

The Development of the Basel Framework and the Impact on Small and

Medium-Sized Enterprises in Germany and Poland

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Abstract: The new equity regulations of Basel III will not only have an impact on banks, but also on credit taking companies, especially small and medium-sized enterprises (SME). In this article we will give an overview of the relevant regulations of the Basel framework and display the effect on small and medium sized enterprises. The banks will have a closer look at the companies, especially at the risks taken in the business in order to calculate a risk adequate interest rate. A backward looking statement from the balance sheet or profit and loss statement will not be sufficient anymore. We propose an evidence-based approach for executing the credit rating.

Key words: Basel capital accord; Basel III; capital adequacy ratio; equity regulation; liquidity coverage ratio; net stable funding ratio; leverage ratio; credit; risk

JEL codes: G20, G28, M20, M48

1. Introduction and Initial Position

The last financial crisis has changed the banking sector significantly. New categories of risk have been revealed. The regulatory response was immediate. The existing capital framework for banks was developed by the Basel Committee on Banking Supervision and transposed in EU law via two adaptations of the Capital Requirements Directive (the CRD III¹ and the proposed CRD IV and CRR). This framework aims at strengthening prudential banking rules. In addition to requiring more and higher quality capital, it imposes higher capital charges for market activities and enhances rules on the management of liquidity risk. This will provide for an enhanced financial stability, more robust banking business models and stronger balance sheets.

On the other hand, higher equity capital and liquidity requirements can influence the scale of financing the real economy. Banks aim to pass over additional regulation costs to customers by increasing credit profit margin. The increased demand for equity and the necessity to extend the liabilities' maturity will cause the tightening of capital on financial markets and the capital cost's increase what will influence the costs of refinancing banks' loan operations. As a consequence, the cost of acquiring capital by enterprises will increase and the demand for credits will decrease.

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¹ Directive 2010/76/EU.

Among the enterprises, SMEs have contributed more than half of the total value added in the non-financial business economy and provided 80% of all new jobs in Europe in the past five years². As they play a significant role for the economy, the European Commission works to improve the financing environment for small businesses in Europe. Despite new actions highlighted in the Small Business Act (SBA) for Europe, SMEs are still dependent to a very large extent on bank loans for their external financing. Most of them do not even consider financing their market activity by other financial resources. As a result banks' market policy remains one of the crucial factors influencing SME's access to financing markets.

The purpose of the paper is firstly to show the evolution from Basel I to Basel III and the corresponding equity regulations and secondly to analyze and to assess the impact of Basel III on the banks and further on to assess the banking sector's regulatory policy on the market performance of small and medium sized enterprises, exemplified by selected empirical data from Germany and Poland.

2. Evolution from Basel I to Basel III

In the late 80s of the twentieth century with the growing importance of risk management and the need to regulate banking supervision, the Basel Committee on Banking Supervision developed innovative rules relating to the security of the banking system. In the document of the Basel Committee, which was published in the year of 1988, known as *Basel Capital Accord* (Basel I) — the most important element became a synthetic measure of the *Capital Adequacy Ratio* (CAR)³. This indicator, also known as Cooke ratio (*Total Capital Ratio* — TCR, *Capital to Risk Weighted Assets Ratio* — CRAR), determines how much capital a bank has to hold in order to ensure that its activity is safe (A. Nocoń, 2015, pp. 224-225). Initially, Capital Adequacy Ratio was applied only to credit risk, and therefore was defined as a relation between bank's capital base (own funds, consisting of tier I capital, as a basis to cover losses, and tier II capital as supplementary capital for a bank) to risk-weighted assets (M. Iwanicz-Drozdowska, 2012, pp. 136-137):

$$CAR_{I} = \frac{c_{tierI} + c_{tierII} - c_{deduction}}{r_{cred}} \ge 8\%$$

Wherein:

 $r_{cred} = r_{bs} + r_{obs}$

Where:

CAR₁ — Capital Adequacy Ratio

c_{tier I} — basic funds (core capital, basic equity) — tier I capital

c_{tier II} — supplementary funds — tier II capital

c_{deduction} — positions which reduce the total amount of funds

r_{cred} — exposure to credit risk (risk-weighted assets)

rbs - exposure to credit risk on balance sheet items

r_{obs}— exposure to credit risk on off-balance sheet items.

Basel I requires that the capital adequacy ratio must not be lower than 8% (M. Iwanicz-Drozdowska, 2012, pp. 132-135).

² An action plan to improve access to finance for SME, Communication from the Commission to the Council, to the European Parliament, to the Committee of the Regions, and to the European and Social Committee, Brussels (COM) 2011, p. 1.

³ International Convergence of Capital Measurement and Capital Standards, Basel Committee on Banking Supervision, July 1988.

However, changing environment of the banking sector and high volatility of prices on the financial markets led to the need to include in the measurement of capital adequacy, in addition to credit risk, also price (market) risk and operational risk. The work on the improvement of the Basel Agreement was revealed in 2004, presenting its new framework known as Basel II — *The New Basel Capital Accord*⁴. Its main foundation became the concept of economic capital, defined as the minimum value of own funds, which secures all unexpected losses, taking into account the bank's preferences in terms of the accepted level of risk (T. Adamowicz, 2005). Additionally, a third category of capital was introduced — *TierIII capital* (available to cover market risk). Basel II took a proposal of measuring capital adequacy into consideration, which was based on three complementary pillars (M. Iwanicz-Drozdowska, 2012, pp. 135-144):

(1) Pillar I — consists of setting the minimum requirements for capital adequacy, including credit risk, market risk and operational risk.

(2) Pillar II — giving supervision authorities the additional task of assessing, whether the own funds, hold by the bank, are sufficient in relation to the scale and risk profile of its business.

(3) Pillar III — applies to market discipline, performed by market participants, assessing bank's risk on the basis of obtained information.

The capital adequacy ratio according to Basel II is defined as follows (M. Iwanicz-Drozdowska, 2012, pp. 137-138; M. Marcinkowska, 2009, p. 106; A. Kopiński, 2008, p. 140):

$$CAR_{II} = \frac{c_{tierI} + c_{tierII} - c_{deduction} + c_{tierIII}}{r_{cred} + 12,5 (r_{mark} + r_{oper})} \ge 8\%$$

Where:

 $c_{tier III}$ — third category of own funds — tier III capital r_{mark} — exposure to market risk r_{oper} — exposure to operational risk

However, by entering the new recommendations, included in The New Basel Capital Accord, into force in early 2007, the first symptoms of the global financial crisis arose. It revealed many imperfections in risk management and existing supervisory regulations. Therefore, the international bodies, including the Basel Committee on Banking Supervision, were forced to revise the mandatory amount of banks' equity capital. All G-20 countries and 19 other nations asked for more sophisticated regulations. As a result, in the years of 2010-2011, the Basel III framework was presented, which will come into force successively by 2019.

3. The Regulations of Basel III

3.1 Liquidity Regulations

The new recommendations of the Basel Committee in Basel III framework is the modification and supplement of the regulations contained in Basel II, combining both micro- and macro-prudential aspects (I. Pyka, 2015, p. 289). Their aim is to strengthen the security of banks, by tightening the rules for the calculation of capital requirements and liquidity risk management. The needs to introduce new regulations are characteristic for "post-crisis" periods in economies. The collapse of liquidity on the financial markets in 2007-2008, prompted Basel Committee on Banking Supervision to look into the issue of detailed regulation of liquidity of banking

⁴ Basel Committee on Banking Supervision: International Convergence of Capital Measurement and Capital Standards, Bank for International Settlements, 2004.

institutions. In Basel III there have been proposed two measures of liquidity⁵:

• Liquidity Coverage Ratio (LCR) — relating to the current liquidity (up to 30 days):

$$LCR = \frac{Stockofhighqualityliquidassets}{netcashoutflowsoverperiodof 30 days} \ge 100\%$$

• Net Stable Funding Ratio (NSFR) — referring to structural liquidity (M. Iwanicz-Drozdowska, 2012, p. 55):

$$NSFR = \frac{availablesourceofstablefunding}{requiredsourceofstablefunding} \ge 100\%$$

Therefore, the Basel Committee referred to two important mistakes made by banks:

• Lack of having adequate quality of liquid assets⁶, to be able to solve problems with liquidity in emergency situation,

• lack of structural adjustment of funding sources to bank's needs, resulting, among others, from the structure of assets.

LCR provides that every bank must maintain the sufficient size of assets easy to liquidate, to secure financing of potential problems with liquidity for 30 days. The value of the LCR ratio should be estimated by a bank separately for each currency, in which it conducts operations. In turn, NSFR forces banks that long-term assets, such as mortgages, should be financed by liabilities with maturity over one year. An important issue in estimating this indicator is to determine the level of available and required amounts of funding. As a part of financial management, banks should gather this information and monitor both of these two values. The Basel Committee has determined that the available stable funding (ASF) includes those positions that are treated as a stable source of funding in the period of at least one year during market turmoil. So that they include⁷:

- equity capital,
- preference shares with a maturity of 1 year or more,
- liabilities with an effective maturity of 1 year or more,

• a part of retail deposits without specified maturity date and/or time deposits with the maturity of less than one year, which in accordance with a bank's expectations should remain there for a longer period in the situation of specific shock event,

• a part of wholesale term deposits with the maturity of less than one year, which in accordance with a bank's expectation should remain there for a longer period in the situation of a specific shock event.

A specific factor was assigned to above positions to realise their meaning. A similar approach was used to estimate the required stable funding (RSF). Thus, each of the assets has assigned a factor, representing necessary

⁵ Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring. Basel Committee on Banking Supervision, December 2010, p. 3 and next.

⁶ Liquid assets of high-quality are assets that can be quickly sold and at a favorable price. These can be not pledged (unencumbered) assets that remain liquid even in a situation of disruption on the market. Liquid assets of sufficient quality in the Basel regulations are divided into two groups:

[•] Assets of level 1, which include: cash, reserve requirement in a central bank, traded financial instruments, representing receivables from or guaranteed by the most credible entities (for example state, the European Community); these instruments should meet certain requirements, referring to the risk weight, attributed on the basis of rating, or large-scale of trading.

[•] Assets of level 2, which include traded financial instruments, representing receivables from or guaranteed by the most credible entities (for example state), which were not classified to the level 1, corporate and secured bonds. The value of assets of level 2 is reduced by at least 15% of their initial value (haircut), which is to make real their value. They can be no more than 40% of liquid assets.

⁽Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring, op. cit., pp. 8-11 and M. Iwanicz-Drozdowska: Banking risk management, op. cit., p. 56).

Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring, op. cit., p. 25 and next.

financing.

The implementation of minimum standards for LCR took place in 2015. In the case of NSFR, it will take place in 2018. A distant perspective gives the possibility of some changes or adjustments, to adapt most of presented measures to the issue of effective liquidity risk management in banks.

3.2 Equity Regulations and Requirements

Basel III also introduced changes in capital requirements of banks. Two capital buffers were defined:

- capital conservation buffer which has protective character,
- countercyclical buffer which has countercyclical character.

Their aim is to increase the security of banks and banking sector, increasing requirements for the level of adequacy ratio, taking into account *common equity Tier I. Capital conservation buffer* refers to the level of capital protection at the level of individual bank (micro-economic approach), while the *countercyclical buffer* — at the level of the banking sector of a country (macro-economic approach).

The protective buffer applies to all banks, regardless of jurisdiction, aiming to increase their resilience, expanding the capacity to absorb losses, as well as reducing the possibility of lowering the capital adequacy ratio below 8%. *Capital conservation buffer* will appear in 2016 at a level of 0.625%, in the following year it will increase to 1.25%, after that to 1.875%, and from the beginning of 2019 on, it will amount to $2.5\%^8$.

The countercyclical buffer has been addicted on the development of lending in a country. Its aim is to correct the growth rate of lending (cooling). It will be added to the protective buffer. Its value should fluctuate in the range from 0 to 2.5%, depending on the assessment of the financial safety net institutions about the possibility of generating excessive systemic risk. At the same time, it was found that the countercyclical buffer should be covered by *common equity Tier I*, allowing full absorption of losses. The level of the buffer will vary with the level of protection buffer — in 2016 it will be at a maximum level of 0.625%, gradually increasing the maximum value to 2.5%. To determine the appropriate level of the countercyclical buffer, supervisory authorities should monitor banks' lending activities and other indicators related to systemic risk. This is to determine whether credit growth is not excessive and does not cause an increase of systemic risk⁹.

Since the beginning of the Basel capital regulations, Tier I capital had the task of absorbing losses incurred by a bank. The higher the level of Tier I capital in relation to the scale of its operations, the higher the ability to survive periods of instability. However, after the experience of the global financial crisis, the Basel Committee has proposed tightening the rules for qualifying specific positions as core capital, to fully meet the requirements associated with the ability to cover losses. The amount of the capital adequacy ratio was left at the current level of 8%. Nevertheless, in Basel III there has been made the differentiation of own funds on¹⁰:

- Tier I capital, described as going concern capital,
- Tier II capital, described as gone concern capital.

This distinction on *going* and *gone concern capital* resulting from a situation, in which the individual categories of capital may be used to cover losses. In the case of *Tier I capital* it is always possible, in the case of *Tier II capital*, only during bankruptcy or liquidation of a bank. Moreover, *Tier III capital*, introduced in The New Basel Capital Accord, disappeared in Basel III (M. Iwanicz-Drozdowska, 2012, p. 48).

⁸ Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, Basel Committee on Banking Supervision, December 2010 (modified version: June 2011), pp. 54-57.

⁹ Ibidem, pp. 57-60.

¹⁰ Ibidem, p. 12 and next.

According to Basel III, Tier I capital consists of *common equity Tier I* (CET1) and *additional Tier I capital*. *Common equity Tier I* includes:

- ordinary shares issued by a bank,
- issue premium resulting from the issuance of instruments classified as common equity Tier I,
- retained earnings and other accumulated earnings, as well as disclosed reserves.

In turn, among the components of *Tier II capital* (supplementary funds) subordinated debt and reserves of general risk and surplus reserves for expected losses on the loan portfolio were qualified.

In the existing regulations the relation between core and supplementary capital may amount to a maximum of 50%. In turn, subordinated loans classified as Tier II capital could provide no more than 25% of core capital. This meant that the capital adequacy ratio calculated for Tier I could not be less than 4%. Basel III has tightened existing recommendations, assigning a greater role of Tier I capital. Banks should therefore maintain capital adequacy ratios at the following levels (see Figure 1)¹¹:



Tier I Capital ratio $\geq 6\%$

Common Equity Tier I ratio (CET1) \geq 4.5%

Figure 1 Changing Equity Structure from Basel II to Basel III

Despite the fact that the Basel Committee maintained the current level of capital adequacy ratio at a level of 8%, the sum of minimum Tier I ratio, minimum Tier II ratio and capital conservation buffer was set at a level of 10.5%, which means a real increase in capital charges for banks.

3.3 Leverage Ratio as Upper Debt Limit

The recommendations of the Basel Committee also proposed in Basel III the regulation of the upper limit of banks' debt. It resulted from the fact that banking institutions had a very high level of leverage ratio before the global financial crisis, exceeding 30-times of their equity capital. The leverage ratio is defined as the average monthly value of leverage within one quarter, and is a relation between Tier I capital to total exposure (M. Iwanicz-Drozdowska, 2012, p. 53):

 $LeverageRatio = \frac{TierIcapital}{exposuremeasure}$

¹¹ Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, op. cit., p. 12.

A preliminary value for the leverage ratio was set at the level of 3%. It enables banks to achieve a maximum 33-times level of leverage (A. Nocoń, 2016, p. 204). However, this 3% level of the ratio will be the subject of observation, in order to determine the appropriate, applicable maximum value of this indicator¹². The function of the leverage ratio is to limit the tendency of banks to excessive leverage, by revealing the real degree of coverage of equity capital of total exposure (K. Kochaniak, 2011, p. 161).

4. Impact of Basel III on Small and Medium-Sized Enterprises

The European Commission defines small and medium-sized enterprises as having less than 250 persons employed. They should also have an annual turnover of up to 50 million Euros or a balance sheet total of no more than 43 million Euros. The main SME classes used for presenting Euros at business statistics are:

- micro-enterprises: with less than 10 persons employed;
- small enterprises: with 10-49 persons employed;
- medium-sized enterprises: with 50-249 persons employed;
- small and medium-sized enterprises (SMEs): with 1-249 persons employed.

In 2014 SMEs accounted for 99.8% of all enterprises in the non-financial business sector in the EU28 and employed almost 90 million people (67% of total employment). They generated 58% of the sector's value added. The SME value added grew by 3.3%, while in 2013 value added grew by 1.6% on average. Almost all SMEs (93%) are micro enterprises employing less than 10 people. About three quarters of SMEs are active in the five key sectors: wholesale and retail trade, manufacturing, construction, business services and accommodation and food services (Hope K., 2015, p. 8).

The development of SMEs reflects the macro-economic and business conditions. According to the *Small Business Act (SBA) for Europe* the access to finance resources is one of the main factors of their further growth and development. As the loans are still the main financial resource of financing SMEs' market activity, the regulations and banks market policy may influence SMEs market performance.

4.1 General Consequences

The Basel III framework will have consequences not only in the banking sector, but also in economy and especially for small and medium-sized enterprises. The higher requirements for equity in banks will lead to a shortage of total borrowings and simultaneously to a prioritization of credits with low risk. The general consequence resulting from this will be that enterprises with a poor credit-worthiness will have to pay more for their credit than an enterprise with a good credit rating. Up to the present, most of the credit using companies have chosen long-term borrowed funds to avoid risk by changes in interest rates. But now, also banks want to avoid this kind of risk. In the future many companies will have to accept short-term debt financing. In order to avoid a credit crunch for SMEs, there is an initiative at the EU-Parliament to reduce the risk weighting for loans for SMEs.

The competitive position and a performing market in the banking sector will be essential prerequisites for the consequences coming up for SMEs. The higher the competition, the lower the margin range to cover risk. It might be that a more restrictive credit policy will be introduced. For this case SMEs will cover their financial gap through other financial instruments.

One consequence can be summarized definitely: The rating grade of a company will gain more and more weight in the lending behaviour of banks.

¹² Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, op. cit., p. 61.

4.2 Empirical Impacts for German Companies

An empirical study (Credit reform Wirtschaftsforschung) shows that there is generally a good access to credit for German companies. For the time being there is no credit crunch to be noticed.

Out of 4000 companies covered in the study, 30% were asking for credit and 89.4% of them have got credit.

In Figure 2 we see, that:

- 86.6% had to provide more loan securities
- 34.1% were given a higher interest rate
- 16.2% did not get the full amount of credit
- 10.6% of the requested credit were rejected
- 5.7% did not get the requested period for the credit



Figure 2 Change of Credit Conditions from 2011 to 2012 Source: Credit reform 2012, p. 28

We can sum up that companies will have to make more effort to get credit and better credit conditions!

Figure 3 shows the changing equity rate for SMEs in Germany during the last years. By increasing the equity there will be less need for credits.

4.3 Empirical Impacts for Polish Companies

Polish SMEs represented 99.8% of all Polish businesses, exactly in the line with the EU average. They have not yet fully recovered from the crisis. The value added they provide is still below 2008 levels, but it has been steadily increasing since 2012 and is expected to reach and exceed its pre-crisis level in 2016 (see Figure 4). Polish SMEs contributed 50.5% of the value added created in the non-financial business economy. A higher proportion of businesses in Poland than in the EU as a whole were micro-enterprises (95.2% compared with 92.7%).

SMEs in Poland were able to access finance more easily than those in many other EU countries. Small loans were relatively easily available, and banks were willing to provide financing to SMEs. Only 10% of SMEs stated the access to finance to be the most pressing problem. 60% of responders stated that the interest expenses remained unchanged over the last 6 months. For 45% of SMEs debt compared with assets also remained unchanged in the selected time period¹³. SMEs also benefited from access to public financial support. The limited availability of venture capital financing remained the main weakness, as in previous years (see Figure 5). Between

¹³ Survey on the access to finance of enterprises, April to September 2014, database.



2008 and 2014, Poland made continuous and relatively consistent progress.

Figure 3 Equity Rate Depending on Company Size Shown by Number of Employees 2005-2014 Source: Statista 2014



Index: 2008 = 100, estimates as from 2013 on words.

Figure 4 Equity Rate Depending on Employees 2005-2013

Improving access to finance has been the government's priority for some time now. Therefore a number of initiatives have been introduced in this area in recent years, including during this reference period. The government has created three new types of preferential loan, designed for specific purposes. The first type of loan is to be used for financing technological innovation in SMEs, the second is for those setting up a business, and the third is to support businesses that employ an unemployed jobseeker. Each of these types of loan is considered to have a significant effect in terms of facilitating access to finance for SMEs. In addition, a new loan fund for women is offering preferential loans to female entrepreneurs. Approximately 60% of Polish SMEs did not, however, make use of external sources of finance.

Data base for Annual Report on European SME 2014/2015. SME start hiring again



Figure 5 Access to Finance in 2014 for Polish SMEs Data base for *Annual Report on European SME 2014/2015*. *SME start hiring again*

The main reasons for not using external resources by Polish SMEs are¹⁴:

- insufficient collateral or guarantee (24%),
- paperwork (24%),
- high interest rates or price (19%),
- no obstacles (19%).

Generally, Polish SMEs feel confident talking about financing with banks and that they will obtain the desired results (54% of responders). In the case of external financing need, 62% of them will prefer bank loans, 7% equity and 15% other resources. Today the most important challenge for them is not finding the external financing but finding customers.

5. Summary

In this contribution we have outlined the Basel framework and referring to equity issues we explained the various characteristics of the different versions from Basel I, II and III. All these different versions target the equity, which has to be backed in a bank in order to protect the single bank as well as the whole banking sector from the next crisis. It is common sense that a functioning banking sector is an important prerequisite for an

¹⁴ Survey on the access to finance of enterprises, April to September 2014, database.

ongoing economy. Banks have the task to provide the economy with money in order to create value added. This task has to be fulfilled in a responsible way, taking the risk positions of the debtors into account. The more risk a bank is willing to accept, the more equity has to be backed.

Credit cannot be given in an unlimited way. Therefore banks have to follow security measures. This will lead to a situation that banks are not willing to give credit to a company with a high risk position. On the other side banks will prefer to give credit to companies with a low risk position, even with better conditions. Here we can emphasize that the rating procedure and the rating grade will have more and more importance.

Finally we showed consequences of the Basel framework for SMEs. Therefore we depicted selected empirical material from Germany and Poland.

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