

INTRODUCTORY BANKING



Lecture 5 – Bank's financial analysis, Ratio analysis

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March 18 2021

Key terms of Lecture 4A and 4B

- Bonds vs. stocks, stock exchange vs. OTC market
- Money vs. capital markets, IPO vs ICO
- 7 milestones in financial theory: portfolio theory (Markovitz), the CAPM model (Sharpe), interest rate structure theory (Vasicek), capital structure theory (Modigliani & Miller), agency theory (Jensen & Meckling; Akerlof), efficient market theory (Alexander, Fama), option pricing theory (Black & Scholes)
- Fintech and Bigtech
- Blockchain
- Future of Banking
- 3 trends: digitalization, commoditization, globalization

Example I - Bank balance sheet structure

	3Q2019		3Q2019		3Q2019		3Q2019		3Q2019	
Assets	156 568 848	100,0%	321 493 425	100,0%	26 678 993	100,0%	221 257 412	100,0%	227 411 116	100,0%
1. Cash, cash balances at central banks and other demand deposits	4 039 405	2,6%	2 272 345	0,7%	24 672	0,1%	7 341 406	3,3%	8 083 050	3,6%
2. Financial assets held for trading	143 247	0,1%	-	-	9 481	0,0%	11 572 663	5,2%	21 186	0,0%
3. Non-trading financial assets mandatorily at fair value through profit or loss	0	0,0%	-	-	21 896	0,1%	-	0,0%	79 776	0,0%
4. Financial assets designated at fair value through profit or loss	0	0,0%	-	-	186 510	0,7%	-	0,0%	0	0,0%
5. Financial assets at fair value through other comprehensive income	34 971	0,0%	-	-	11 841 381	44,4%	18 464 932	8,3%	1 040	0,0%
6. Financial assets at amortised cost	150 408 727	96,1%	317 119 938	98,6%	14 392 092	53,9%	182 635 438	82,5%	208 913 446	91,9%
6.1. Debt securities	4 361 408	2,8%	-	-	5 558 859	20,8%	4 186 005	1,9%	25 313 061	11,1%
6.2. Loans and advances	146 047 318	93,3%	317 119 938	98,6%	8 833 233	33,1%	178 449 433	80,7%	183 600 385	80,7%
7. Derivatives - Hedge accounting	0	0,0%	1 845 632	0,6%	0	0,0%	-	0,0%	155 939	0,1%
8. Fair value changes of the hedged items in portfolio hedge of interest rate risk	0	0,0%	-623 869	-0,2%	0	0,0%	-	0,0%	49 991	0,0%
9. Investments in subsidiaries, joint ventures and associates	159 421	0,1%	-	-	2 539	0,0%	135 017	0,1%	4 521 431	2,0%
10. Tangible assets	220 814	0,1%	389 807	0,1%	131 863	0,5%	176 341	0,1%	3 070 218	1,4%
11. Intangible assets	6 165	0,0%	432 827	0,1%	17 802	0,1%	179 066	0,1%	2 076 593	0,9%
12. Tax assets	96 819	0,1%	8 268	0,0%	0	0,0%	-	0,0%	0	0,0%
13. Other assets	1 459 279	0,9%	48 477	0,0%	50 757	0,2%	752 550	0,3%	438 446	0,2%
Liabilities and equity, total	156 568 848	100,0%	321 493 425	100,0%	26 678 993	100,0%	221 257 412	100,0%	227 411 116	100,0%
1. Liabilities, total	152 670 827	97,5%	277 611 695	86,4%	21 733 203	81,5%	207 700 653	93,9%	201 167 169	88,5%
1.1. Financial liabilities held for trading	31	0,0%	-	-	19 496	0,1%	11 961 675	5,4%	9 456	0,0%
1.1.1. Derivatives	31	0,0%	-	-	19 496	0,1%	7 110 775	3,2%	9 456	0,0%
1.2. Financial liabilities designated at fair value through profit or loss	0	0,0%	-	-	0	0,0%	-	0,0%	0	0,0%
1.3. Financial liabilities measured at amortised cost	151 719 830	96,9%	275 918 821	85,8%	17 775 096	66,6%	194 917 577	88,1%	198 908 241	87,5%
1.3.1. Deposits	150 410 393	96,1%	105 045	0,0%	17 744 326	66,5%	187 886 215	84,9%	194 706 393	85,6%
1.3.2. Debt securities issued	0	0,0%	274 577 863	85,4%	0	0,0%	3 664 079	1,7%	1 991 114	0,9%
1.3.3. Other financial liabilities	1 309 437	0,8%	1 235 913	0,4%	30 770	0,1%	3 367 283	1,5%	2 210 734	1,0%
1.4. Derivatives - hedge accounting	0	0,0%	1 402 117	0,4%	9 897	0,0%	-	0,0%	512 766	0,2%
1.5. Fair value changes of the hedged items in portfolio hedge of interest rate risk	0	0,0%	-	0,0%	0	0,0%	-	0,0%	0	0,0%
1.6. Provisions	294 789	0,2%	58 804	0,0%	3 649 236	13,7%	180 756	0,1%	190 193	0,1%
1.7. Tax liabilities	6 767	0,0%	41 594	0,0%	26 951	0,1%	170 509	0,1%	187 504	0,1%
1.8. Share capital repayable on demand	649 410	0,4%	190 358	0,1%	252 527	0,9%	470 136	0,2%	1 359 010	0,6%
2. Equity, total	3 898 021	2,5%	43 881 730	13,6%	4 945 790	18,5%	13 556 759	6,1%	26 243 947	11,5%
2.1. Capital	760 000	0,5%	5 076 336	1,6%	2 631 626	9,9%	769 004	0,3%	511 000	0,2%
2.2. Share premium	0	0,0%	24 569 069	7,6%	0	0,0%	411 545	0,2%	5 028 199	2,2%
2.5. Accumulated other comprehensive income	27 378	0,0%	88 729	0,0%	149 906	0,6%	543 531	0,2%	419	0,0%
2.6. Retained earnings	1 862 156	1,2%	1 780	0,0%	793 883	3,0%	10 388 511	4,7%	17 791 489	7,8%
2.8. Other reserves	0	0,0%	12 415 270	3,9%	1 350 000	5,1%	1 228	0,0%	102 000	0,0%
2.10. Profit or loss attributable to owners of the parent	1 248 487	0,8%	1 730 545	0,5%	20 374	0,1%	1 442 940	0,7%	2 810 839	1,2%
			<i>Performing exposures</i>	<i>Non-performing exposures</i>	<i>Performing exposures</i>	<i>Non-performing exposures</i>	<i>Performing exposures</i>	<i>Non-performing exposures</i>	<i>Performing exposures</i>	<i>Non-performing exposures</i>
Debt securities	4 361 408	-	-	-	17 529 146	0	27 601 835	-	25 317 080,89	-
- Debt securities of non-financial institutions	-	-	-	-	305 457	0	7 714 405	-	-	-
Loans	145 089 699	1 816 065	317 463 426	3 342 377	8 189 222	2 252 728	176 173 692	3 268 903	188 404 588,27	2 457 114,00
- Loans to non-financial institutions	10 675 742	1 787 838	137 733	0	2 903 478	2 057 280	18 249 175	3 268 894	39 113 826,06	537 077,91
- Loans to households	7 080 729	28 186	308 361 430	3 342 377	134 857	193 839	152 710	9	95 724 136,37	1 919 901,46
Off-balance sheet exposures	10 395 689	-	24 836 128	6 555	23 786 336	519 359	12 903 997	20 547	28 214 452,56	27 285,07
- Off-balance sheet exposures to non-financial institutions and households	7 776 285	-	24 836 128	6 555	23 211 471	519 359	7 702 187	20 547	23 180 479,18	27 285,07

Example I - Bank balance sheet structure

5 different commercial banks

- Development bank, focuses on support of local producers, guarantees small and developing businesses and trade
- Mortgage bank
- Commercial bank focused on consumer credits and loans to households
- Commercial bank financing small and medium enterprises, but the main focus is on providing payment services
- Commercial bank with certain features of investment bank

Example II – Bank balance sheet

The financial institution just succeeded in the licensing process and became a BANK (as of I.I.) with the basic capital of 500 mil CZK. The BANK also managed to issue bonds immediately with the license in the amount of 300 mil CZK, paying 4 % p.a. (paid semi-annually).

The opening balance of the BANK includes cash balances with the central bank of 600 mil CZK (for simplicity assume zero interest) and a portfolio of long-term loans paying on average 5 % p.a. in the amount of It also invested in 1 000 corporate bonds of ČEZ company for 97 CZK each (1 000 nominal value) in its trading portfolio.

1. Show the opening balance of the BANK, determine the portfolio amount.

Omit taxes in all cases and provisions created (loan loss allowances, impairment)

Example II – Bank balance sheet, cont.

During the year the BANK made these operations:

- collected deposits in the amount of 200 mil CZK paying on average 1,5 % p.a. (when calculating P/L assume the average amount of deposits during the year 100 mil CZK).
- in March the BANK purchased highly liquid equities of Erste Bank in the amount of 265 mil CZK and sold them in November for 278 mil CZK. In August it also received dividends of 8 mil CZK for these shares.
- As the yields during the year increased, the market price of the ČEZ bonds dropped to 95 at the year end. The BANK received coupon payments in the amount of 6 mil CZK in September.
- The loan exposure did not change during the year.
- The rest of assets were deposited with the central bank.

The bonds issued by the bank were freely traded in the market; the market value dropped to 280 mil CZK at the end of the period (31.12.).

2. Show the P/L calculation of the BANK for the year end
3. Show the closing balance of the BANK (as of 31.12.)

Financial ratios analysis

- **Profitability**
- **Liquidity**
- **Activity (Efficiency)**
- **Marketability (Market ratios, P/E ratio)**
- **Leverage (indebttness), (for banks rather capital adequacy ratios)**

Financial ratios specific to banks

Most important prudential/capital ratio:

Capital adequacy ratio (CAR or CAD)

Tier I capital ratio

Other:

NPL (non-performing loans) / total loans (quality of portfolio)

Profitability measures

NIM (Net interest margin)

ROAA or ROA (return on (average) assets)

ROAE or ROE (return on (average) equity)

Liquidity ratios

LCR (Short term measure),

NSFR (Long term measure)

Leverage ratio (Tier I Capital/Total assets) —+— indebtedness

Profitability ratios

ROAA or ROA (return on (average) assets) $ROAA(\%) = \frac{net_profit}{(assets_t + assets_{t+1})/2} * 100$

ROAE or ROE (return on (average) equity) $ROAE(\%) = \frac{net_profit}{(equity_t + equity_{t+1})/2} * 100$

NIM (Net interest margin) $NIM(\%) = \frac{NII}{(i.e.assets_t + i.e.assets_{t+1})/2} * 100$

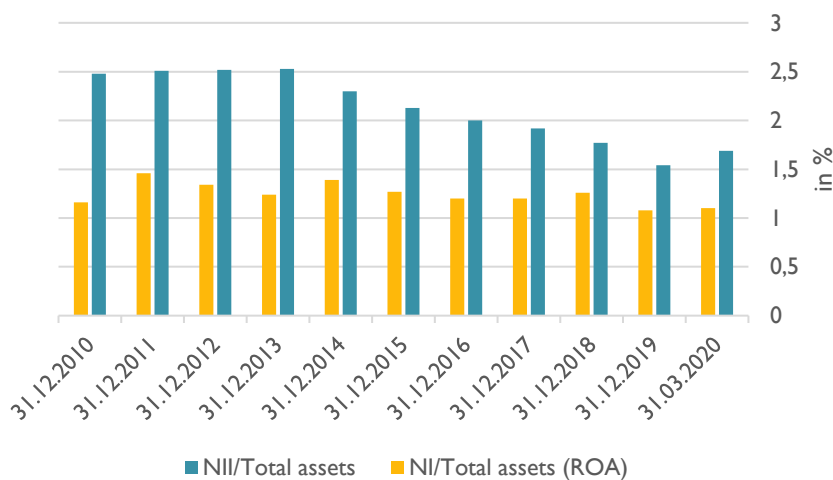
C/I (Cost-income ratio) $C/I = \frac{OPEX}{gross_income}$

ROE decomposition (DuPont decomposition) $ROE = \frac{net_income}{sales} \cdot \frac{sales}{assets} \cdot \frac{assets}{equity}$



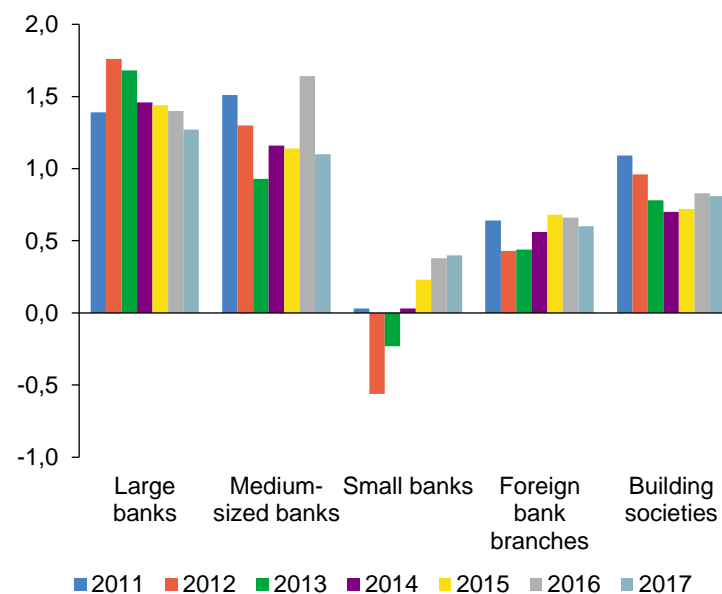
Rentability (RoA)

Profitability in terms of assets



NI – net income
NII – net interest income

RoA

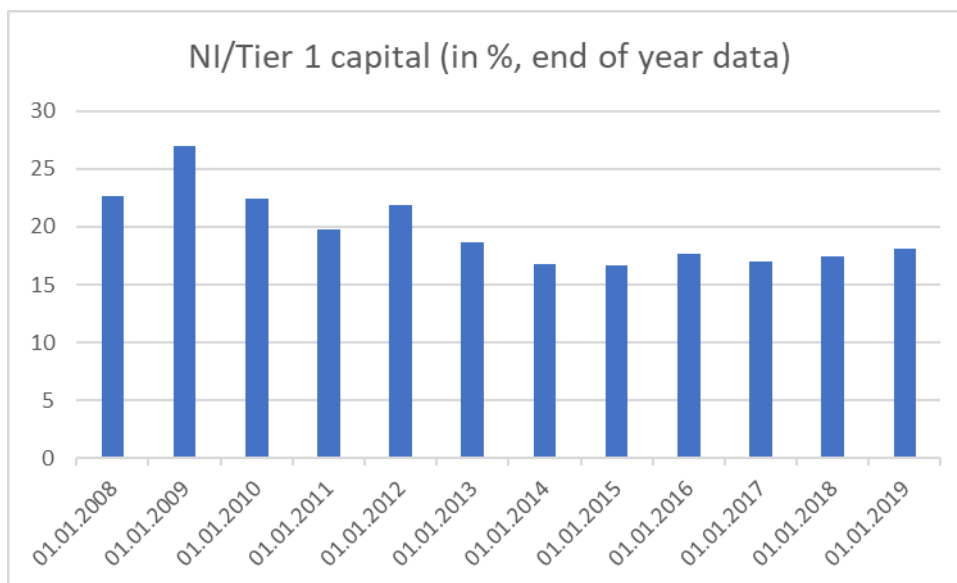


Economies of scale ?

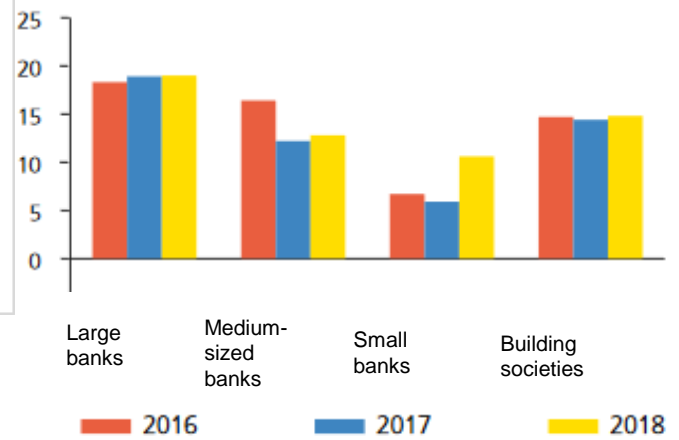
Source: Financial stability report 2017/2018, own calculations based on ARAD database



Rentability (RoE)



RoE (Tier I rentability)



.....and hasn't changed much in 2019

Source: Financial Market Supervision Report, 2018, ARAD database

CONSOLIDATED STATEMENT OF INCOME FOR THE YEAR ENDED 31 DECEMBER 2019



Prepared in accordance with International Financial Reporting Standards
as adopted by the European Union

(CZKm)	Note	2019	2018
Interest income calculated using the effective interest rate method	5	45,693	33,069
Other similar income	5	1,127	695
Interest expense calculated using the effective interest rate method	6	(12,781)	(6,620)
Other similar expense	6	(2,035)	(1,128)
Net interest income		32,004	26,016
Fee and commission income	7	12,374	11,427
Fee and commission expense	7	(3,856)	(3,405)
Net fee and commission income		8,518	8,022
Dividend income		12	10
Net gains / (losses) from financial instruments at fair value through profit or loss and foreign exchange	8	(2,213)	1,850
Net realised gains on financial instruments at fair value through other comprehensive income		1	-
Income from operating lease	9	2,620	2,708
Expense from operating lease	9	(2,467)	(2,624)
Other net income	10	3,929	1,120
Operating income		42,404	37,102
Staff expenses	11	(9,333)	(8,709)
General administrative expenses	12	(7,445)	(7,605)
Depreciation and amortisation	22, 23	(2,256)	(1,455)
Operating expenses		(19,034)	(17,769)
Impairment losses	13	(403)	(983)
on financial assets at amortised cost and at fair value through other comprehensive income (OCI)		(313)	(212)
on other financial and non-financial assets		(90)	(771)
Share of profit of associates and joint ventures	20	218	581
Profit before tax		23,185	18,931
Income tax expense	14	(3,494)	(3,174)
Profit for the year		19,691	15,757

Source: ČSOB
Annual Report 2019

CONSOLIDATED STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2019



Prepared in accordance with International Financial Reporting Standards
as adopted by the European Union

(CZKm)	Note	2019	2018
ASSETS			
Cash, balances with central banks and other demand deposits	16	47,725	38,610
Financial assets held for trading	17	29,017	19,869
Financial assets held for trading pledged as collateral	17	-	1,676
Non-trading financial assets mandatorily at fair value through profit or loss	17	948	643
Financial assets at fair value through other comprehensive income	18	10,007	15,367
Financial assets at fair value through other comprehensive income pledged as collateral	18	6,465	3,286
Financial assets at amortised cost	19	1,459,211	1,223,433
Financial assets at amortised cost pledged as collateral	19	43,007	45,281
Fair value adjustments of the hedged items in portfolio hedge		(4,177)	(3,905)
Derivatives used for hedging	21	9,226	9,376
Current tax assets		194	149
Deferred tax assets	14	367	365
Investment in associates and joint ventures	20	86	4,482
Property and equipment	22	14,417	10,355
Goodwill and other intangible assets	23	11,498	6,350
Non-current assets held-for-sale	24	23	85
Other assets	25	3,053	2,616
Total assets		1,631,067	1,378,038
LIABILITIES AND EQUITY			
Financial liabilities held for trading	26	51,458	33,177
Financial liabilities designated at fair value through profit or loss	26	42,231	26,065
Financial liabilities at amortised cost	27	1,423,115	1,212,589
Fair value adjustments of the hedged items in portfolio hedge		(3,564)	(3,062)
Derivatives used for hedging	21	10,967	10,125
Current tax liabilities		180	818
Deferred tax liabilities	14	940	984
Other liabilities	28	6,340	4,669
Provisions	29	722	657
Total liabilities		1,532,389	1,286,022
Share capital	30	5,855	5,855
Share premium		20,929	20,929
Statutory reserve		18,687	18,687
Retained earnings		52,870	46,136
Revaluation reserve from financial assets at fair value through other comprehensive income	30	561	384
Cash flow hedge reserve	30	(224)	25
Shareholders' equity		98,678	92,016
Non-controlling interests, presented within equity		-	-
Total equity		98,678	92,016
Total liabilities and equity		1,631,067	1,378,038

Both loans and securities purchased

Both deposits and securities issued

Source: ČSOB
Annual Report 2019

KEY FIGURES



Consolidated, EU IFRS ¹⁾

2019

2018

2017

Financial Statements Figures

Balance sheet at the year end (CZK_m)

Total assets	1,631,067	1,378,038	1,315,590
Financial assets at amortised cost/Loans and receivables ²⁾	1,459,211	1,223,433	1,062,201
Deposits received from other than credit institutions	957,221	792,625	744,448
Debt securities in issue	415,818	365,311	350,136
Shareholders' equity ³⁾	98,678	92,016	93,703

Statement of income (CZK_m)

Operating income	42,404	37,102	37,199
– of which Net interest income	32,004	26,016	22,692
– of which Net fee and commission income ⁴⁾	8,518	8,022	7,412
Operating expenses	19,034	17,769	16,252
Impairment on financial assets at amortised cost/loans and receivables	313	214	131
Profit before tax	23,185	18,931	20,969
Profit for the year ³⁾	19,691	15,757	17,517

Ratios (%)

Return on average equity (ROAE) ^{5), 13)}	20.7	17.5	19.3
Return on average assets (ROAA) ^{5), 13)}	1.20	1.07	1.26
Cost / income ratio ^{5), 13)}	44.9	47.9	43.7
Capital adequacy ratio ^{6), 13)}	19.2	18.0	17.2
Leverage ratio ^{7), 13)}	4.04	4.26	4.48
Net stable funding ratio ^{7), 13)}	161.5	161.4	146.0
Loan-to-deposit ratio ^{5), 13)}	79.4	76.3	77.7

General Information (as at 31 December 2019)

Number of employees – the ČSOB group ⁸⁾	8,626	8,318	8,299
Number of clients – the ČSOB group (in millions) ⁹⁾	4.241	4.268	4.306
Number of branches – the Bank ¹⁰⁾	225	235	270
Number of ATMs ¹¹⁾	1,068	1,063	1,070

ČSOB's Credit Rating ¹²⁾ (as at 31 December 2019)

Rating Agency	Long-term Rating	Outlook	Short-term Rating	Long-term Rating valid since
Moody's	A1	stable	P-1	21 November 2018
Standard & Poor's	A+	stable	A-1	30 July 2018

Source: ČSOB

Annual Report 2019