⓐ the company pays LESS than the market does (a discount is therefore offered)
- ⓑ the company pays MORE than the market does (a premium is therefore charged)
- ⓒ the company pays the SAME as the market does (a fair game)

Bond Amortization

- It is useful to think about amortization in this way: At the issuance of the bond, we have n future coupon payments, where the discount will "unfold" for each interest payment

Bond Amortization

- It is useful to think about amortization in this way: At the issuance of the bond, we have n future coupon payments, where the discount will "unfold" for each interest payment
- Each year after the coupon payment, a portion of the total discount (premium) should be reduced because that has already been "incurred"

Bond Amortization

- It is useful to think about amortization in this way: At the issuance of the bond, we have n future coupon payments, where the discount will "unfold" for each interest payment
- Each year after the coupon payment, a portion of the total discount (premium) should be reduced because that has already been "incurred"
- We expense a portion of the discount on each coupon payment since the discount comes from the fact that coupon rate $<$ market rate; Similar for the amortization of premiums

Bond Amortization

- It is useful to think about amortization in this way: At the issuance of the bond, we have n future coupon payments, where the discount will "unfold" for each interest payment
- Each year after the coupon payment, a portion of the total discount (premium) should be reduced because that has already been "incurred"
- We expense a portion of the discount on each coupon payment since the discount comes from the fact that coupon rate $<$ market rate; Similar for the amortization of premiums
- Eventually, the bond discount or premium will be amortized to zero (Refer to the Excel template for the recitation on Nov 10 to see how this works...)

Bond Amortization

- It is useful to think about amortization in this way: At the issuance of the bond, we have n future coupon payments, where the discount will "unfold" for each interest payment
- Each year after the coupon payment, a portion of the total discount (premium) should be reduced because that has already been "incurred"
- We expense a portion of the discount on each coupon payment since the discount comes from the fact that coupon rate $<$ market rate; Similar for the amortization of premiums
- Eventually, the bond discount or premium will be amortized to zero (Refer to the Excel template for the recitation on Nov 10 to see how this works...)
- Ending Book Value of Bonds $=$ Beginning $+$ Int Exp - Coupon Payments
  - Interest expense $=$ beginning book value $\times$ yield
  - Coupon payment $=$ face value $\times$ coupon rate $=$ reduction in cash
  - Bond amortization $=$ difference between interest expense and coupon payment

Cost Accounting

- Cost-flow identification: FIFO, LIFO, specific identification method, and weighted-average cost method

Cost Accounting

- Cost-flow identification: FIFO, LIFO, specific identification method, and weighted-average cost method
- Activity-based costing (ABC):
  - Group similar types of overhead costs together into cost pools
  - For each cost pool, determine an allocation basis (or cost driver)
  - Compute allocation rates separately for each cost pool and driver

Cost Accounting

- Cost-flow identification: FIFO, LIFO, specific identification method, and weighted-average cost method
- Activity-based costing (ABC):
  - Group similar types of overhead costs together into cost pools
  - For each cost pool, determine an allocation basis (or cost driver)
  - Compute allocation rates separately for each cost pool and driver
- Might be useful to think of ABC as a way to "weight" each product/project...

Long-Lived Assets

- Different depreciation schemes: straight-line, units-of-production, sum-of-the-years'-digits, declining balance

Long-Lived Assets

- Different depreciation schemes: straight-line, units-of-production, sum-of-the-years'-digits, declining balance
- Ending PP&E = Beginning PP&E + Purchase - Sale/Disposal (All in gross values)

Long-Lived Assets

- Different depreciation schemes: straight-line, units-of-production, sum-of-the-years'-digits, declining balance
- Ending PP&E = Beginning PP&E + Purchase - Sale/Disposal (All in gross values)
- Ending Acc Dep = Beginning Acc Dep + Dep Exp - Acc Dep Related to Sale/Disposal

Long-Lived Assets

- Different depreciation schemes: straight-line, units-of-production, sum-of-the-years'-digits, declining balance
- Ending PP&E = Beginning PP&E + Purchase - Sale/Disposal (All in gross values)
- Ending Acc Dep = Beginning Acc Dep + Dep Exp - Acc Dep Related to Sale/Disposal
- Gain/Loss on Sale of PP&E = Proceeds - (Gross Value of PP&E - Related Acc Dep)

Long-Lived Assets

- Different depreciation schemes: straight-line, units-of-production, sum-of-the-years'-digits, declining balance
- Ending PP&E = Beginning PP&E + Purchase - Sale/Disposal (All in gross values)
- Ending Acc Dep = Beginning Acc Dep + Dep Exp - Acc Dep Related to Sale/Disposal
- Gain/Loss on Sale of PP&E = Proceeds - (Gross Value of PP&E - Related Acc Dep)
- Typical roadmap: 1) Use one equation to back out one unknown, x; 2) Use the intermediary result, x, to back out other unknowns in other equations

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues
- Permanent differences: Different jurisdictions; different items for income/tax purposes

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues
- Permanent differences: Different jurisdictions; different items for income/tax purposes
- Temporary differences: Differences between GAAP-basis income and tax-basis income resulting from differences in the time of recognition (decay to zero in the long run)

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues
- Permanent differences: Different jurisdictions; different items for income/tax purposes
- Temporary differences: Differences between GAAP-basis income and tax-basis income resulting from differences in the time of recognition (decay to zero in the long run)
- Effective tax rate (provisions for income taxes) = tax expense / pretax income

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues
- Permanent differences: Different jurisdictions; different items for income/tax purposes
- Temporary differences: Differences between GAAP-basis income and tax-basis income resulting from differences in the time of recognition (decay to zero in the long run)
- Effective tax rate (provisions for income taxes) = tax expense / pretax income
- Taxable income = pretax income - temporary differences - permanent differences

Tax Accounting

- The discrepancies between GAAP and IRS tax codes cause accounting issues
- Permanent differences: Different jurisdictions; different items for income/tax purposes
- Temporary differences: Differences between GAAP-basis income and tax-basis income resulting from differences in the time of recognition (decay to zero in the long run)
- Effective tax rate (provisions for income taxes) = tax expense / pretax income
- Taxable income = pretax income - temporary differences - permanent differences
- Income tax expense...

$$
\begin{aligned}
&= \text{tax (current)} \pm \text{tax (deferred)} \\
&= \text{statutory tax rate} \times (\text{pretax income} \pm \text{temporary difference}) \\
&= \text{statutory tax rate} \times (\text{taxable income} \pm \text{permanent difference})
\end{aligned}
$$