PRECONDITIONS OF THE EUROZONE ECONOMIC SECURITY: HOW TO OVERCOME LIQUIDITY RISK AND COST INEFFICIENCY IN LEADING BANKS OF UK AND GERMANY

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Abstract: Among many factors affecting economic security of the Eurozone, performance of banks play especially important role. The aim of this study is to investigate factors influencing performance of banking sector in UK and Germany. Performance is being estimated using indicators of liquidity and cost efficiency in the biggest banks of both indicated countries. For analysis data of eight banks from each country have been used, two periods of years 2009-2010, and 2012-2014 have been distinguished. Fixed effect model has been employed. The obtained results revealed some significant relationships. Specifically, liquidity is negatively influenced by interest margin in banking sector of both countries during both considered periods, what initiated more active lending. That, in its turn, reduced banks' liquidity and conditioned lower margins. Bank size did affect liquidity (loan to asset ratio) neither in UK, nor in Germany. Obtained results can be used for respective policy implications directed to sustaining better performance of banks, and therefore for increased economic security of the Eurozone economies

Key words: economic security, liquidity, cost efficiency, net interest margin, credit risk, profitability financial leverage, UK, Germany

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Introduction

Economic security of Eurozone depends on wide array of factors. Financial performance of individuals, companies, stock exchanges, banks etc. is among factors, which can seriously affect economic security of any country. Those questions are widely discussed in the contemporary literature (e.g. Michailova et al. 2017; Masood et al. 2017; Peker et al. 2017; Tkacova et al. 2018; Peterlin et al. 2018; Ashraf et al. 2018; Mentel et al. 2016; Aktan et al. 2018; Medaiskis et al. 2018; Osipov et al. 2018; Manuylenko et al. 2018; Mackevičius et al. 2018; Shvetsova et al. 2018; Ahmed et al. 2018; Włodarczyk et al. 2018). The purpose of this study is to reveal factors, which impact liquidity level and cost efficiency in UK and German commercial banks. The empirical analysis has been performed using data of 8 biggest banks from United Kingdom and 8 biggest banks from Germany. The period of analysis is 2008 to 2016. According classics, high values

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of liquidity indicator signal about underuse of available funds (e.g Smith, 1980), what, naturally, means that performance is not efficient enough. On the contrary, too low values of liquidity indicators would mean that banks could encounter with lack of funds, needed for financing of companies (e.g. Webb, 2000), what would cause inefficiencies of different character. The study discusses issues related to liquidity level of banks. In order to tackle considered issues there were numerous changes in regulations of banking sectors in various countries (Casu et al. 2006, Teresienė 2018; Narkunienė, Ulbinaitė. 2018). Main problems to discuss here are that, since the financial crisis, banks of United Kingdom moving more slowly than their European competitors in their recovery and despite their struggles to cut costs and restructure, they are not expected to close the gap for years and they may never be as profitable as they were before the financial crisis (Martin 2016). During the last five years banking sector suffered a lot because of turbulence in financial markets caused by an array of factors, mostly related to lack of responsibility of banks' management and improper regulation, which was not able to curb this lack of responsibility. Globalization played its role, of course. Aim of this study is to explore factors, impacting liquidity indicators of banking sectors of considered countries. The results, we believe, would could be practically beneficial for the formulating respective financial policy implications. This paper is divided into four headings. 2nd Heading section will give the literature review of studies devoted to the analysis of issues related to liquidity, which ultimately affects efficiency of performance of any bank, and a whole banking sector of any country. 3rd Heading demonstrates the research methodology of the paper. 4th heading section will give empirical findings and 5th heading section finally concludes with suggestions as well.

Literature Review

There is a lot of literature in the area of financial performance evaluation of companies. The banks are not exception. Indicator of ROA (return on assets is the classic, one of basic indicators of performance of any profit seeking company). Besides similarity with other profit seeking entities, banks have their uniqueness. This uniqueness receives a lot of attention in scientific literature. Hence, according to Cucinelli, the banks, which have a portfolio of assets of higher quality, manage liquidity better in short-term time horizon (Cucinelli 2013). Other scientists claim that liquidity indictor is affected by bad loans and interest rates on loans and interbank transaction (Vodova 2011; Vodova 2013). Cost inefficient banks may tend to have high non-performing loans due to bad management, bad luck, skimping or moral hazard. Fundamentally, the bad luck hypothesis reverted to exogenous factors comprising operating conditions. Also, credit risk was attributed to poor management practices reflected in reduced cost efficiency and poor underwriting and monitoring practices (Berger and DeYoung 1997). Naceur and Omran discussed that bank's net interest margin and cost efficiency were affected by individual bank characteristics such as credit risk and capital (Naceur and

Omran 2011). At the end it is hypothesized that credit risk has impact on liquidity and cost efficiency of banks. Vodova (2011), in her paper on determinants of liquidity of Czech banks during years 2001 to 2009, claim that there is very weak relationship between size and liquidity indicator. Other scientists, such as Nguyen, Skully, & Perera (2012), in a study on a sample of 47684 banks in 113 different countries, analysed the relationship between liquidity risk and bank market power, and found that bigger banks, through lower capitalization and cost efficiency, endured a lower liquidity risk. In her later study, Vodova (2013) found that there might be negative relationship between bank size and liquidity level. Other scientists found an opposite results (Mehdi and Abderrassoul 2014).

The relative efficiency of UK clearing bank branches was assessed by Drake and Howcroft in 2002 by using DEA method. They utilized the basic efficiency indices and extended the analysis by examining the relationship between size and efficiency. At the end it is hypothesized that bank size has impact on liquidity and cost efficiency of banks. Another scientists (e,g. Ghosh et al. 2003) point attention to interrelations between efficiency, liquidity and profitability of banks. Mesa et al. (2014) examined the main determinants influencing bank efficiency in European Union countries and indicated that income diversification was one of the strongest explanatory variables in the efficiency ratio; the higher the amount of other income, the better the efficiency. So it is stated that profitability has impact on liquidity and cost efficiency of banks. There is consensus among studies that the relationship between net interest margin and operating costs is positive, and there is agreement that banks pass these costs on to customers (Maudos and Fernandez de Guevara 2004).

Some factors like internet banking, bank foreign ownership involvement, financial performance and other macroeconomic factors have significant impact on bank's liquidity and its cost efficiency (e.g. Kunitsyna et al. 2018; Demoulin 2013; Rauch et al., 2010) studied the determinants of liquidity risk and attempted to identify the determinants of liquidity creation. Their results highlighted that the most important determinants were macroeconomic variables and monetary policy (Vodova 2013). Banks with foreign ownership involvement were found to be significantly less inefficient than domestic banks (Hasan and Marton 2003) and according to him, "the higher the share of the foreign involvement is the more efficient the bank is". Capital is a prominent factor of bank financial performance (Athanasoglou et al. 2008). This shows that there are any other factors as well which effects bank liquidity and efficiency.

Hypothesis Development

H1: *Relationship between in interest rate and liquidity and cost efficiency is significant, positive*

H2: *Relationship between credit risk, liquidity and cost efficiency is significant*

H3: *Relationship between income diversification, liquidity and cost efficiency is significant*

H4: *Relationship between profitability, liquidity and cost efficiency is significant*
H6: *Relationship between financial leverage, liquidity and cost efficiency is significant*
H7: *Residuals of different banks are similar.*
H8: *Common, Random or Fixed effect model can be used.*

Methodology

This section gives information on type of data employed and sources used to obtain data. Instead of choosing huge number of banks, this study selected eight biggest banks from Germany and eight biggest banks from United Kingdom. Data was collected from openly available sources (Table 1).

Table 1. The biggest banks of UK and Germany in term of assets

Leading banks in UK ranked by total assets in million GBP (2016)	**Leading banks in Germany ranked by total assets in billions of euros (2016)**
Barclays Bank plc (1,345,833)	Deutsche bank AG (1636.57)
Royal Bank of Scotland Group plc (1,019,934)	Commerzbank AG (574.263)
Lloyds Bank plc (862,004)	Deutsche Zentral-Genossenschaftsbank (DZ bank AG) (402.23)
HSBC Bank plc (811,695)	Hypovereinsbank AG* (HVB) (297.700)
Standard Chartered plc (499,100)	Landesbank Baden-Wurttemberg (LBBW) (285.000)
Bank of Scotland Plc (381, 225)	Bayerische Landesbanken (Bayren LB) (257.743)
Santander plc (315,488)	Norddeutsche Landesbank (Nord LB) (197.424)
Nationwide Building Society (189,926)	Deutsche Post bank AG** (158.434)

**HypoVereinsbank (Unicredit bank AG) is a member of Unicredit Group*
*** Deutsche Postbank is a subsidiary of Deutsche bank AG*

For the research two time periods, indicated above were used with aim to omit year of financial crisis; number is observations was 72 for both considered countries, UK and Germany.
The banks used in this study are listed on London Stock Exchange. Sample selected for the study consists of eight leading banks from United Kingdom and eight leading banks from Germany. Descriptive analysis is used to describe the basic features of the data in a study. Pooled least square or common effect model is one of the modeling techniques used in panel data analysis. Regression with period fixed effects is used to control omitted variables that do not vary across entities but vary over time.
Redundant fixed effects tests and Hausman test are performed to see either random effect, common effect model are appropriate or fixed effect model. Pesaran test of cross sectional independence is used to see whether residuals across entities are correlated or not.

Data Analysis

Descriptive Analysis for German and UK Banks

Table 2 provides Redundant Fixed and Hausman Effects calculated using a summary of the descriptive statistics for the dependent and independent variables for the sample banks of Germany and UK.

Table 2. Redundant Fixed and Hausman Effects

Test for United Kingdom (Y = LOANASSET) Prob 1, 3: UK and Prob 2, 4: German

	UK					**Germany**				
Variables	Mean	Med	Max	Min	SD	Mean	Med	Max	Min	SD
[Total net loans and advances/Total assets]*100	57.5	57.3	88.8	24.8	17.0	55.4	57.6	71.8	25.4	11.7
[Operating expenses/Total income]*100	50.2	53.5	169.1	0.56	26.7	68.5	63.2	153.9	31.9	23.5
[Total debt/Total Shareholder's Equity]	25.8	23.3	60.5	12.2	10.7	34.4	28.8	106.4	11.2	20.3
[Allowances for loan losses/Total gross loans & advances]*100	1.18	0.76	5.51	-0.3	1.21	21.1	18.6	124.6	-69.4	28.1
Natural log of total assets	13.2	13.2	14.6	11.7	0.75	12.6	12.5	14.6	11.7	0.74
[Non-interest income/Total income]*100	43.6	46.1	81.7	-11.1	19.6	20.7	25.5	56.9	-125.9	30.8
[Net profit/Total Assets]*100	0.20	0.29	0.97	-1.9	0.53	0.01	0.07	2.18	-1.23	0.43
[(Interest income - Interest expenses)/Total assets]*100	1.09	0.96	2	0.56	0.36	0.85	0.72	1.99	0.3	0.40

Data collected from available annual reports, in million euros and pounds respectively. All ratios were calculated in percentages except debt to equity ratio.

Total no of observation are 72 (Table 3). All the figures collected from annual reports of sample banks of Germany and UK are in million euros and pounds respectively. All ratios were calculated in percentages except debt to equity ratio.

Table 3. German and UK Banks Descriptive Analysis

	Redundant Fixed Effects Tests				**Correlated Random Effects - Hausman Test**			
	Y=LOANASSET		Y = CIR		Y=LOANASSET		Y = CIR	
Effects Test	Prob 1	Prob 2	Prob 3	Prob 4	Prob 1	Prob 2	Prob 1	Prob 2
Cross-section F	0.0000	0.0000	0.0000	0.0000				
Cross-section Chi-square	0.0000	0.0000	0.0000	0.0000				
Cross-section random					0.0000	0.0009	0.0260	0.0000

Redundant fixed effects and Hausman tests indicating that fixed effect model is most appropriate model because all probability values are less than 0.05, thus the

study accepts hypothesis that the fixed effect model is appropriate model to use (Table 4).

Table 4. Fixed Effect Regression Model

	Dependent Variable: LOANASSET				Dependent Variable: CIR			
	United Kingdom		**Germany**		**United Kingdom**		**Germany**	
Method: Pooled Least Squares Included observations: 9 Cross-sections included: 8								
Variable	CF	Prob.	CF	Prob	CF	Prob	CF	Prob
C	21.23	0.65	85.84	0.22	361.3	0.00	120.0	0.00
NIM_?	22.07	0.00	19.95	0.00	-33.32	0.00	10.25	0.00
DEBTEQUITY_?	-0.02	0.73	0.270	0.00	-0.210	0.20	0.147	0.26
CR_?	-2.50	0.00	-0.008	0.80	-3.260	0.06	0.055	0.96
SIZE_?	0.41	0.89	-4.448	0.41	-16.82	0.00	9.265	0.01
NIITI_?	0.26	0.00	-0.003	0.90	-0.902	0.00	0.051	0.00
ROA_?	-5.47	0.00	1.470	0.51	-18.61	0.00	3.816	0.00
R-squared	0.925928		0.775658		0.890063		0.837595	
Adjusted R-squared	0.909327		0.725374		0.865422		0.801193	

United Kingdom Fixed Effect

Obtained results let us claim that there is significant positive relationship between liquidity and interests, and significant positive relationship between other incomes to total assets. Relationship between liquidity, credit risk and ROA is significant negative. Meanwhile, in UK bank size and propensity to lend are insignificantly related with liquidity. Other relationships and insignificant or non-existing (e.g. residuals in considered banks are not related).

German Fixed Effect

Obtained results let us claim that there is significant positive relationship between liquidity and interests, like in UK case. There is positive relationship between ineptness and total assets, the result specific to Germany. Other relationships are insignificant (e.g. relationships between bank size, credit risk, income diversification, profitability and liquidity; residuals in German banks are not related similarly as in UK).

Conclusion

To generalize the results, the following insights can be formulated: liquidity is significantly affected by interest margins in both considered countries, UK and Germany during both considered periods. The high interest margins stimulate excessive lending, what naturally reduce liquidity of banks. This tendency is characteristic for 2009-2010 year span. For another year span, i.e. year 2012-2014,

a different phenomenon is characteristic: increased liquidity conditioned lowering of interest margins, and therefore contraction of lending.
During the financial crisis liquidity remained almost at the same level or slightly decreased, this is the reason behind positive relationship between profitability and liquidity (this is in case of UK). It is interesting, that profitability is not significant factor for liquidity in case of Germany. Cost efficiency is positively influenced by bank size for both economies meaning that larger the bank size is in terms of total assets, higher will be the bank efficiency. Cost efficiency is positively influenced by net interest margin for both economies meaning that higher the net interest income, higher will be the efficiency. Cost efficiency is positively influenced by income diversification for both economies meaning that higher the amount of other income, better the efficiency. Cost efficiency is positively influenced by ROA for both economies meaning that higher the returns on total assets, higher will be the bank efficiency. Clients usually prefer those banks that have higher profitability, thus those banks attract the best potential creditworthy borrowers as well as the biggest share of deposits. Recommendations from the study are as follows:

- Interest margins should be regulated, since too high margins boost lending activities thus reduce liquidity.
- Regulation of interest margins would increase opportunities for banks to undertake profitable business in order to win customers' trust and enhance cost efficiency.
- Banks should make an effort in reducing operating expenses, and in increasing diversified sources of revenue in order to become cost efficient.

This study, we believe, would facilitate more efficient financial policy making leading to more efficient banking sector in considered countries. The more efficient, and therefore stable banking system would serve as precondition of economic security of overall Eurozone,

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UWARUNKOWANIA BEZPIECZEŃSTWA GOSPODARCZEGO STREFY EURO: W JAKI SPOSÓB PRZEZWYCIĘŻYĆ RYZYKO PŁYNNOŚCI I KOSZTOWEJ NIEWYDOLNOŚCI WIODĄCYCH BANKÓW WIELKIEJ BRYTANII I NIEMIEC

Streszczenie: Wśród wielu czynników wpływających na bezpieczeństwo ekonomiczne strefy euro szczególną rolę odgrywają wyniki banków. Celem niniejszgo badania jest analiza czynników wpływających na wyniki sektora bankowego w Wielkiej Brytanii i Niemczech. Wyniki są szacowane na podstawie wskaźników płynności i efektywności kosztowej w największych bankach obu wskazanych krajów. Do analizy wykorzystano dane z ośmiu banków z każdego kraju, wyróżniono dwa okresy z lat 2009-2010 i 2012-2014. Wykorzystano model poprawionego efektu. Uzyskane wyniki ujawniły kilka istotnych związków. W obu krajach, w obu okresach szczególnie negatywny wpływ na płynność ma marża odsetkowa w sektorze bankowym, co zapoczątkowało aktywniejszą akcję kredytową. To z kolei zmniejszyło płynność banków i uwarunkowało niższe marże. Wielkość banku nie wpłynęła na płynność (stosunek kredytów do aktywów) ani w Wielkiej Brytanii, ani w Niemczech. Uzyskane wyniki mogą być wykorzystane do odpowiednich implikacji politycznych ukierunkowanych na utrzymanie lepszych wyników banków, a tym samym do zwiększenia bezpieczeństwa ekonomicznego gospodarek strefy euro.

Słowa kluczowe: bezpieczeństwo ekonomiczne, płynność, efektywność kosztowa, marża odsetkowa netto, ryzyko kredytowe, rentowność dźwignia finansowa, UK, Niemcy

欧元区经济安全的前提条件：
如何克服英国和德国领先银行的流动性风险和成本不足

摘要：影响欧元区经济安全的诸多因素中，银行业绩起着特别重要的作用。本研究的目的是调查影响英国和德国银行业绩效的因素。正在使用两个指定国家的最大银行的流动性和成本效率指标来估算业绩。对于每个国家的八家银行的分析数据，使用了2009-2010和2012-
2014两个时期。已采用固定效应模型。获得的结果揭示了一些重要的关系。具体而言，在两个考虑期间，两国银行业的利差都受到了流动性的负面影响，从而引发了更积极的贷款。这反过来又降低了银行的流动性，并降低了利润率。银行规模确实影响了英国和德国的流动性（贷款与资产比率）。获得的结果可用于各自的政策影响，旨在维持银行更好的业绩，从而提高欧元区经济的经济安全性

关键词：经济安全;流动性;成本效益;净息差;信用风险;盈利能力财务杠杆;英国，德国