**Study Sheet for Accounting Final Exam 2020**

**Capital Employed**: Invested Capital. The capital used by a company to generate profits.

**ROCE**: Return On Capital Employed. Probability Ratio. Generates the profit a company can make. ROCE = EBIT / Capital Employed. ROCE = margin \* rotation. ROCE = Economic Result / Capital Employed. Well (high ROCE), bad (low ROCE).

**Return on Equity (ROE)**: Net profit / Equity

**Gearing**: Financial Debt / Equity

**EBIT**: Earnings Before Interest and Tax. Remove Depreciation and Amortization from EBITDA.

**EBITDA / Turnover**: Earnings Before Interest Taxes Deprecation Amortization.

**Amortization**: Method for spreading the intangible assets cost over that asset’s useful life. Usually, intangible assets, such as patents, copyrights, goodwill, and software.

**WCR**: Working Capital Requirement = Operating Current Assets – Operating Current Liabilities = (Inventories + Operating Receivables) – Operating Payables.

**Productivity of WCR**: Sales / WCR

**Current Liabilities**: Operating Current Liabilities

**Short Term Ratio – Current Ratio**: Current Assets / Current Liabilities

**Short Term Ratio – Quick ratio**: (Receivables + Cash Assets) / Current Liabilities

**Short Term Ratio – Cash Ratio**: Cash assets / Current Liabilities

**Medium Term Solvency Ratio**: SR / CE = Stable Resources / Capital Employed = (Equity + MT LT Debts) / (Fixed assets + WCR).

**Other solvency ratio**: Net Debt / Cash flow from operation

**Not preferred solvency ratio**: Net Debt / EBITDA

**Net Cash**: Cash assets – Cash liabilities (short term debts). Stable Resources – Capital Employed.

**Equity**: Share Capital + Reserves + Result

**Stable resources:** Equity + LT MT Financial Debts

**Fixed Assets**: Tangible Assets + Intangible Assets + Financial Assets

**Net Operating Profit After Taxes (NOPAT**): EBIT \* (1 -T). The economic profit after corporate tax. T = The Effect of corporate tax.

**Weighted Average Cost on Capital (WACC)**: . E = Equity. D = Net dept. ke = cost of equity (constant: percentage %). kd = cost of net debt (constant: percentage %).

**ROCE > WACC**: Creating value

**Cost of Net Debt:** kd \* Net Debt.

**Profitability for shareholders**: Net profit / Equity = Net profit / Equity invested

**Market value of Debt**: Cost of net debt / kd

**Market value of Equity**: Net profit / ke

**Discounting**: going backwards.

**Capitalization**: going forwards.

Profit Value: like discounting.

**Net Profit Value (NPV):** . Positive NPV = Value creation. Negative NPV: value destruction.

NPV = -V0 + Sum Ft / (1+r)^t

**VAN**: the discount rate to choose! Risk based (6% low, 17% high risk)

**Internal Rate of Return (IRR)**: When NPV = 0. IRR = i. Aka. It is the discount rate. IRR > above required rate of return = Value Creation. If IRR is above desired internal return, then it’s a yes go.

IRR: -V0 + Sum Ft / (1+r)^t = 0

**COGS**: Cost of Goods Sold.

**SG&A**: Selling, General and Administrative processes. Sum of all direct and indirect selling expenses and all general and administrative expenses. SG&A includes nearly everything that isn't included in the cost of goods sold (COGS). On the income statement, COGS is deducted from the net revenue figure to determine the gross margin. Below gross margin, SG&A and any other expenses are listed.

**D&A**: Depreciation and Amortization.

**Free Cash Flow to the Firm (FCFF)**: Equal to all the cash inflows and outflows, adjusted by a interest rate, of what the firm can bring in during its lifetime.

**Terminal Value (TV)**: Estimates a company’s value based on a forecast period on future cash flow statements. Usually five years. Using discounting.

**Discounted TV**: Used to calculate the total value of the business. Based on forecast period and terminal value.

**Solvency**: How well the enterprise is able to solve its debt.

Breakeven Point: fixed costs/ 𝑚𝑎𝑟𝑔𝑖𝑛 𝑜𝑛 𝑣𝑎𝑟𝑖𝑎𝑏𝑙𝑒 𝑐𝑜𝑠𝑡 𝑖𝑛 %

𝑚𝑎𝑟𝑔𝑖𝑛 𝑜𝑛 𝑣𝑎𝑟𝑖𝑎𝑏𝑙𝑒 𝑐𝑜𝑠𝑡 𝑖𝑛 % = (𝑠𝑎𝑙𝑒𝑠 - 𝑣𝑎𝑟𝑖𝑎𝑏𝑙𝑒 𝑐𝑜𝑠𝑡𝑠) / 𝑠𝑎𝑙𝑒s

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## **Income Statement, Balance Sheet and Cash Flow**

**Income Statement** = NET PROFIT (Net Earnings, Deprecating and Amortization): Operating expense, Financial expense, Non-recurring expense. Income statement is based on net income, which is derived from operating income, which is derived from Revenue – COGS – Operating Expense.

**Balance Sheet** = Snapshot (Changes in Working Capital, Capital Expenditures, Debt Issuance, Equity Issuance)

**Cash Flow**: Amount of money the company actually receives from its operations.

**Income Statement and Cash Flow**: can include taxes.

### **Income Statement: By-nature vs by-function format:**

By-nature:

* Consumption of raw materials
* External expenses (rents, insurance, maintenance ...)
* Taxes (excluding corporation tax)
* Staff costs (salaries and social security contributions)
* Depreciation allowances and operating provision allowances

By-function:

* **COGS**: Cost of Goods Sold
  + Cost of production of goods sold
    - Time, raw materials, etc.…
* **SG&A**: Sales, General and Administration
  + Cost of marketing
  + Salaries of salespeople
  + Accountants
  + HR
  + Insurance, Electricity, etc.…
* R&D could be isolated

Remember: before and after inventory:

* Goods inventory variation: Si-Sf
* Raw material inventory variation: Si-Sf

### **Cash Flow**

“IRR is very closely linked to NPV. The IRR is essentially the discount rate that makes the NPV zero. It is the rate of return that we expect to receive from investing in the project. The higher the better. If your NPV is positive, it means that your IRR is higher than the discount rate. If your NPV is negative, it means that your IRR is less than the discount rate. However, IRR tends to be a trial and error sort of metric. There is no direct calculation, and no block additivity property that can be exploited like NPV.”

## **Formulas**

### **Income Statement**

**EBITDA** = operating income – all the operating expenses except calculated expenses (here only depreciation and allowances)

**EBITDA** = (Sales + increase inventory of finished products) – (Raw mat. purchases - increase of inventory of raw material + external expenses + local taxes + Payroll taxes + Salaries)

**EBIT** = operating income – operating expenses

Or EBIT = EBITDA – calculated expenses (here only depreciation allowances)

**EBIT** = EBITDA – depreciation, amortization allowances

**Financial result** = Financial income – Financial expenses

**Non-recurring result** = Non–recurring income – Non–recurring expenses

**Gross result** = Operating result (EBIT) + Financial result + Non-recurring result

**Net result** = Gross result – Corporate tax

**NOPAT** = (EBIT) \* (1 – corporate tax rate%)

**ROCE** = NOPAT / Capital employed

**ROE** = Net profit/ Equity

**ROE** = ROCE + financial leveraging effect

**Financial leverage effect** = 𝑅𝑂𝐸 − 𝑅𝑂𝐶𝐸 = (𝑅𝑂𝐶𝐸 – 𝐾𝑑) ∗ 𝐷/𝐸

EBIT > NOPA

### **Balance Sheet**

**WCR** = Operating current assets – Operating current liabilities

**Net cash** = Cash assets – Cash liabilities

**Stable resources** = Equity + LT/MT financial debt

**ROE** = Net Profit / Equity

### **Financial Balance Sheet**

· Needs

o Fixed Assets

o WCR

· Resources

o Equity

o Net Debt

### **Cash Flow**

· Internal rate (i)

· Optimal: IRR greater than desired internal rate

## 

## **Income Statement Mapping**

### **Operating Expense**

* Goods purchase
* Goods inventory variation: Si-Sf
* Raw material purchase
* Discount on raw material purchase Raw material inventory variation: Si-Sf
* Maintenance works Rentals
* Staff salaries Payroll taxes
* Local taxes
* Fixed asset depreciation allowances

### **Financial Expense**

* Loan interest

### **Non-recurring Expense**

* Exceptional expenses on m. operations

### **Operating Income**

* Goods sales
* Discount on goods sales
* Finished product sales
* Finished product inventory variation: Sf-Si Income from ancillary activities

### **Financial Income**

* Financial income

### **Non-recurrent Income**

* Exceptional income on m. operations

## 

## **Balance Sheet Mapping**

### **Fixed Assets (tangible, intangible)**

* Gross fixed assets
* Depreciations
* Machines
* Depreciation of the machines
* Equipment and tools
* Depreciation of equipment and tools

### **Operating Current Assets**

* Inventories
* Advanced paid to suppliers
* Trade receivables
* Other operating receivables

### **Cash assets**

* Treasury bills
* Bank (deposit)
* Cash on hand

### **Equity**

* Capital
* Net profit of year Y
* Social capital and reserves

### **MT/LT Debt**

* Medium-term debt
* Long-term loans

### **Operating Current Liabilities**

* Trade payables
* Staff Debt
* State Debt

### **Cash Liabilities**

* Bank overdraft
* Short-term financial debt

Notes on Classmate’s presentations:

The Audit Sector & The Big 4

* Big 4: Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers
* Audting: Examining an organization’s (or individual’s) financial records and determining whether they are accurate and in accordance with any applicable rules (including accepted accounting standards), regulations, and laws.
* FOUR PHASES OF AN AUDIT CYCLE
  + **Planning and Preparation** Audit preparation consists of planning everything that is done in advance by interested parties. Such as the auditor, the lead auditor, the client, and the audit program manager.
  + **Execution** The execution phase of an audit is often called the fieldwork. It is the data-gathering portion of the audit and covers the time period from arrival at the audit location up to the exit meeting.
  + **Reporting** The purpose of the audit report is to communicate the results of the investigation. The report should provide correct and clear data that will be effective as a management aid in addressing important organizational issues.
  + **Follow-up and Closure** An organization may also conduct follow-up audits to verify preventive actions were taken as a result of performance issues that may be reported as opportunities for improvement
* **internal** audit vs the **external** audit. The former is mainly for reviewing the routine activities of the business, while the latter is to provide assurance on financial records.

Enron

* Change to Market-to-Market (MTM) valuation in 1992 to portray assets and liabilities based on perceived fair market value rather than cost basis. Since it is projections-based, MTM requires a lot of subjectivity to estimate inputs, which can easily be inflated.
* owner earnings = net income + depreciation, amortization ± other non cash charges - CAPEX ± Changes in WC
* Filled for chapter 11 bankruptcy. Caused major reheavel of auditing practices

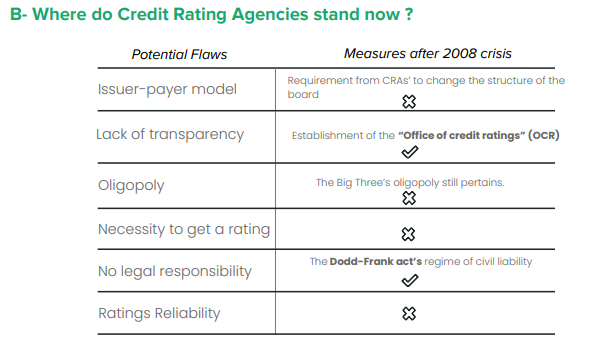
John Law/Mississippi Bubble

* Died achieving nothing, but later in 1718 the bankrupt french decide to make a banking system based on paper currency
* It succeeded very well, the Mississippi Company (bank of france in the US) was a company that could be invested with share, but it was all based on belief systems that eroded when printer go brr
* Ppl realized it wasn’t backed by gold or smth that could be exchanged in case all investors wanted their money back tmr, so value of money un-stonked

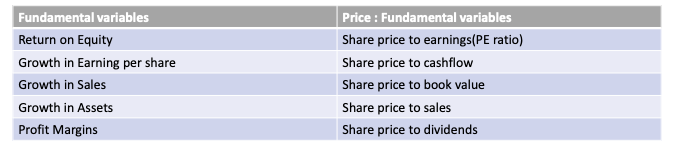
Bank Companies

* Main purpose of Bank
  + 1. Keep money safe for customers
  + 2. Offer customers interest on deposits, helping to protect against money losing value against inflation.
  + 3. Lending money to firms, customers and homebuyers.
  + 4. Offering financial advice and related financial services, such as insurance
* **Central Bank:** responsible for formulating monetary policy, set Financial Reserve Requirement, set interst rate, Support liquidity of member banks. E.g. U.S. Federal Reserve
* **Retailing Bank:** include savings and checking accounts, mortgages, personal loans, debit/credit cards, and certificates of deposit (CDs).
* **Commercial Bank:** offer consumers and small to mid-sized businesses with basic banking services including deposit accounts and loans. These banks make money from a variety of fees and by earning interest income from loans.
* **Investment Bank:** provide underwriting services, merger and acquisition (M&A) strategies IPO and other types of servises to large companies and institutional investors
* Well-performing commercial banks have negative operating cash flows due to increased lending
* Banks earn interest income from loans and from investing cash in short-term securities like U.S. Treasuries.
* Banks also earn revenue from fee income that they charge for their products and services.
* Can’t calculate a bank’s WCR since they don't have typical company structure, it’s better to calculate a bank's financial health with Net interest margin (NIM)

Credit Rating Agencies:

* Why? Lenders want to know if a potential or actual borrower is likely to repay the loan.
* Lenders may also seek outside advice about credit worthiness.
* Rating agencies assess the financial strength of companies and government entities.
* Rating agencies rate their ability to meet principal and interest payments on their debts.
* Those ratings assigned to a given debt shows an agency’s level of confidence that the
* borrower will honour its debt obligations.
* Rating based on
  + QUANTITATIVE CRITERIA (Financial data)
  + QUALITATIVE CRITERIA (Business strategy / Political stability)
  + CONTEXTUAL CRITERIA (Changes in industry / Public finances)
* Big 3 (USA): Moody’s, Fitch Rating, Standard & Poor (S&P)
* 

Value Investing

* is estimating the fundamental value of a financial security; comparing that value to the security’s current market price; and buying it if the market price is sufficiently lower than the fundamental value
* 
* Benjamin Graham coined the term Margin of Safety - Margin of safety (safety margin) is the difference between the intrinsic value of a stock and its market price
* In the three-element approach used by value investors, intrinsic value is the sum of asset value, earnings power and growth value
* It is far difficult to use value investing today than it was in the past due to availability of information, scalability and imitators,

Exercise Exam z

Question 1 (4 points) - After classifying the assets and liabilities of this balance sheet into categories that you think relevant, build an economic view of the balance sheet (capital employed analysis) of Aytaç Company.

Balance Sheet

| Assets | Liabilities |
| --- | --- |
| **Fixed Assets**  Machines 190 000  Depreciation of machines -60 000  Equipment and tools 70 000  Depreciation of equipment and tools -30 000  **Operating Current Assets**  Inventories 108 000  Trade receivables 120 000  Other operating receivables 15 000  **Cash Asset**  Cash on hand 2 000 | **Equity**  Social capital and reserves 125 000  Net profit 20 000 (financial result from last year)  **MT/LT Loans**  Long-term loans 80 000  **Operating Current Liabilities**  Trade payables 78 000  Debt to staff 4 000 (not debt!)  Debt to state 8 000 (not debt!)  **Cash Liabilities**  Short term loan 84 000  Bank Overdraft 16 000 (unplanned loan) |

**Economic View**

| Assets | Liabilities |
| --- | --- |
| **Fixed Assets**  190000-60000+70000-30000  170 000 | **Equity**  145 000 |
| **WCR**  (108000+120000+15000) - (4000+8000+ 78000  165 000 | **Net debt**  (80000+84000+16000) - 2000  190 000 |

Question 2 (2 points) – Calculate the gearing of this company. Express in another way the financial structure of this enterprise

Debt = Net Debt = Financial Debt = 190 000

Equity = 145 000

Gearing = 190 000 / 145 000 = 1.31

Question 3 (2 points) - Based solely on the balance sheet data and a ratio that you think is relevant, what do you think about the solvency of this company?

MT Solvency Ratio:

SR = Equity + Debt = 145 000 + 80 000 = 225 000

CE = WCR + Fixed Assets = 165 000 + 170 000 = 335 000

SR / CE = 225 000 / 335 000 = 0.67

Question 4 (2 point) – Calculate the economic profit after corporate tax (NOPAT).

Turnover = 400 000

EBIT (same as operating result: operating income - operating expense) = 39 000

Financial Result (financial income - financial expense) = - 9 000

What about no recurrent income/expense? None

39\*(1-.33)

Gross Result = Operating Result + Financial Result + Non Recurring Result = EBIT

NOPAT = (1-Tax) \* Gross Result = (1-⅓) \* 39 = EB = Net Result

Turnover = Profit = Sales = Revenue ( money before expenses)

Question 5 (2 point) – Deduce the ROCE of this company.

ROCE = NOPAT / CE = 143 333 / 335 000 = 42%

Question 6 (1 point) – The WACC of this company is 7%. Does this company destroy value?

ROCE > WACC

Question 7 (2 points) – Calculate the financial profitability for shareholders. Deduce the financial leverage effect.

Net Profit = 20000

Equity = 145 000

Balance Sheet formula: Financial Profitability = ROE = Net Profit / Net Equity = 20/145 = 13%

Exercise 2: Cashflow

Y0 = -20 - 1.5

Y1 = (20/5\*.4) + (3\*.6) - 2.5

Y2 = (20/5\*.4) + (3\*.6)

Y3 = (20/5\*.4) + (3\*.6)

Y4 = (20/5\*.4) + (3\*.6)

Y5 = (20/5\*.4) + (3\*.6)

Y6 = (3\*.6)

Y7 = (3\*.6)

Y8 = (3\*.6) + 2.5

Every year, you make 3M - 1.2 to tax = 3\*.6 = 1.8

Every year, you get subsidized for depreciating equipment, by not having to pay for its value =

Q2:

I = Internal Rate = 10%

Ft = Cash for year t

NPV = -V0 + Sum Ft / (1+r)^t

= -21.5 + 0.9/1.1 + 3.4/(1.1)^2 + 3.4/(1.1)^3 + 3.4/(1.1)^4 + 3.4/(1.1)^5 + 1.8/(1.1)^6 + 1.8/(1.1)^7 + 4.3/(1.1)^8 = -6.93

Q3)

IRR: -V0 + Sum Ft / (1+r)^t = 0

-21.5 + 0.9/(1+r) + 3.4/(1+r)^2 + 3.4/(1+r)^3 + 3.4/(1+r)^4 + 3.4/(1+r)^5 + 1.8/(1+r)^6 + 1.8/(1+r)^7 + 4.3/(1+r)^8

Find r s.t. =0

r = -1.79

or r = 0.008

Cash flow statement

+ Operating cash-in (payments from clients)

- Operating cash-out (payment to suppliers, payments of salaries, etc.)

= Net operating flows (A)

- Acquisitions of fixed assets

+ Disposals of fixed assets

= Net investment flows (B)

(A) + (B) = Free Cash Flows

+ New loan emission

- Loan capital reimbursement

- Interest payment

+ Social capital increase

- Social capital decrease

- Dividends

= Net financing flows (C)

Variation of cash assets = (A) + (B) + (C) = (1) – (2)

(1) Cash assets at the closing

(2) Cash assets at the opening

Or

+ Net profit

+ Depreciation and provision allowances

- WCR increase

= Net operating flows after interest paid (A)

- Acquisitions of fixed assets

+ Disposals of fixed assets

= Net investment flows (B)

(A) + (B) = Free Cash Flows after interest paid

+ New loan emission

- Loan capital reimbursement

+ Social capital increase

- Social capital decrease

- Dividends

= Net financing flows (C)

Variation of cash assets = (A) + (B) + (C) = (1) – (2)

(1) Cash assets at the closing

(2) Cash assets at the opening

INCOME STATEMENT

Operating expenses:

-

-

Financial expenses:

-

-

Non-recurring expenses:

-

-

----------------------------------------------

(Gross result: - )

Corporate tax:

Net result:

Operating incomes are composed of:

* Sales of manufactured products, services, goods
* Inventoried production (finished products manufactured but not yet sold)
* Capitalized production (production of the company for itself)

Operating expenses are composed of:

* Consumption of raw materials
* External expenses (rents, insurance, maintenance ...)
* Taxes (excluding corporate tax)
* Staff costs (salaries and social security contributions)
* Depreciation allowances and operating provision allowances

Financial income is the income earned on the company's financial investments

(eg. treasury bond interests paid to the company by states or other companies).