Relationship between liquidity ratios and profitability in Russian banks using regression analysis

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Research questions

1. What is the nature of the relationship between liquidity level and bank profitability?

2. How the relationship between liquidity level and bank profitability in period of stable economic situation in a country differ from that in period of liquidity crisis?

Methodology

- ***A sample design*** – stratified random sampling;
- ***Data collection method -*** documentary secondary data from annual report of commercial banks;
- ***Method of analysis*** - the regression analysis

Hypotises

1. There is a significant reverse relationship between liquidity level and bank profitability. The excess of liquid assets leads to decrease of bank profitability.
2. Bank's liquidity ratios are close to the normative coefficients established by Central bank of Russia in periods of stable economic situation in a country. Bank's liquidity ratios are higher than the normative coefficients during a period of liquidity crisis.

1. Introduction
1.1. Methodology
1.2. Assumptions

2. Basic definitions
2.1. Bank liquidity risk
2.2. Liquidity risk management
2.3. Liquidity ratios
2.4. Profitability ratios
2.5. Regression analysis

3. Setting up the model
3.1. Gathering the data
3.2. Regression analysis with use of MO Excel

4. Conclusion

Liquidity ratios

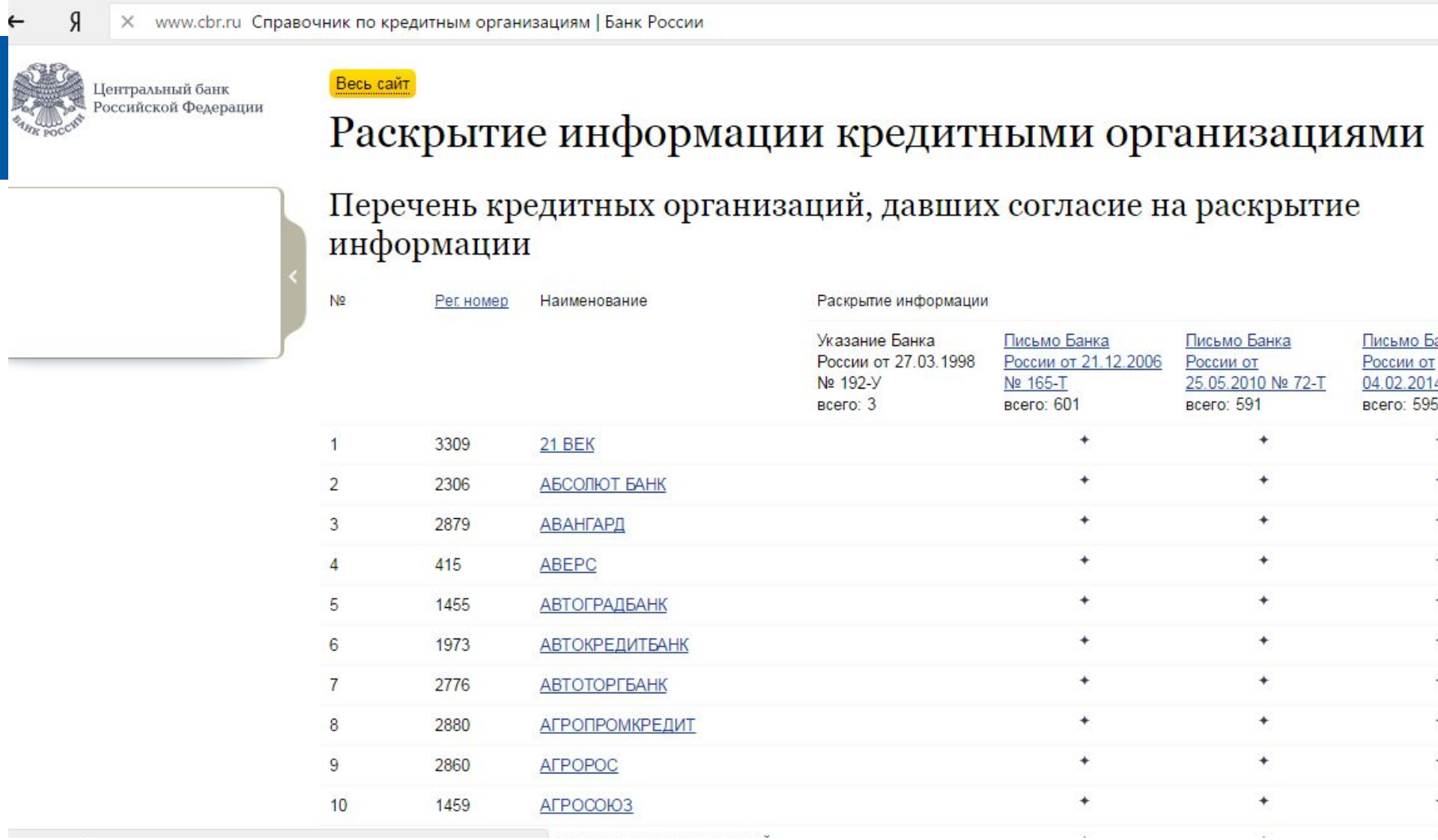
1. Quick liquidity ratio = high liquid assets (1 day) / liabilities without term

2. Current liquidity ratio = liquid assets (30 days) / current liabilities (30 days)

3. Long-term liquidity ratio = credits with maturity date > 1 year / equity and liabilities with maturity date > 1 year

Example of data

Banks	quick liquidity ratio,%	current liquidity ratio,%	long term liquidity ratio,%	ROE,%	after tax profit	equity
Sberbank	110	151	165	10,15	236256	2328156
VTB	61	99	58	3,79	48580	1282028
Gazprombank	50	151	52	-8,33	-34365	412370
VTB 24	84	118	78	0,26	461	179100
Otkritie	274	113	79	1,83	2303	126034
Rosselhoz	148	285	67	-29,61	-69207	233712
Alphabank	132	162	54	21,89	49591	226554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Центральный банк Российской Федерации
Весь сайт
Раскрытие информации кредитными организациями
Перечень кредитных организаций, давших согласие на раскрытие информации
№
Рег. номер
Наименование
Раскрытие информации
Указание Банка России от 27.03.1998 № 192-У всего: 3
Письмо Банка России от 21.12.2006 № 165-Т всего: 601
Письмо Банка России от 25.05.2010 № 72-Т всего: 591
Письмо Ба России от 04.02.2014 всего: 595
1 3309 21 ВЕК
2 2306 АБСОЛЮТ БАНК
3 2879 АВАНГАРД
4 415 АВЕРС
5 1455 АВТОГРАДБАНК
6 1973 АВТОКРЕДИТБАНК
7 2776 АВТОТОРГБАНК
8 2880 АГРОПРОМКРЕДИТ
9 2860 АГРОРОС
10 1459 АГРОСОЮЗ

Regression analysis

The function for this study is given as:

$Y = b0 + b1X1 + b2X2 + b3X3 + e$

Where:

Y = Profitability representing the dependent variable;

b0, b1, b2, b3 are regression parameters;

X1 , X2 , X3 are independent variables;

X1 – quick liquidity ratio;

X2 – current liquidity ratio;

X3 – long-term liquidity ratio

ROE	quick liquidity ratio	current liquidity ratio	long term liquidity ratio
10,15	110	151	165
3,79	61	99	58
-8,33	50	151	52
0,26	84	118	78
1,83	274	113	79
-29,61	148	285	67
21,89	132	162	54

ROE

C	D	E	F
10,15	110	151	165
3,79	61	99	58
-8,33	50	151	52
0,26	84	118	78
1,83	274	113	79
-29,61	148	285	67
21,89	132	162	54

ВЫВОД ИТОГОВ

Регрессионная статистика

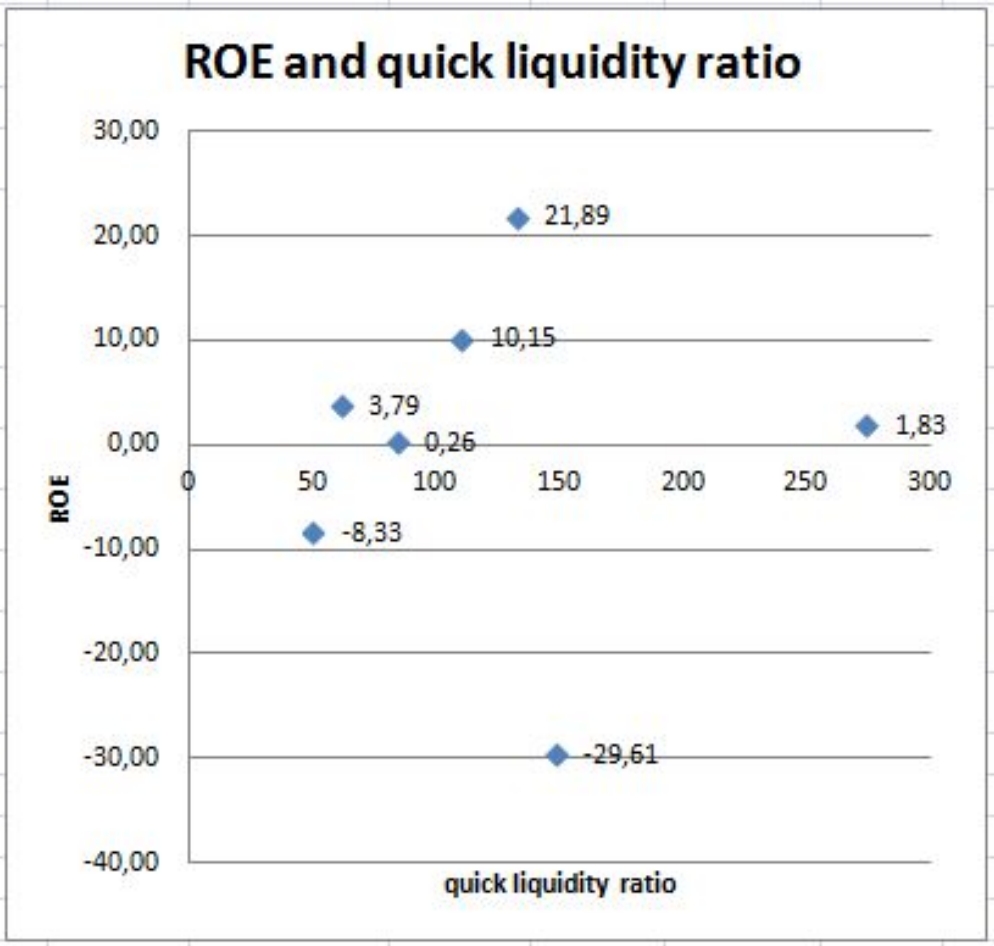
Множественны	0,69292
R-квадрат	0,48014
Нормированный R-квадрат	-0,03972
Стандартная с	16,3687
Наблюдения	7

Дисперсионный анализ

	df	*SS*	*MS*	*F*	*начимость F*
Регрессия	3	742,397	247,4656	0,9236	0,5252782
Остаток	3	803,808	267,9359		
Итого	6	1546,2			

	Коэффициенты	*Стандартная ошибка*	*t-статистика*	*P-Значение*	*Нижние 95%*	*Верхние 95%*	*Нижние 95,0%*	*Верхние 95,0%*
Y-пересечение	19,6646	24,1387	0,8147	0,4749	-57,1554	96,4847	-57,1554	96,4847
quick liquidity	0,0064	0,0890	0,0723	0,9469	-0,2768	0,2897	-0,2768	0,2897
current liquidi	-0,1704	0,1079	-1,5794	0,2124	-0,5137	0,1730	-0,5137	0,1730
long term liqui	0,0735	0,1704	0,4312	0,6955	-0,4690	0,6159	-0,4690	0,6159

x quick liquidity ratio	y ROE
110	10,15
61	3,79
50	-8,33
84	0,26
274	1,83
148	-29,61
132	21,89



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Thank you for attention!