BASEL III GLOBAL LIQUIDITY STANDARDS: CRITICAL DISCUSSION AND IMPACT ONTO THE EUROPEAN BANKING SECTOR

Veronika Bučková – Svend Reuse

Veronika Bučková: Masaryk University, Faculty of Economics and Administration, Department of Finance, Lipová 41a, 602 00 Brno, v.buckova@mail.muni.cz

Svend Reuse: Masaryk University, Brno / FOM University of Applied Science Luxemburger Allee 121, 45481 Mülheim, Germany, Svend.Reuse@gmx.de

Abstract: Together with the Basel III regulatory equity rules, two liquidity ratios have been published. Resulting from the illiquidity of some banks during the financial crisis in 2008, these ratios shall help to prevent further crisis in the European banking sector. But do they really fulfill their aim? This article presents the new liquidity ratios, the actual liquidity situation in banks and describes the consequences for banks at a simplified example.

It has to be stated that implementing more detailed liquidity frameworks into the banking supervision process is necessary. The financial crisis in 2008 showed that several banks did not have adequate liquidity risk models and processes to prevent illiquidity. But the LCR and the NSFR seem to be wrong methods. Both ratios will increase. The implementation of both ratios has to be done very carefully in order to prevent this.

Key words: Basel III, Liquidity Coverage Ratio LCR, Net Stable Funding Ratio NSFR, Maturity Transformation

JEL classification: G21, G28

Introduction

The IMF states correctly that “the financial crisis highlighted the lack of sound liquidity risk management at financial institutions and the need to address systemic liquidity risk.” (IMF, 2011, p. 75). As a result, the Basel Committee on Banking Supervision developed new principles of banking regulation, known as Basel III. On

October 19, 2010, the Basel Committee and central bankers from 27 countries agreed to phase in introduction of internationally harmonized global liquidity standards (see Basel Committee on Banking Supervision, 2010.09 and Frère/Reuse, 2010, pp. 3). The aim of these liquidity standards is to ensure liquidity of the banking system in times of stress. The standards establish the minimum liquidity requirements on a short-term and long-term basis. The aim of the paper is to discuss the new liquidity ratios critically and to answer the question whether they will help to make the European banking system more stable.

1 Presenting the new Basel III liquidity Rules

The Basel Committee on Banking Supervision (BCBS) has developed two minimum standards for funding liquidity:

- Liquidity Coverage Ratio (LCR) and
- Net Stable Funding Ratio (NSFR).

These minimum standards were developed to ensure a sufficient level of liquidity of banking system: the LCR focuses on the short-term liquidity while the NSFR focuses on the long-term liquidity. The objective of the LCR is to "promote short-term resilience of a bank's liquidity risk profile by ensuring that it has sufficient high-quality liquid assets to survive a significant stress scenario lasting for one month" (Basel Committee on Banking Supervision, 2010.12, paragraph 4). The objective of the NSFR is to "promote resilience over a longer time horizon by creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing basis" (Basel Committee on Banking Supervision, 2010.12, paragraph 4).

These standards establish the minimum levels of liquidity for internationally active banks. The standards will be introduced after an observation period. The observation period has begun in 2011. The LCR will be introduced on January 1, 2015. The introduction of the NSFR is planned for January 1, 2018.

1.1 Liquidity Coverage Ratio

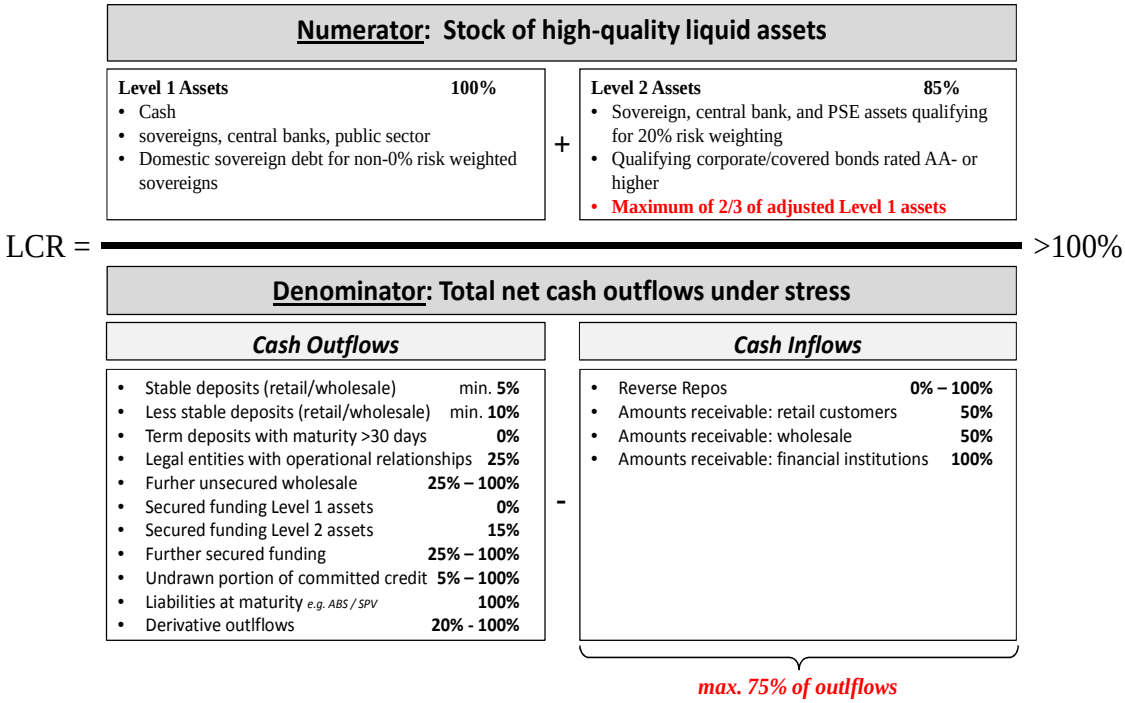
The aim of the LCR is to ensure the short-term liquidity of a bank. Under this standard, the bank has to maintain an adequate level of high-quality liquid assets that can be converted into cash to meet its liquidity needs for a 30-day time horizon under a significantly severe liquidity stress scenario. The liquidity stress scenario will be

specified by supervisors. The LCR standard binds the banks to hold a stock of high-quality liquid assets to cover the total net cash outflows over a 30-day time horizon under the stress scenario. The LCR standard will be defined as follows:

$$LCR = \frac{\text{Stock of high - quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}} > 100\% \qquad (1)$$

Figure 1 shows how the parts of the LCR are defined in detail.

Fig. 1: Parts of the LCR



Source: Basel Committee on Banking Supervision, 2010.12, pp. 42–45 and Schäfer, 2010, p. 7. Stock of high-quality liquid assets

High-quality liquid assets must meet specific requirements. Generally, high-quality liquid assets must be easily and immediately converted into cash at a little or no loss of value (see Basel Committee on Banking Supervision, 2011.06, p. 9). These assets have to bear a low credit and market risk, listed on a developed and recognized exchange market or have a low correlation with risky assets. The market, where the asset is traded, should be of specific characteristics – e.g. low market concentration, active and sizable market and so on.

The assets should be unencumbered, which means not pledged to secure, collateralize or credit-enhance any transaction. Ideally, the assets should be central bank eligible (see Basel Committee on Banking Supervision, 2011.06, p. 9). The assets are divided into two categories: *Level 1* assets and *Level 2* assets.

Banks can hold Level 1 assets, for example, in the form of cash, central bank reserves[1], marketable securities representing claims on (or guaranteed by) sovereigns, central banks, the Bank for International Settlements, IMF and others after satisfying stated conditions (see Basel Committee on Banking Supervision, 2010.12, paragraph 40). Assets of this category can be included without limit.

Level 2 assets are limited to, for example, marketable securities representing claims on (or claims guaranteed by) sovereigns or central banks (and others), corporate bonds and covered bonds after satisfying certain conditions (see Basel Committee on Banking Supervision, 2010.12, paragraph 42). This category of assets can comprise only up to 40 % of the high-quality liquid stock.

Total net cash outflows

The total net cash outflows are defined as "the total expected cash outflows minus total expected cash inflows[2] in the specified stress scenario for the subsequent 30 calendar days" (Basel Committee on Banking Supervision, 2010.12, paragraph 50). The total expected cash inflows are limited to 75 % of the total expected cash outflows.

1.2 Net Stable Funding Ratio

The NSFR was developed to ensure medium and long-term liquidity of a bank. According to this standard, the long-term assets should be funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles. The standard aims to encourage better assessment of liquidity risk across all on-balance and off-balance sheet items. The NSFR is defined as follows:

$$NSFR = \frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} > 100\% \qquad (2)$$

[1] To the extent that they can be drawn down in time of stress.

[2] The expected cash inflows and outflows should include interest expected to be received or paid in the time horizon of 30 days.

The "stable funding" means that the types and amounts of equity or liability financing are reliable sources of funds over a one-year time horizon (i.e. long-term funding). Figure 2 describes the parts of the NSFR in detail.

Available stable funding (ASF) is the sum of a bank's capital, preferred stock or liabilities with maturity of one year or greater and others types of long term liabilities (see Basel Committee on Banking Supervision, 2010.12, paragraph 124). All components must be multiplied by the appropriate Associated ASF Factor (from 0 to 100 %) (according to Basel Committee on Banking Supervision, 2010.12, table 1).

Required stable funding (RSF) can be defined as the sum of the value of the assets held and funded by the institution and the amount of OBS activity. Assets and OBS activities must be multiplied by the appropriate Associated RSF Factor (more liquid assets in the stressed environment receive a lower RSF factor) (according to Basel Committee on Banking Supervision, 2010.12, table 2 and 3).

Fig. 2: Parts of the NSFR

NSFR= $\frac{\text{Numerator: Available Stable Funding} \rightarrow \text{Liabilites}}{\text{Denominator: Required Stable Funding} \rightarrow \text{Assets}}$ >100%

Numerator: Available Stable Funding → Liabilites	
• Tier 1 and Tier 2 Capital and other equity ≥ 1yr	**100%**
• Other liabilities with an effective maturity of ≥ 1yr	**100%**
• Stable deposits of retail and small business customers (non-maturity or residual maturity < 1yr)	**90%**
• Less stable deposits of retail and small business customers (non-maturity or residual maturity < 1yr)	**80%**
• Wholesale funding provided by non-financial corporate customers, sovereign central banks, multilateral development banks and PSEs (non-maturity or residual maturity < 1yr)	**50%**

Denominator: Required Stable Funding → Assets	
• Cash	**0%**
• Debt issued or guaranteed by sovereigns, central banks, BIS, IMF, EC, non-central government, multilateral development banks with a 0% risk weight under Basel II standardised approach	**5%**
• Corporate bonds or secured bonds, Rating AA- or better, Basel II-20%, maturity ≥ 1yr	**20%**
• Corporate bonds or secured bonds, Rating A+ to A-, maturity ≥ 1yr, Gold, equity securities	**50%**
• Loans to non-financial corporate clients, sovereigns, central banks, and PSEs with a maturity < 1 yr	**50%**
• Unencumbered residential mortgages of any maturity and other unencumbered loans	**65%**
• Other loans to retail clients and small businesses having a maturity <1 yr	**85%**
• All other loans with a maturity ≥ 1yr	**100%**
• Undrawn amount of committed credit and liquidity facilities	**5%**

Source: Basel Committee on Banking Supervision, 2010.12, pp. 46–47 and Schäfer, 2010, p. 9.

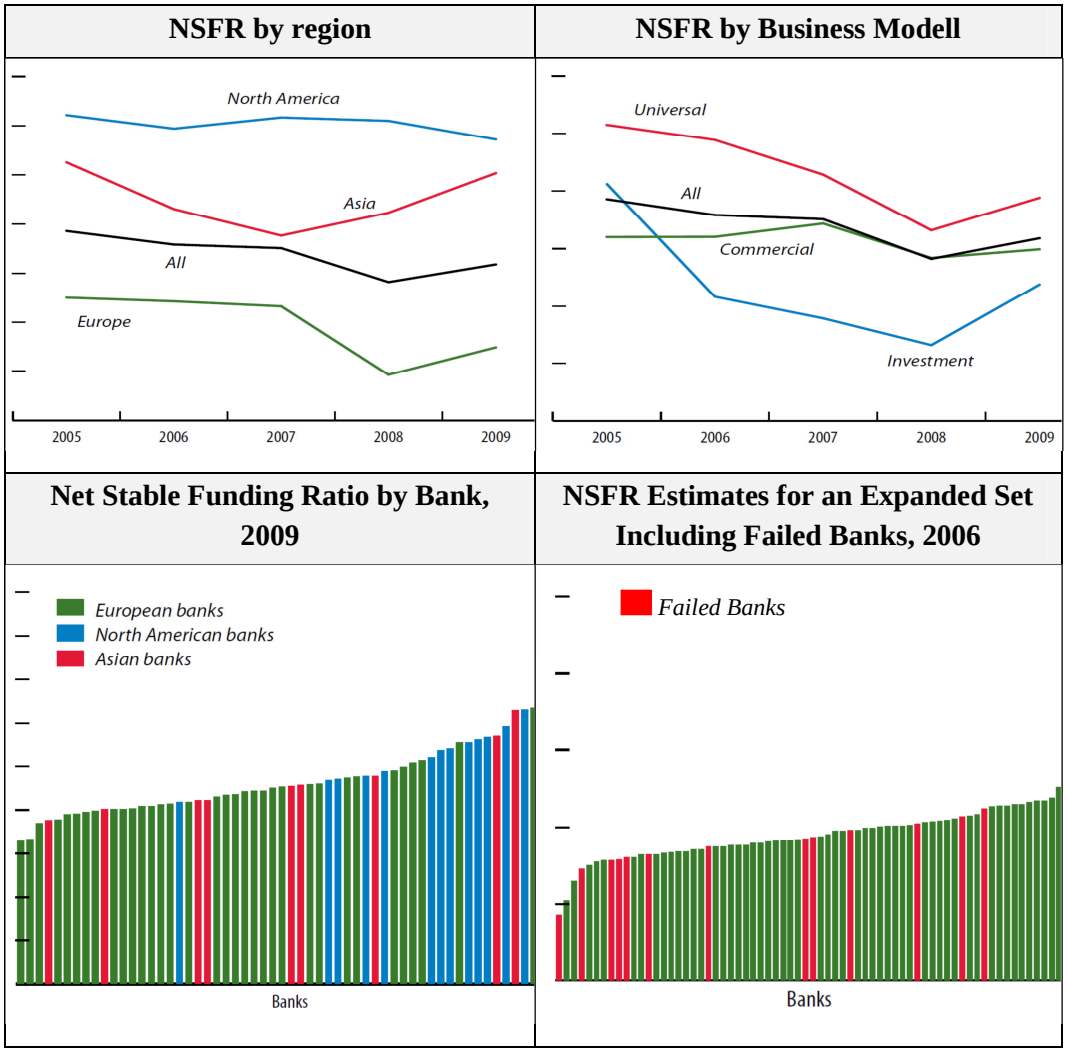
2 Current situation in Europe

The IMF (see IMF, 2011, pp. 75–110) analyzed the worldwide impacts of the new liquidity rules. The LCR could not be quantified seriously as the required information is not available publicly (see IMF, 2011, p. 78). But the IMF was able to quantify the NSFR with available official information for 60 globally oriented banks in 20 countries in Europe, North America and Asia. The analysis consists of commercial, universal and investment banks. The IMF added 13 further banks that became bankrupt during the financial crisis so that the sample consisted of 73 banks (see IMF, 2011, p. 78 for the detailed setup). The results are shown in the combined figure 3.

These quantifications lead to several conclusions for the European banking sector: the NSFR is better in Asia and North America, Europe shows the lowest ratio of all regions. This leads to the conclusion that Europe has to do much more to achieve the minimum ratio of 100%. Further, it has to be stated that universal banks show the best ratio. This is consistent as these banks have higher volumes of stable refinancing funds. Investment banks offer the lowest ratio in figure 3 – these banks cannot have e.g. retail deposits. Analyzing specific banks confirms the fact that European banks have the lowest NSFR. If these banks want to fulfill the ratio, they have to do significant changes in their balance sheets – even though the NSFR does not seem to be a good indicator for illiquidity as shown in the last part of figure 3. Some of the banks with a low NSFR survived and vice versa, some with a relatively good NSFR became illiquid.

The results for the European banking sector are as follows: the NSFR does not seem to be a significant indicator for illiquidity but European banks seem to have more to do to achieve the ratios compared to Asia and North America. For Europe it is important to use the observation period and to insist on a late introduction date.

Fig. 3: First quantifications of the NSFR



Source: Originally taken from IMF, 2011, pp. 79, 81, 82.

3 Setting up a simplified example

The IMF analyzed the impacts of the NSFR on big banks of each region. Small or medium sized banks – which often hold a market share of more than 50% in the private customer segment – are not analyzed as the required data are not officially available.

According to this, a fictive bank is modeled. It represents a typical local oriented small bank. Its main business is to grant customer loans and to manage customer deposits.

According to the low yield curve, the deposits have a low maturity while the loans on the asset side show maturities of five to ten years. This leads to a natural maturity transformation of this bank (see Reuse, 2011 for further details on the maturity transformation). The liquidity management has invested into German covered bonds, so-called "Pfandbriefe". These bonds are very liquid and they offer a better yield than German sovereign bonds. As a consequence, only a small investment in sovereign bonds is made. The balance sheet of this fictive bank including the relevant LCR and NSFR weightings might look as shown in table 1.

Tab. 1: Balance sheet of the fictive bank

Assets					**Liabilites**				
Position	***Amount in t€***	***Interest rate***	***LCR weight***	***NSFR weight***	***Position***	***Amount in t€***	***Interest rate***	***LCR weight***	***NSFR weight***
Cash	20,000	0.00%	*100%*	*0%*	Stable retail deposits, no maturity or ≤ 30d	50,000	0.00%	*5%*	*90%*
Sovereign Bonds	25,000	3.00%	*100%*	*5%*	less stable retail deposits, no maturity or ≤ 30d	195,000	1.50%	*10%*	*80%*
Covered Bonds AAA	250,000	4.00%	*85%*	*20%*	term deposits				
Corporate Bonds, A	25,000	6.00%	*0%*	*50%*	*…maturity , > 30d and ≤ 1yr*	550,000	2.50%	*0%*	*80%*
Retail loans < 1yr maturity					*…maturity , > 1yr*	0	3.00%	*0%*	*100%*
…maturity , > 30d	300,000	6.00%	*0%*	*85%*	Legal entities with operational relationships < 1yr	80,000	2.50%	*25%*	*50%*
…maturity , ≤ 30d	50,000	6.00%	*50%*	*85%*					
Unencumbered residential mortgages					Long term interbank bonds ≥ 1yr	175,000	3.50%	*0%*	*100%*
…maturity , > 30d	350,000	5.50%	*0%*	*65%*	short term interbank finance	300,000	1.25%	*100%*	*0%*
…maturity , ≤ 30d	75,000	5.50%	*50%*	*65%*					
All other loans with maturity ≥ 1yr	405,000	6.50%	*0%*	*100%*	Equity	150,000	---	*0%*	*100%*
Sum	**1,500,000**	**5.53%**			**Sum**	**1,500,000**	**1.90%**		

Interest Margin =	**3.63%**

$$\text{LCR} = \frac{\underset{45{,}000}{\textit{Level 1 Assets}} + \underset{30{,}000}{\textit{Level 2 Assets}}}{\underset{342{,}000}{\textit{Cash Outflow}} - \underset{125{,}000}{\textit{Cash Inflows}}} = \mathbf{34.56\%}$$

$$\text{NSFR} = \frac{\underset{1{,}006{,}000}{\textit{Available Fundings}}}{\underset{1{,}042{,}500}{\textit{Required Stable funding}}} = \mathbf{96.5\%}$$

Source: Authors' calculation.

It becomes clear that this bank does not fulfill the actual Basel III liquidity standards. So the bank has to react: It switches covered bonds into sovereign bonds and it switches short-term interbank finance into long-term interbank finance (examples are shown in Basel Committee on Banking Supervision, 2010.08, p. 24). The result is visualized in table 2.

Tab. 2: Balance sheet of the fictive bank after the implementation of Basel III

Assets					Liabilites				
Position	*Amount in t€*	*Interest rate*	*LCR weight*	*NSFR weight*	*Position*	*Amount in t€*	*Interest rate*	*LCR weight*	*NSFR weight*
Cash	20,000	0.00%	*100%*	*0%*	Stable retail deposits, no maturity or ≤ 30d	50,000	0.00%	*5%*	*90%*
Sovereign Bonds	125,000	3.00%	*100%*	*5%*	less stable retail deposits, no maturity or ≤ 30d	195,000	1.50%	*10%*	*80%*
Covered Bonds AAA	150,000	4.00%	*85%*	*20%*	term deposits				
Corporate Bonds, A	25,000	6.00%	*0%*	*50%*	*...maturity , > 30d and ≤ 1yr*	550,000	2.50%	*0%*	*80%*
Retail loans < 1yr maturity					*...maturity , > 1yr*	0	3.00%	*0%*	*100%*
...maturity , > 30d	300,000	6.00%	*0%*	*85%*	Legal entities with operational relationships < 1yr	80,000	2.50%	*25%*	*50%*
...maturity , ≤ 30d	50,000	6.00%	*50%*	*85%*					
Unencumbered residential mortgages					Long term interbank bonds ≥ 1yr	275,000	3.50%	*0%*	*100%*
...maturity , > 30d	350,000	5.50%	*0%*	*65%*	short term interbank finance	200,000	1.25%	*100%*	*0%*
...maturity , ≤ 30d	75,000	5.50%	*50%*	*65%*					
All other loans with maturity ≥ 1yr	405,000	6.50%	*0%*	*100%*	Equity	150,000	---	*0%*	*100%*
Sum	**1,500,000**	**5.46%**			**Sum**	**1,500,000**	**2.05%**		

Interest Margin =	3.41%

$$LCR = \frac{\text{Level 1 Assets (145,000)} + \text{Level 2 Assets (96,667)}}{\text{Cash Outflow (242,000)} - \text{Cash Inflows (125,000)}} = 206.55\%$$

$$NSFR = \frac{\text{Available Fundings (1,106,000)}}{\text{Required Stable funding (1,027,500)}} = 107.64\%$$

Source: Authors' calculation.

These two transactions have several consequences on the balance sheet and the income statement. First, the natural maturity transformation of the bank is lowered as the interbank liabilities have a longer maturity now. This leads to higher costs of interests on the liability side. Further, the interest earnings on the asset side decrease as the sovereign bonds have a lower interest rate than the covered bonds. The consequence is a lower interest margin of 0.22% - assuming that the bank has the possibility to receive long-term interbank finance.

Conclusion and critical outlook

The simplified example shows the results in the European banking sector. Sovereign bonds will become more attractive – as long as they have a 0% risk weight asset. European banks might come to the conclusion that mixing domestic sovereign bonds and "high yield European sovereign bonds" might be the best solution to meet the LCR. In the authors' opinion, this is not the right way to regulate banks.

Further, this will result in more long-term interbank finance. But if all banks have to fulfill these ratios, the worst case scenario might appear: as all banks need long-term money, no bank will offer it – or only at a very high price. This will lead to pressure in the banking sector as well. In addition, the attractive retail customer savings will become more and more important for banks. As all banks will come to this conclusion, this will lead to higher prices of these deposits. The pressure onto the interest margin might lead to a higher demand at interest rate swaps in order to increase the margin by a derivative maturity transformation. In the worst case, a bubble on the derivative market might be the consequence. Last, the banks will be more critical in granting loans so that economy will probably have problems to receive money.

In the authors' opinion it is right to regulate liquidity of the European banking sector, but the presented LCR and NSFR lead to additional risks that should be prevented. Especially, the NSFR has to be seen critically as Europe shows the lowest ratios in the international comparison. The necessary changes in the balance sheets are consequently high (examples are shown in Basel Committee on Banking Supervision, 2010.08, p. 24). So an implementation has to be done very carefully and has to be long-term oriented. Europe shall insist on a late introduction date for the NSFR. 2018 is the earliest possible implementation period. The economic costs resulting from Basel III have to be considered – even though the Basel Committee tries to convince the public that the economic benefits are higher than the economic costs (discussed in Basel Committee on Banking Supervision, 2010.08, p. 5). The LCR offers several problems as well: the definition of the Level 1 assets has to be seen critically. During the integration process into the European law, banking supervisors should care for implementing those assets that are really liquid in Europe. Otherwise a destabilization of the markets might be the consequence. The implementation period 2015 might be too early as banks must increase equity till 2017 to achieve the equity ratios of Basel III.

In combination with the higher regulatory equity requirements, banks are faced with the following problem: they need to have a lower risk position, to hold higher liquidity and to increase equity to meet Basel III. This might lead to a new banking crisis if Europe makes too many mistakes during the implementation process. A possibility to prevent this is to act like the USA intend to: applying Basel III only to banks that have a significant influence on the stability of the banking sector (discussed in Haasis, 2011). This means vice versa that small savings and cooperative banks in Europe do not have to meet all Basel III rules. In the authors' opinion, this is the right way – implementing Basel III in dependence on the complexity and size of a bank.

References

Basel Committee on Banking Supervision (2010.08). *An assessment of the long-term economic impact of stronger capital and liquidity requirements*. Retrieved from: <http://www.bis.org/publ/bcbs173.pdf>, accessed on September 6, 2011.

Basel Committee on Banking Supervision. (2010.09). *Group of Governors and Heads of Supervision announces higher global minimum capital standards.* Retrieved from: <http://www.bis.org/press/p100912.pdf>, accessed on September 6, 2011.

Basel Committee on Banking Supervision. (2010.12). *Basel III: International framework for liquidity risk measurement, standards and monitoring*. Retrieved from: <http://www.bis.org/publ/bcbs188.pdf>, accessed on September 6, 2011.

Basel Committee on Banking Supervision (2011.06). *Basel III: A global regulatory framework for more resilient banks and banking systems.* Retrieved from: <http://www.bis.org/publ/bcbs189.pdf>, accessed on September 6, 2011.

Frère, Eric / Reuse, Svend (2010). *Basel III – Auswirkungen der Neuregelungen auf die deutsche Kreditwirtschaft*, in: Banken Times December 2010 / January 2011, pp. 3–4.

Haasis, Heinrich (2011). Basel-III-Regelungen müssen in USA und Europa in gleicher Weise angewendet werden, Pressemitteilung Nr. 49, May 11, 2011. Retrieved from: <http://www.dsgv.de/de/presse/pressemitteilungen/110511_PM_Basel_III_49.pdf>, accessed on September 6, 2011.

IMF (2011). *Global Financial Stability Report*, April 2011. Retrieved from: <http://www.imf.org/external/pubs/ft/gfsr/2011/01/pdf/text.pdf>, accessed on September 6, 2011.

Reuse, Svend (2011). *Corporate Evaluation in Banks – Development of a new Evaluation Model with the Special Focus on the Separation of the Value of Maturity Transformation*, in: FAI – Financial Assets and Investing, January 2011, edition 01/2011, Brno, pp. 6 – 32.

Reuters (2010). *Basel III to ease in new bank liquidity rules*. Retrieved from: <http://www.reuters.com/article/2010/10/19/us-banks-basel-idUSTRE69I1HL20101019>, accessed on September 6, 2011.

Schäfer, Jörg (2010). *QIS – neue Liquiditätsstandards*, Frankfurt 18.02.2011. Retrieved from: <http://www.bundesbank.de/download/bankenaufsicht/pdf/qis/liquidity_schaefer.pdf>, accessed on September 6, 2011.