

Denne kolonne er forbeholdt sensor

This column is for external examiner

1. This gives not a correct description of a modern bank. The definition is correct, but not complete. Banks pool deposits of investors and invests it in projects. Therefore, banks work as investment managers. Their task is to screen and monitor the loans, in a way that is efficient by having economies of scale in monitoring and screening. Profit is coming from net interest, the difference between the lending interest rate and deposit rate minus the costs occurring. But today, a bank can make profit not just by pooling deposits and investing them. Other ways of making profit are: fund management, FX sales, brokerage services, corporate services, insurance and much more. Today's banks are characterized by a huge range of products, that can be very complex, and furthermore cooperating in a large network of banks, national and international. Additionally, loans can be funded not just through deposits. Also the issuing of bonds and loans from the money market can be used to invest in profitable projects. All in all, the classical textbook gives a description of a bank, but it needs to be expanded by the variety of choices and possibilities of a modern bank. Modern banks also have to deal with new technologies and things like seizing a collateral, saving its value and selling it for the highest amount possible. As a result, the variety of a modern bank has various types and forms.

2. a) Assets are things you own and claims you hold on others. Things you own are for banks: items, deposits at central bank and at other banks, securities. Claims on others on the asset side are loans (client should repay you) and currency (also an item, but could be seen as claim on government). Liabilities are claims that others hold on you. The capital is a claim from the shareholders. Deposits from other banks, and loans from the central bank are also liabilities. Bonds you issued is a liability as well, as the owner claims the coupon payment and face value.
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 customers
- b) Deposits from customers are liabilities as the customers gave the bank their money and want it back at some day in the future. They hold the claim that the bank pays it back, as the depositors are the owners of the money.

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c) Loans are assets as the bank lent its money to a customer. The customer should pay it back with interest. The bank holds a claim against the customer.

d) Equity can be seen as a claim from the equity holders. Furthermore, it is per definition in the liability side. Equity should make the two sides of the balance sheet equal. It is difference between assets and liabilities.

e) Liquid money is a claim the bank holds on others. Deposits with the central bank are expected to can be withdrawn and the bank should get its money back. Currency is a claim on the government, it can also be seen as an item, as cash represents an amount of money defined by its given numbers.

Therefore, liquid money is an asset. Capital is on the liability side, it is equal as equity (definitions differ a bit). Capital can be seen as a claim as it serves loan losses.

- f. Risks on the asset side are:
- loan losses
 - decline of market value from securities
 - inflation leading to declining value of currency
 - solvency of other banks (bank can't have its deposits back)

- Risk on the liability side:
- unexpected withdrawals of deposits
 → when many or all depositors are doing this
 ⇒ bank run, leading the bank with insufficient liquidity to cover withdrawals

3.

$$y_1 = 0.0102 = r_{01}$$

$$(1+y_2)^2 = (1+r_{01})(1+r_{12})$$

$$1.0113^2 = 1.0102 \cdot x$$

$$x = 1.0124 \Rightarrow r_{12} = 1.24\%$$

$$(1+y_3)^3 = (1+r_{01})(1+r_{12})(1+r_{23})$$

$$1.0122^3 = 1.0102 \cdot 1.0124 \cdot x$$

$$x = 1.014 \quad r_{23} = 1.4\%$$

$$r_{01} = 1.02\% \quad r_{12} = 1.24\% \quad r_{23} = 1.4\%$$

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check with approximate method:

$$r_{12} = 2y_2 - y_1 = 1.24\%$$

$$r_{23} = 3y_3 - 2y_2 = 1.4\%$$

As the rates are quite small, the approximate method gives the same results as the exact method.

4. Stocks are equity, bonds are debt. A stock is a partial ownership of the company. When owning a stock you have rights to dividend and co-determination. In a case of bankruptcy, there is no claim to residual value.

Bonds are an "I owe you". One has the right to coupon payments and one final payment. In a case of bankruptcy, there is a right for residual value.

Bonds mainly have downside risk. Coupon payments or final payments may be left out, leading to a smaller value of the bond (credit risk). When selling a coupon before its maturity, the holding yield is computed by the coupon rate and appreciation rate. If interest rates are very low, there is a chance of appreciation (upside risk) when selling before maturity, but this case is very rare.

Stocks have downside and upside risk. The value of a stock is determined by the dividends paid and the appreciation rate. It is dependent on market movements. Good news about growth (company news, macro data, political decisions) moves stock prices higher, bad news lower. The stock market moves like a random market and no one can determine the future value of a stock, it can decline, rise or stay equal.

5. Risk weighting of assets means that every single asset position gets a weight that is determined by its risk. Government bonds and other safe assets have a weight of 0, very risky assets and securities 100%. The weights are determined by a standardized approach or by an internal rating system which needs to be approved by a regulatory institution. The internal rating system is based on the banks past experience. After every asset is assigned a weight, it is multiplied with it and summed up to get the Risk Weighted Assets (RWA).

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$$\text{risk weighted capital ratio} = \frac{\text{capital}}{RWA}$$

$$\text{leverage ratio} = \frac{\text{capital}}{\text{assets}}$$

The risk weighted capital ratio has RWA as denominator, the leverage ratio the sum of assets (unweighted). Both have capital as numerator.

The risk weighted capital ratio takes risk into account, the leverage ratio not.

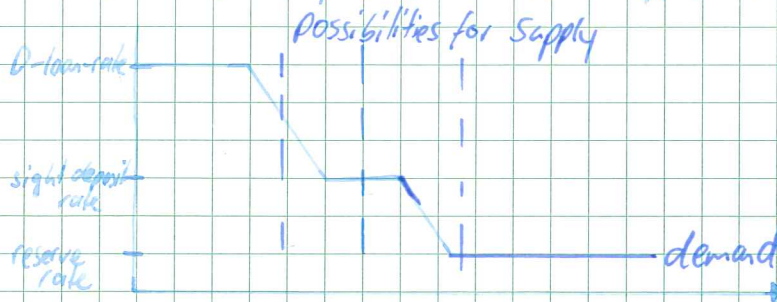
Advantages of the weighted capital ratio is that the bank's risk taking can be controlled by stating requirements for it. The disadvantage is its complexity which leads to high costs when calculating and controlling it. Resources are needed to a greater extent than with leverage ratio.

The leverage ratio is easy to compute and therefore causes less costs and resources. But banks are not prevented from investing in very risky assets.

Important for both ratios is, that it should be set in the right amount in order to make it efficient and don't slow growth.

6. The central bank sets three rates directly:
- D-loan rate (for overnight loans)
 - Sight deposit rate (for overnight deposits at CB)
 - reserve rate (for overnight deposits greater than a specified amount)

Furthermore, the CB offers the amount of liquidity that makes the NIRA equal to the sight deposit rate. NIRA is like the rate from the CB for secured interbank market. It describes the Norwegian overnight weighted average, the average of lending rates between banks. The NIRA is determined as the intersection of banks demand for liquidity and the supply of liquidity from CB.



There is also an unsecured interbank market. The rates there are determined by estimates of a lending rate to a leading international bank. 6 banks submit their estimates, the average of the middle 4 will be the NIBOR rate. It is actually an FX swap rate.

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Bank A can borrow NOK from Bank B which buys an US-Dollar forward and pays it back when bank A takes delivery of its loan.

Via arbitrage, all markets are linked. There should be no chance of making profit without creating a risk.

When Norges Bank raises its policy rate, the other market rates (NOK/USD, VIBOR) and rates for T-bills or bonds are raised as well via arbitrage.

As funding costs for the banks are higher now, they need to raise lending rates (lending rates are determined by funding cost + processing cost). To attract more depositors, deposit rates are raised as well.

In the end, when the CB raises its policy rate, all other rates are raised as well. When it lowers its policy rates, all others are lowered. The banks anticipate the complex process and do it simultaneously to the CB.

If the CB raises or cuts its rate is determined by many decisions, depending on economy. For example, lowers the CB the rate to increase, the importance of interest rate market. The policy rate is an important instrument for the whole financial market.

The CB only needs to be careful to not set its policy rate far below zero as banks will hold cash as reserves instead of using the market, which makes the policy rate ineffective.