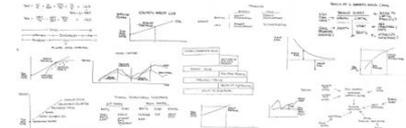


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# Loan Loss Provisions

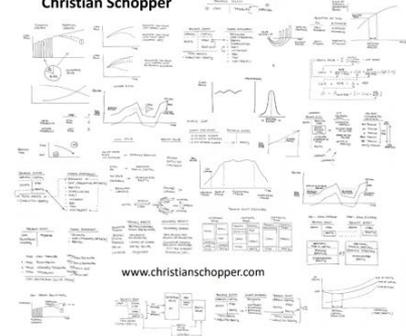
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## Credit Risk

Credit risk is the potential for loss due to **failure** of a borrower to **meet** its **contractual obligation** to repay a debt in accordance with the agreed terms

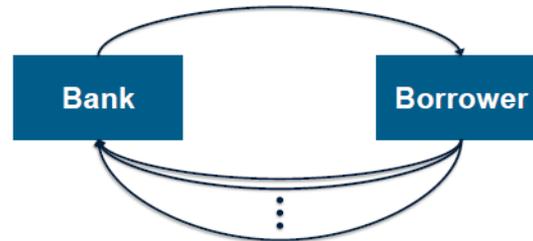
- Commonly also referred to as **default risk**
- **Credit events** include: Bankruptcy, failure to pay, loan restructuring, loan moratorium, accelerated loan payments
- For banks, credit risk typically resides in the assets in its banking book (loans and bonds held to maturity)
- Credit risk can arise in the trading book as counterparty credit risk

- **Market risk** is the potential loss due to changes in market prices or values
  - Assessment **time horizon: typically one day**
- **Credit risk** is the potential loss due to the nonperformance of a financial contract
  - Assessment **time horizon: typically one year**
  - Credit risk is generally more important than market risk for banks
  - Many credit risk drivers relate to market risk drivers, such as the impact of market conditions on default probabilities
  - Differs from market risk due to obligor behavior considerations
  - **The five “C’s” of Credit** — Capital, Capacity, Conditions, Collateral, and Character
- Both credit and market risk models use historical data, forward looking models and behavioral models to assess risks

## Credit Risk – A Simple Loan

Contractually, how a loan should work:

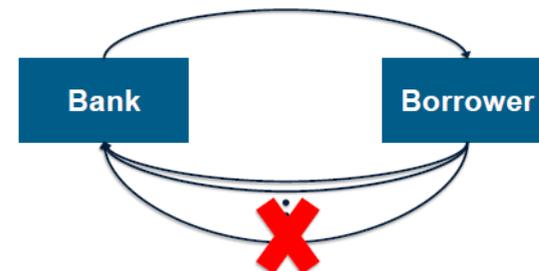
1. Bank loans borrower \$V



2. Borrow repays loan across time with periodic payments

Credit risk arises because there is the possibility that the borrower will not repay the loan as obligated

1. Bank loans borrower \$V



2. Borrow fails to repay loan across time with periodic payments

## Credit Products

### Loans

- A contractual agreement that outlines the **payment obligation from the borrower to the bank**
  - May be secured with either **collateral** or **payment guarantees** to ensure a reliable source of secondary repayment in case the borrower defaults
  - Often written with **covenants** that require the loan to be repaid immediately if certain adverse conditions exist, such as a drop in income or capital
- Generally reside in the bank's banking book or **credit portfolio**
  - Although banks may sell loans another bank or entity investing in loans

### Bonds

- A publicly traded loan — an **agreement between the issuer and the purchasers**
  - Collateral support, payment guarantees, or secondary sources of repayment may all support certain types of bonds
  - **Structuring characteristics** that determine a bond investor's potential recovery in default
- Generally reside in the bank's **trading book**

## The 6 Credit P's

The 6 Credit P's allow to evaluate the following to ascertain the current creditworthiness of a loan

- People
- Purpose
- Protection
- Payment
- Problem
- Prospects

## The 6 Credit P's (cont'd)

### **People** *Who is the borrower?*

- Type of business/industry
- Organizational structure
- Management quality and depth
- Payment history with your institution
- Information from other lenders/parties

### **Purpose** *What will the money be used for?*

- Underlying borrowing cause
- Purchase specific assets
- Fund working capital needs
- Asset based lending
- Refinance other debt
- Is the purpose legitimate?
- Does loan structure correlate with purpose?

### **Protection** *What is the collateral and what is worth?*

- If there is a lien, has it been perfected?
- What is the lien position?
- What is the liquidation value?
- Marketability of collateral?
- Access/Control issues?

### **Payment** *Borrower's ability to pay?*

- Terms of the loan
- Sources of repayment
- Cash flow from operations
- Guarantor support
- Other sources and uses (global cash flow?)
- Delinquency status is only one indicator of repayment capacity

### **Problems** *Are there well defined weaknesses that jeopardize loan repayment?*

- If repayment concerns exist, what is the underlying cause?
- Are problems temporary or permanent?
- Have underwriting or credit administration weaknesses contributed to loan deterioration?

### **Prospects** *What steps is the bank or borrower planning to take to address the loan's weaknesses?*

- What does borrower plan to do to resolve issues?
- If problem is temporary, will a loan restructuring improve prospects for repayment?
- What are the bank's intentions going forward?
- Are the borrower's problems permanent or are they correctable?

## The Importance of Loan Loss Provisions

- For most commercial banking institutions the **loan portfolio is the main asset to generate income**. Therefore, it is key understand:
  - Change in quality of loan portfolio
  - Impact of change in quality of loan portfolio on profit & balance sheet
- **Keeping the loans that are not going to be repaid** in the accounting book can show **overestimation** of the size of loan portfolio ...
- ... and save an institutions from declaring a large amount of loans unrecoverable all at once, thereby drastically reducing as assets
- A **loan loss provision** acts as a “**shock absorber**” to offset probable future losses, by increasing the loan loss reserve
  - A loan loss provision is the amount expensed on the Income Statement
  - A loan loss reserve is an account that represents the amount of principal that is not expected to be recovered. It is a negative asset on the balance sheet
- The process of **recognizing an uncollectable loan** is called a **write-off**
  - Loan losses are written off against loan loss reserves and are also removed from the outstanding portfolio. It means that they decrease the reserve and the outstanding portfolio

## The Importance of Loan Loss Provisions (cont'd)

- **Non-performing loans and loan loss provisions** have generally been considered to be the main **transmission channels of macroeconomic shocks** to banks' balance sheets
- **Provisions** represent an important quantitative **indicator** of the **credit quality** of loan portfolios
- Banks take them in **anticipation of potential losses** and they are a key contributor to fluctuations in bank earnings and capital
- In effect, loss provisions constitute a **tool for adjusting the historical value of loans to reflect their true value**

## Loan Classifications

**Loan classifications are expressions of different degrees of a common factor, risk of nonpayment**

- Loans not adversely classified
  - Pass
  - Special Mention
- Adversely classified loans
  - Substandard
  - Doubtful
  - Loss

***Non-performing loans* are usually defined as banks' loans overdue for more than ninety (90) days**

## Loan Classifications (cont'd)

### Substandard

- Loans classified Substandard are **inadequately protected** by the current sound worth and paying capacity of the obligor or of the collateral pledged, if any
- Loans so classified must have a well defined weakness or **weaknesses that jeopardize the liquidation** of the debt
- Distinct **possibility** that the **bank will sustain some loss** if the deficiencies are not corrected

### Doubtful

- Loans classified Doubtful have all of the weaknesses inherent in those classified Substandard with the added characteristic that the weaknesses make **collection or liquidation in full**, on the basis of currently known facts, conditions and values, **highly questionable and improbable**

### Loss

- Loans classified Loss are **uncollectible** and of such little value that their continuance as a bankable asset is not warranted
- This classification does not mean that the loan has absolutely no recovery or salvage value but rather that it is **not practical** or desirable **to defer writing off this basically worthless asset** even though partial recovery may be effected in the future

## Example: Classification of a Loan Portfolio by Aging Analysis

Class	Provision Percentage
On time loans	0%
Loans overdue for < 30 days	5%
Loans overdue between 31-60 days	10%
Loans overdue between 61-90 days	25%
Loans overdue between 91-180 days	50%
Loans overdue between 181-365 days	75%
Loans overdue for above 365 days	100%

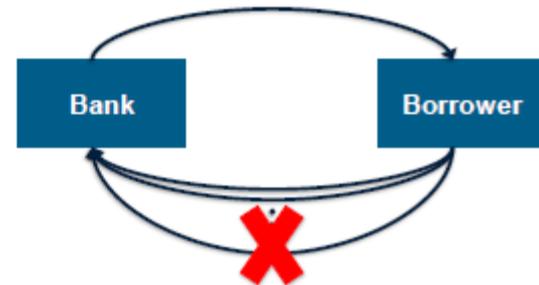
Class	Outstanding loan Portfolio	Provision Rate	Loan loss Provision
On time loans	500000	0%	0
Loans overdue for < 30 days	100000	5%	5000
Loans overdue between 31-60 days	50000	10%	5000
Loans overdue between 61-90 days	25000	25%	6250
Loans overdue between 91-180 days	15000	50%	7500
Loans overdue between 181-365 days	10000	75%	7500
Loans overdue for above 365 days	5000	100%	5000
Total	705000		36250
Provision Rate	$=36250/705000=5.41\%$		

## Estimating Credit Losses

- Most familiar risk metric is often
  1. The **adequacy of general and specific loan loss provisions**, and
  2. The size of the general and specific loan loss reserve **in relationship to the total exposures** of the bank
    - Allowance for loan losses creates a **cushion** of credit losses in the bank's credit portfolio
    - Primarily intended to **absorb** the bank's expected loan **losses**
- **Historically** credit decisions were made in a **case by case** basis
- Growing sophistication and automation of lending and the increasing complexity of credit products have spawned the **development of computational approaches to credit assessment and evaluation** of individual retail and commercial borrowers
  - Introduction of bank-wide credit risk software has accelerated
  - In part driven by regulatory pressures, as regulators demanded improved analysis and oversight of the risk assessment process

## Estimating Credit Losses – Common Measures

- **Probability of Default (PD)**
  - The likelihood that the borrower will fail to make full and timely repayment of its financial obligations
- **Exposure At Default (EAD)**
  - The expected value of the loan at the time of default
- **Loss Given Default (LGD)**
  - The amount of the loss if there is a default, expressed as a percentage of the EAD
- **Recovery Rate (RR)**
  - The proportion of the EAD the bank recovers



## Estimating Credit Losses – Expected Loss

- Banks are expected to hold reserves against expected credit losses which are considered a cost of doing business
- The most basic model of expected loss considers two outcomes: default and non-default.
  - In the event of non-default, the credit loss is 0.
  - In the event of default, the loss is loss given default (LGD) times the current exposure (EAD)

<u>Event</u>	<u>Loss</u>	<u>Probability</u>
No default	0	1 - PD
Default	LGD x EAD	PD

$$\text{Expected Loss} = (1 - \text{PD}) \times 0 + \text{PD} \times \text{LGD} \times \text{EAD} = \text{PD} \times \text{LGD} \times \text{EAD}$$

## What determines banks' provisioning practices?

### Expansionary Phase

- Corporate profits improve
- Collateral values rise
- Households form optimistic expectations about their future finances
  
- Acceleration of banks' lending activities
- Gradual loosening of credit standards
- Reduction of provisions for future losses
  
- May even take the form of "negative NPV" strategies ...
  - Lower interest charges ...
  - ... and/or increased lending to low-credit quality borrowers

### Economic recession

- Rise of unemployment
- Decline in household and corporate incomes hinder the debt servicing capacity of borrowers
  
- Rise in problem loans
- Decline in collateral values
- Serious tightening of credit conditions
- Banks become increasingly unwilling to extend new loans
  
- Environment characterized by increased information asymmetries with respect to the actual credit quality of borrowers
- Notable deterioration in banks' balance sheets due to the incipient rise in non-performing exposures

## What determines banks' provisioning practices? (cont'd)

### Economic Upturns

#### Principal-agent problem

- Goal is to obtain a reasonable return on equity for shareholders
- Managers may engage in riskier activities and put more emphasis on their own rewards
- May be based more on growth objectives than on profitability targets
- Hence: Managers may have incentives to increase loans growth, even in periods of declining profitability

#### Herd behavior

- Banks are encouraged to increase loans volume to preserve market share

#### Focus on short-term objectives

## What determines banks' provisioning practices? (cont'd)

### Provisioning Practices

- May differ considerably across countries and institutional arrangements and be greatly influenced by existing accounting and taxation rules

#### General provisions

- Generally taken against expected losses on non-impaired loans
- Are based on a probabilistic (and judgmental) assessment of the future evolution of the quality of the credit portfolio
- May be subject to a discretionary assessment on the part of bank managers
- This, in turn, increases the risk of accounts manipulation and ...
- ... explains why regulatory authorities have set up rules for this particular class of provisions

#### Specific provisions

- Made only when losses are known to occur and are somewhat akin to write-offs
- Are generally taken against loan losses that are known to materialize
- This reduces the risk of accounts manipulation ...
- ... but potentially contributes to the amplification of the business cycle

## What determines banks' provisioning practices? (cont'd)

**Use of provisioning for purposes may not be directly related to the need to adjust the value of loans to more realistic levels ...**

### Earnings management

- Provisions may be increased in good times for use in lean years ...
- ... so as for banks to be able to report a more stable income stream
- Usually a good indication of performance from the perspective of stock price stability, credit ratings, cost of funds and management rewards

### Capital ratio management

- ... particularly if general provisions account as regulatory capital
- Frequently, banks with a small capital ratio increase loan loss provisions with the intention to reduce the regulatory costs imposed by capital requirements

### Taxation rules

- In countries in which general provisions are tax deductible, there may be a strong incentive for banks to increase general provisions

## What determines banks' provisioning practices? (cont'd)

**There is a general agreement that unexpected loan losses should be covered by bank capital, ...**

**... whereas expected losses by loan loss provisions**

- As a result, cyclical capital shortages may not only be due to inadequate risk based capital regulation ...
- ... but most prominently to the lack of risk based regulation of banks' provisioning policies
- Given this close relation between provisions and capital, a number of studies have argued that a sound provisioning policy should be part of any regulations on capital requirements
  - For instance, the lack of a coherent and internationally accepted regulation of provisions, as is the case in many emerging markets, reduces the usefulness of minimum capital regulation

## Loan Portfolio Quality Analysis

- An outstanding portfolio is defined as the principal amount of loan balances outstanding
- The **major risk factor** in the portfolio is **not the payments** that are **past due**, ...
- ... **but** rather the **outstanding balance of loans with payments past due**
  - Payments past due can be seen as a warning sign that a particular borrower is in difficulty and that the borrower may be unable to repay the remaining balance of the loan. The entire outstanding balance is thus at risk

**Common:**

$$\text{Amount Past Due} = \frac{\text{Amount past due}}{\text{Outstanding portfolio}}$$

**Better:**

$$\text{Portfolio At Risk (PAR)} = \frac{\text{Unpaid principal balance of all loans with late payments}}{\text{Outstanding portfolio}}$$

## Portfolio Quality and Loan Collection Ratios

Indicator	Ratio	Measurement answers the questions:
Portfolio at Risk (PAR) by Age*	$\frac{\text{Unpaid principal balance of all loans with payments at least (1, 31, 61 days) past due}}{\text{Outstanding portfolio}}$	How much could you lose if all late borrowers default? Aging separates more risky loans from less risky. (The longer a loan goes unpaid, the higher the risk it will never be paid.)
Arrears Rate Past Due Rate	$\frac{\text{Amount past due}}{\text{Outstanding portfolio}}$	How commonplace is nonpayment? Measures amount of loan principal that is due but not paid.
Repayment Rate	$\frac{\text{Amount received (current and past due) - prepayments}}{\text{Total amount due this period + Amounts past due from previous periods}}$	Shows amount paid compared to amount due/expected during a specific period. Does not provide useful information about the performance of the outstanding portfolio.
Current Recovery Rate	$\frac{\text{Amount received this period (P or P+I)**}}{\text{Amount due this period (P or P+I) under original loan terms}}$	Fluctuates from month to month. Is meaningful only for longer periods. Can be processed algebraically to predict eventual loan loss rates.
Annual Loan Loss Rate*	$\frac{\text{Amount of loans written off as unrecoverable}}{\text{Average outstanding portfolio}}$	Useful in interest rate setting. Costs of default, must be balanced by higher interest income.

Note: Portfolio at Risk (PAR) and Annual Loan Loss Rate are the preferred ratios for analyzing portfolio quality. The other ratios are more limited as noted in the Measurement column.

\*See CGAP Occasional Paper No. 3, Measuring Microcredit Delinquency: Ratios Can Be Harmful to Your Health.

\*\* P = principal, I = interest.

## Rationale for Loan Loss Provisions and Reserves

Loan Loss Reserve	Loan Loss Provision	Loan Losses or Write-Offs
<ul style="list-style-type: none"> <li>• An account that represents the amount of outstanding principal that is not expected to be recovered by a micro-finance organization</li> <li>• Negative asset on the balance sheet that reduces the outstanding portfolio. (An alternative presentation is to show it as a liability.)</li> </ul>	<ul style="list-style-type: none"> <li>• Amount expensed on the income and expenses statement.</li> <li>• Increases the loan loss reserve</li> </ul>	<ul style="list-style-type: none"> <li>• Occur only as an accounting entry.</li> <li>• Do not mean that loan recovery should not continue to be pursued.</li> <li>• Decrease the reserve and the outstanding portfolio.</li> </ul>

Source: Joanna Ledgerwood. *Financial Management Training for Microfinance Organizations*, CALMEADOW, 1996.

## Accounting for Loan Loss Provisions and Write-Offs

Starting on 12/31/2009, the bank has 5,000 in loans on the balance sheet and 100 in the loan loss reserve account (contra-asset). So, net loans are 4,900:

Loans 5,000 - Loan Loss Reserve 100 = Net Loans 4,900

On 5/25/2010, a loan in the amount of 5 becomes totally uncollectible and is written off:

Debit: Loan Loss Reserve 5

Credit: Loans 5

Now, net loans are still 4,900 (4,995-95)

On 8/10/2010, a loan in the amount of 20 becomes totally uncollectible and is written off:

Debit: Loan Loss Reserve 20

Credit: Loans 20

Now, net loans are still 4,900 (4,975-75)

\*Loan Loss Provision is an expense on the income statement for 2010.

As of 12/31/2010, bank management estimates that the loan loss reserve should be 120, so the loan loss reserve account must be increased by 45 (from 75 to 120):

Debit: Loan Loss Provision\* 45

Credit: Loan Loss Reserve 45

Now, net loans are 4,855 (4,975- 120). The decrease in net loans over the year of 45 results from write-offs of 25 and a net increase in the reserve of 20.

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**Appendix**

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## Russia – Key Banking Sector Indicators

Credit institutions grouped by assets (in descending order) as of 29.02.2016

	1-5	6-20	21-50	51-200	201-500	501-718	Total
<b>Assets</b>							
Assets (liabilities)	45,455,735	18,321,945	9,156,732	8,160,665	1,933,686	221,504	83,250,267
Loans to non-financial institutions	20,978,077	6,701,094	3,143,258	2,282,605	639,377	71,575	33,815,984
Loans to resident financial institutions (except credit institutions)	667,998	743,200	165,745	136,528	25,412	1,003	1,739,885
Loans to individuals	5,877,503	1,876,544	1,171,953	1,431,644	223,814	21,433	10,602,891
Unsecured consumer loans (portfolio of homogenous loans)	2,678,136	1,311,814	774,579	674,392	65,481	5,484	5,509,886
<b>Capital and financial performance</b>							
<b>Equity capital</b>	4,852,434	2,103,011	688,726	1,033,163	342,460	72,997	9,092,979
Capital adequacy N1.0, %	11	14	8	14	19	37	12
Profit for the current year	93,440	8,407	-14,049	-4,727	-686	203	82,588
Return on assets, %	1	0	-1	1	0	1	0
Return on equity, %	9	1	-12	4	3	3	4
<b>Liabilities</b>							
Individuals' deposits	13,434,383	3,812,128	2,469,048	2,417,069	783,928	53,950	22,970,506
Loans received from the Bank of Russia	3,096,569	527,037	291,505	212,529	32,850	214	4,160,705

## Russia – Key Banking Sector Indicators (cont'd)

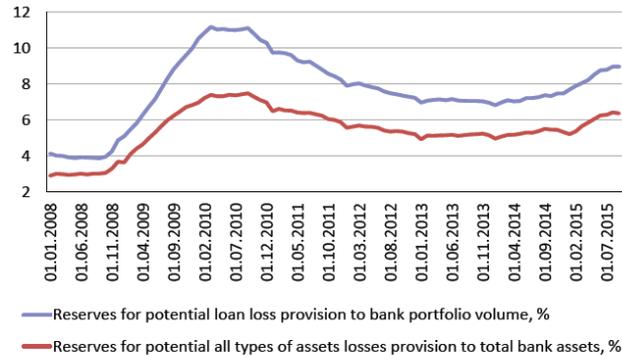


Fig. 1. Indicators of bank assets quality, %

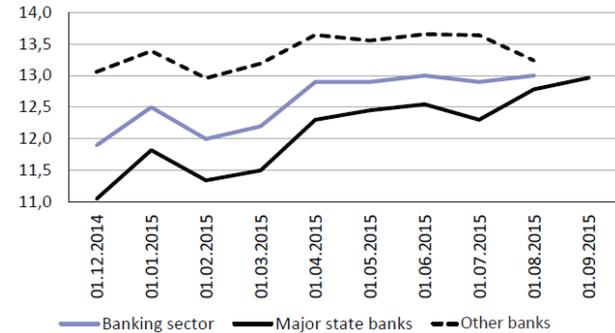


Fig. 3. Capital adequacy ratio in the banking sector, state and other banks, %

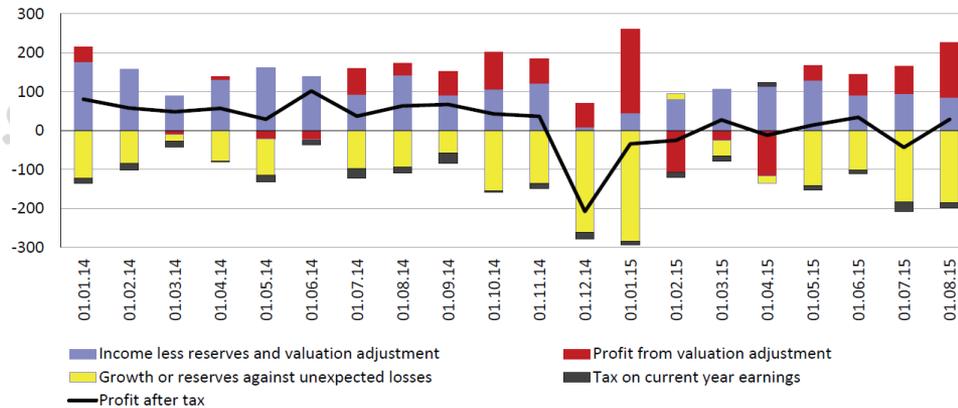


Fig. 2. The main components of the banking sector financial results, Rb billion

## Russia – Key Banking Sector Indicators (cont'd)

### Key banking sector indicators

Balance sheet data	2008	2009	2010	2011	2012
Total assets (EUR mn)	676,189	678,293	838,138	998,949	1,238,697
growth in % yoy	20.7	0.3	23.6	19.2	24.0
in % of GDP	67.9	75.8	73.0	74.6	79.4
Total loans (EUR mn)	398,805	371,425	449,946	558,325	693,248
growth in % yoy	16.6	(6.9)	21.1	24.1	24.2
in % of GDP	40.0	41.5	39.2	41.7	44.4
Loans to private enterprises (EUR mn)	301,867	289,057	348,669	425,119	499,671
growth in % yoy	16.4	(4.2)	20.6	21.9	17.5
in % of GDP	30.3	32.3	30.4	31.7	32.0
Loans to households (EUR mn)	96,938	82,368	101,277	133,206	193,577
growth in % yoy	17.2	(15.0)	23.0	31.5	45.3
in % of GDP	9.7	9.2	8.8	9.9	12.4
Mortgage loans (EUR mn)	30,650	27,214	32,119	38,992	52,838
growth in % yoy	80.2	(11.2)	18.0	21.4	35.5
in % of GDP	3.1	3.0	2.8	2.9	3.4
Loans in foreign currency (EUR mn)	98,704	88,157	99,615	114,462	118,308
growth in % yoy	26.9	(10.7)	13.0	14.9	3.4
in % of GDP	9.9	9.9	8.7	8.5	7.6
Loans in foreign currency (% of total loans)	25	24	22	21	17
Total deposits (EUR mn)	354,609	393,260	520,161	622,019	748,058
growth in % yoy	4.2	10.9	32.3	19.6	20.3
in % of GDP	35.6	44.0	45.3	46.5	47.9
Deposits from households (EUR mn)	142,540	172,512	243,423	284,881	356,550
growth in % yoy	(0.7)	21.0	41.1	17.0	25.2
in % of GDP	14.3	19.3	21.2	21.3	22.9
Total loans (% of total deposits)	112	94	87	90	93
<b>Structural information</b>					
Number of banks	1,108	1,058	1,012	978	956
Market share of state-owned banks (% of total assets)**	44	45	46	52	53
Market share of banks over 50% foreign-ownership (% of total assets)*	17.3	18.3	18.0	16.9	17.8
Market share of 100% foreign-owned banks (% of total assets)**	10.9	9.0	8.6	8.3	7.9
Market share of 100% foreign-owned banks (% of total loans)**	10.7	8.2	8.1	8.2	7.6
<b>Profitability and efficiency</b>					
Return on Assets (RoA %)	1.8	0.7	1.9	2.4	2.3
Return on Equity (RoE %)	13.3	4.9	12.5	17.6	18.2
Capital adequacy (CAR % of risk weighted assets)	16.8	20.9	18.1	14.7	13.7
Non-performing loans (% of total loans)	2.5	6.2	5.7	5.0	4.8

\* As reported by the CBR, \*\* Raiffeisen RESEARCH estimate; Source: CBR, RBC-Rating, Raiffeisen RESEARCH

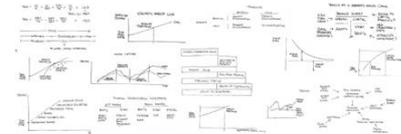
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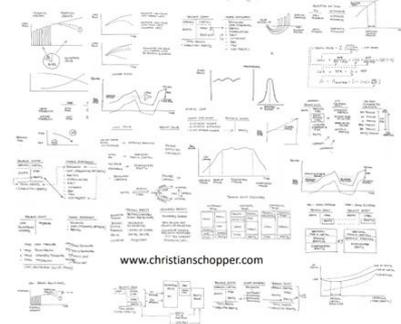
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