

# PERSPECTIVES OF BASEL III: EMPIRICAL EVIDENCE FROM BOSNIA AND HERZEGOVINA

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**Kozarević, Emira; Polić, Nedžad**

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**Emira Kozarević**  
Tuzla University  
Faculty of Economics  
Univerzitetska 8,  
75000 Tuzla,  
Bosnia and Herzegovina  
emira.kozarevic@untz.ba  
Phone: +38761178821

**Nedžad Polić**  
Zenica University & Hifa Oil d.o.o.  
Faculty of Economics  
Fakultetska 3,  
72000 Zenica,  
Bosnia and Herzegovina  
nedžad.polic@ef.unze.ba  
Phone: +38761477037

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# PERSPECTIVES OF BASEL III: EMPIRICAL EVIDENCE FROM BOSNIA AND HERZEGOVINA

## ABSTRACT

The latest Basel Accord, which relies on the New Capital Accord (i.e. Basel II) and whose basic goals have been, from a normative standpoint, enhancing the banking sector's ability to absorb the losses arising from economic distresses like the global financial crisis (2007-2009), improving risk management and governance, and strengthening the bank's transparency and disclosures, operationally emphasises the need to improve the quality and quantity of capital components, liquidity standards, and leverage ratio. The implementation of the Accord in developed economies started at the beginning of 2013 and the overall transition period from the Basel II framework should end by the year 2019. But as far as emerging economies are concerned, there are several issues on the road of implementation, such as necessary (technical) skills and expertise of bank staff as well as their supervisory institutions, sophisticated internal rating mechanisms and capacity, significant amount of new information and recordkeeping, etc. This paper discusses real and potential effects of Basel III in both developed and emerging economies. A special emphasis is given to the banking sector of Bosnia and Herzegovina.

**Keywords:** International banking standards, Basel accords, Basel III, effects, developed economies, emerging economies, Bosnia and Herzegovina

## 1. *Introductory Consideration*

The regulation of banks as financial intermediaries is important for two reasons – their systemic impact on the economy and their role as deposit takers and loan providers. The role of capital as an indicator of bank soundness has been the main driver for the Basel Committee on Banking Supervision initiative since its inception. The Capital Accord (Basel I) is a “global” standard that initially sets guidelines for internationally active banks. It was introduced by the

G-10 countries plus Luxembourg and Spain in 1988 in order to overcome the lack of harmonised capital adequacy requirements and ultimately establish an equal playing field for the banks.

In general, the Basel accords (Basel I, II, and III) are not a guarantee for the prevention of bank crises. Instead, they aim to provide some assurance to the stakeholders and the public by indicating the degree of strength in the banking sector. Increased inter-relatedness of the global banking system creates a domino effect on emerging countries. Therefore,

ensuring that the global banking regulatory standards meet the unique needs of emerging economies is especially important. Despite the fact that the Basel Committee has no supranational authority to supervise the implementation of its standards, its accords have now taken the proportions of a globally accepted standard for bank capital adequacy.

The main goal of this paper is to enlighten the effects (real as well as potential) of the newest Basel Accord (Basel III) on both developed and emerging economies. The special research attention is given to the Bosnia and Herzegovina banking sector, its current state and perspectives according to adoption of Basel standards, in general, and Basel III, in particular. The paper is organised as follows. The first part of this paper provides an overview of the Basel III requirements. The second part discusses their impact and implementation challenges in developed economies. The third part of the paper contains a critique and perspective of Basel III application in emerging countries, with a particular emphasis on the case of the Bosnia and Herzegovina banking sector. Although the paper has a more descriptive rather than normative goal, it provides some general recommendations resulting from the analysis.

## 2. A Brief Overview of Basel III

The Basel Committee, as an institutionalised body for the harmonisation of banking standards, reached a consensus regarding the Basel III framework on 26/07/2010. On 30/11/2010, the G-20 leaders endorsed the framework at the summit in Seoul, South Korea.

Basically, Basel III relies on the Basel II framework and has three objectives that are articulated by the Committee: address the issues which led to the global financial crisis (2007-2009) and the lessons learned from the crisis,<sup>1</sup> improve risk management and governance, and strengthen bank's transparency and disclosures.

The Basel III Accord is characterized as a successive process in which banks are to increase the primary capital ratio from 2% to 7% in several years to come. The total implementation of Basel III is expected on 01/01/2019. Regulators believe that during a crisis banks may temporarily reduce the ratio to 4.5%, but are not allowed to pay bonuses and dividends until they return the ratio to 7% (Table 1).

The dynamics of the realization plan for individual stages of the Basel III project includes the following (Ganić, 2012: 194-195):

- The beginning of implementation of new standards at the national level is planned for 01/01/2013. However, national regulators are expected to transfer and build the rules into national legislation prior to this date. Also, as of 01/01/2013, banks are expected to fulfil and keep the following new minimum requirements as follows:
  - minimum 3.5% of common stocks compared to the risk-weighted assets,
  - minimum 4.5% of the primary capital (*Tier 1*), compared to the risk-weighted assets, and
  - minimum 8% of the total bank capital compared to the risk-weighted assets.
- Minimum requirements in terms of the shareholders' equity (common stocks) and primary character capital are planned for gradual implementation from 01/01/2013 to 01/01/2015.

Table 1 Capital framework in Basel III

	Paid-in capital – common stocks (after deductions)	Primary character capital (Tier 1)	Total capital
Minimum requirements	4.5%	6%	8%
Capital buffer	2.5%		
Minimum requirements plus capital buffer zone	7%	8.5%	10.5%
Counter cyclic buffer [common stocks and other categories of capital stock (i.e. equity share) for total loss absorption]	0-2.5%		

Source: Authors

The phased introduction dynamics predicted that as of 01/01/2013, minimum ratio of common stocks and risk-weighted assets was to increase from the present 2% to 3.5%, while the primary character capital was to increase from 4% to 4.5%. As of 01/01/2014 further increases of the ratios were planned so that ordinary shares reach 4% and the primary character capital 5.5%, while the requirement for common stocks would be 4.5% and 6% for the primary character capital as of 01/01/2015.

The demanded coefficient of capital adequacy was to stay at 8% of the bank's risk-weighted assets and no stage introduction was to be implemented here. The difference between the total capital demands, that is, the rate of capital adequacy of 8%, and the requirements for the primary character capital could be compensated by more qualified forms of shareholders' equity.

- Regulatory adaptation (deduction items and prudential filters) includes deductions from paid-in common stocks for the amounts above 15% of the total limit for investment of a financial institution, services of mortgage rights, and deferred tax assets. Deductions from common stocks are expected to be completely eliminated as of 01/01/2018. In particular, stage adaptation to regulatory requirements starts with deductions from common stocks up to 20% on 01/01/2014, 40% from 01/01/2015, 60% as of 01/01/2016, 80% from 01/01/2017, and finally 100% as of 01/01/2018.
- Banks are expected to gradually introduce the capital buffer zone in the period from 01/01/2016 until the end of 2018, with it becoming completely obligatory starting on 01/01/2019. Among other things, banks were expected to start creating capital buffer zones until 01/01/2016 in the amount of 0.625% of the risk-weighted assets, while each following year this amount would be increased by an additional 0.625%. That way the threshold amounting to 2.5% of the risk-weighted assets would be reached by 01/01/2019. Economies creating excessive rates of credit growth have a discretionary right to impose shorter periods of transition and introduce limits for the buffer zone prior to the arranged deadlines.

In addition to the Basel II capital ratio, Basel III requires banks to respect additional ratios, such as the leverage ratio, the liquidity coverage ratio, and the net stable funding ratio. The risk-based Capital

Ratio (CR) requires that 8% of risk-weighted assets are covered by Tier 1-capital plus Tier 2-capital. The volume-based Leverage Ratio (LR) requires banks to hold 3% T1-capital against their total assets. The Net Stable Funding Ratio (NSFR) stipulates that stable-funding weighted assets are to be 100% covered by stable-funding weighted liabilities. The Liquidity Coverage Ratio (LCR) requires that outflows are 100% covered by inflows plus the (haircut-weighted) liquidity reserve (Schmaltz et al., 2014: 311-313).<sup>2</sup>

Reactions to Basel III are both positive and negative. The officials of the Bank for International Settlements (BIS) stated that the new regulations on the required capital of banks would make the world "a safer place". Robert Peston, the BBC business editor, claims that the new regulations are "the most important global initiative for learning the lessons in the global financial crisis of 2008 and its correction".

However, there are some who accuse the new regulations of being "mild" towards banks. One of the creators of these regulations, the former governor of the Dutch Central Bank, Nout Wellink, warned that the banking sector would have to collect hundreds of billions of euros in order to fulfil requirements. He stated that "for years, banks would have to retain their profit, not dividing it to the shareholders or using it to pay the bonuses. Furthermore, some banks would have to provide additional resources on the capital market", OECD estimated that the implementation of Basel III would reduce annual gross domestic product growth by 0.05-0.15% (Köffer, 2014: 11).

The new liquidity rules are expected to create a significant impact on banks. Their implementation is expected to lead to more capital- and liquidity-efficient business models and products. In particular, the rules relating to NSFR will limit the banks' ability to perform maturity transformation, one of the core banking functions. Accordingly, complying with the new standards might also have an impact on bank performance, such as reduced profitability and a squeeze on lending margins as well as systemic effects (Dietrich, Hess & Wanzenried, 2014: 13-25).

## 2. Basel III and Developed Countries: Impact and Implementation Challenges

According to the BIS, implementation statistics regarding Basel I as a voluntary standard are im-

pressive. From 2001, over 100 countries worldwide had implemented Basel I. Furthermore, from 2004, these countries intended to implement Basel II – 13 were Basel Committee Members and 88 were non-Basel Committee Members. As of 2008, 105 countries had either implemented Basel II (57) or intended to implement Basel II (48), a total of 13 Basel Committee Members and 92 non-Basel Committee Members.

From 2008, the Basel Committee country membership expanded to include 27 Members. What is important is that this allows emerging countries to join the negotiations about what the “global” supervisory framework would look like. Argentina, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, and Turkey are some of the countries whose admission can be expected to bring different perspectives into the work of the Committee. However, Basel II appears to show extremely west-centric characteristics.

Interestingly, the BIS found that 9,400 supervisory institutions would require training in the implementation of Basel II. It also found that in terms of implementing Pillar 2 (*i.e.* Supervisory Review Process), the biggest hurdles would be in technical and human resources related to supervision.

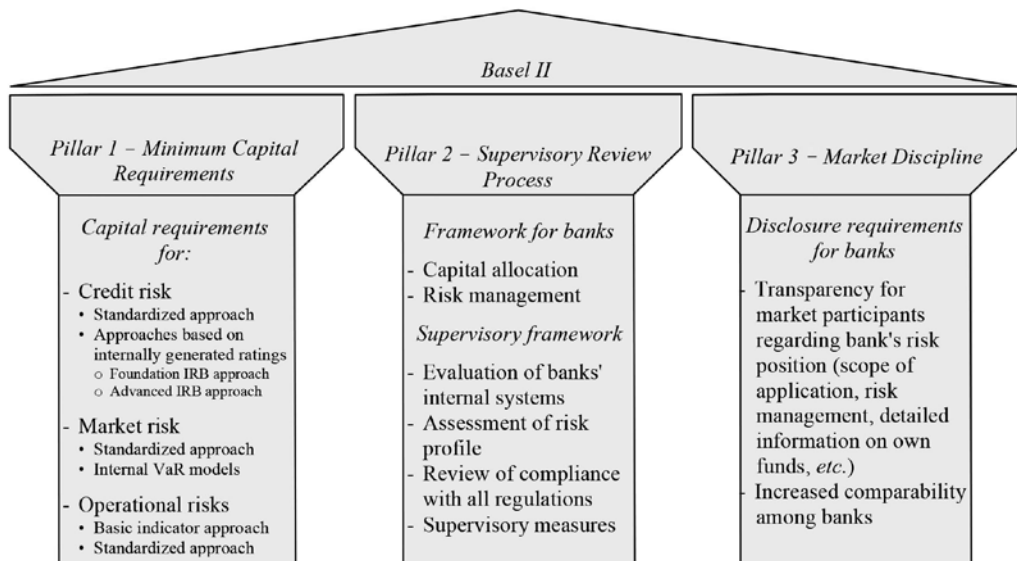
By 2008, most jurisdictions globally had postponed implementation of Pillar 2 and Pillar 3 (*i.e.* Market Discipline or Enhanced Discipline) to 2015, later than originally expected in 2006. The BIS estimates this is due to more preparation being required than initially estimated for implementation of these pillars (Dissanayake, 2012a: 358).

As far as Basel III is concerned, it is mentioned above that it relies on the Basel II framework, as a three-pillar structure, but with more rigorous Pillar 1 – Minimum Capital Requirements (see Figure 1).

By using the three-pillar concept, the Basel Committee attempts to achieve a more “risk sensitive” framework (Bessis, 2011: 233) as well as a more holistic approach to risk management, which would focus on the interaction among different types of risks. At the same time, the three-pillar concept clearly indicates that there is a difference between quantifiable and non-quantifiable risks.

Pillar/tier one requires that banks calculate minimum capital charge related to the regulatory capital, with the aim of minimum capital quantification being related more to the economically potential loss of banks. According to Basel II, there is the cost of capital for credit risk, market risk, and for the first time, for operational risks.

Figure 1 The three-pillar structure of the Basel II framework



Source: Authors

While the treatment of market risk has been relatively unchanged since the Basel I Amendment in 1996, the cost of capital for credit risk has been significantly changed. When calculating the cost of capital for credit and operational risks, banks have a choice of three approaches to sensitivity increase and risk complexity: basic indicator approach, standardized approach, and advanced measurement approach (internal methodology with the usage of quantitative and qualitative criteria).

Any quantitative approach to risk management should be “built” into the functional management structure of an institution. This is why the best practice of risk management imposes clear limitations for institution organization, namely the board of directors, management, employees, and internal and external revision processes. In special cases, the board of directors takes over the final responsibility for the failure to “landscape” risk and the formulation of the institution’s “appetite” for risk. This is where pillar/tier two is introduced. This important pillar, which is marked as the supervisory review process, helps local regulators make various checks and put the balances in order. This pillar starts with the need for effective audit of the bank’s internal assessment of the total risk and enables management to practise “the sound” of assessment, leaving the appropriate capital for different risks aside.

Furthermore, in order to fulfil the promise of growing regulation also reducing the systemic risk, clear guidelines were requested in terms of reporting on risks taken by financial institutions. Pillar/tier three requests the establishment of market discipline by better publication of risk measures and other information relevant for risk management. Banks would be forced to provide a better insight into the adequacy of their capitalization.<sup>3</sup>

When it comes preparing for Basel III, Ketcha (2014: 18-19) emphasized that all the banks will need an effective capital adequacy process. To be fully effective, the process should be built using the following seven principles:

1. sound risk management fundamentals,
2. effective loss-estimation methodologies,
3. solid resource-estimation methodologies,
4. sufficient capital adequacy impact assessment,
5. comprehensive capital policy and capital planning,

6. robust internal controls, and
7. effective governance.

In their study conducted on a sample of sixty-eight East Asian banks, Chalermchatvichien, Jumreornvong & Jiraporn (2014: 28-46) revealed that, by requiring more capital stability, Basel III would have improved the bank’s Z-score.<sup>4</sup>

Despite the fact that the actual impact of Basel III will not be known for several years, in its study about the initial effects of Basel III on capital, credit, and international competitiveness, launched in 2014, the U.S. Government Accountability Office (GAO) found that Basel III capital requirements will lead to a modest decline in lending activities (as most banks may not need to raise additional capital to meet the minimum requirements) and a modest incline in the loan rate.<sup>5</sup> Basel III serves, in part, to limit competitive disparities due to differences in capital standards, but because of jurisdictional diversities there are limitations to the full harmonisation (Mendoza, 2015: 35-37).

### **3. A Critique and Perspectives of Basel III in Emerging Economies, with a Focus on Bosnia and Herzegovina**

#### *3.1 (Im)possibilities of Basel III Implementation in Emerging Economies*

Although the Basel accords are intended for implementation by internationally active banks and in developed economies, other economies (and, therefore, emerging) are also forced to implement the accords due to international regulatory and competitiveness matters. For example, in Asia, at least nine countries had implemented or expected to implement Basel II by 2010 (e.g. India, Hong Kong, Japan, Philippines, Singapore, Taiwan, and Thailand had implemented several aspects of Basel II as early as by 2008). Moreover, the argument for prevention of crises and maintenance of bank soundness is supported by the fact that banking crises in emerging economies have generally exceeded 25% of GDP, and are, proportionately, much larger in scale than in developed economies (Dissanayake, 2012a: 353-354).

As mentioned above, from 1988 only the G-10 countries were involved in the Basel Committee. As late as in 2004, when Basel II was launched, no emerg-



ing economies were represented on the Committee. However, by 2009 the Committee had 27 members, including emerging countries such as Argentina and India. The geopolitical interests that dominate the accords are therefore evident.

In fact, the Basel accords were neither made for the emerging economies nor intended to be applied in those economies. As far as Basel III is concerned, it is also clear that the accord has not addressed emerging economy concerns. The accord uses indicators that are less suitable for assessing bank strength or soundness in emerging economies. It endorses using a capital buffer that consists of a category of capital that has a lower quality in emerging economies.

While Basel III has brought some positive changes from the perspective of the emerging economies, such as the counter cyclic buffer and the new rules on assessing credit rating agencies, the structure of the accord still falls far short of the specific needs of those economies. It is obvious that the emerging economies require a regulatory standard that would meet their needs. Applying any standard, without changes suited to the local context, can have disastrous consequences on the health of banking systems in emerging economies. Therefore, it is necessary for regulators from emerging countries to engage in a discussion which will be either truly global, or will specifically cater to the needs of the emerging economies.

The problem of lack of skills and expertise in emerging economies is one that can be addressed by the Basel Committee. By establishing programs for sharing of technical skills and funding between countries, this issue can be solved. It will be in the interest of the global financial system to have a strong domestic regulatory apparatus in place, and therefore, the incentives for countries to participate in such a program are enormous. Furthermore, the role of credit rating agencies has been addressed to some extent in Basel III. It provides for reducing the role of credit rating agencies, which are not suitable for emerging economies (i.e. they exacerbate the crowding out effect, due to the structure and practical effect of the rules), by relying on internal rating systems. Unfortunately, many emerging economies lack sophisticated internal rating mechanisms and capacity due to lack of skills and expertise. If emerging economies are able to increase their skills and expertise, and encourage skills improvement within domestic firms, this will allow for reduced reliance

on credit rating agencies.

Rojas-Suarez's recommendation for emerging economies to deepen the process of financial internationalisation through the increased participation of foreign institutional investors will meet several issues, as follows (Rojas-Suarez, 2002: 36):

1. It will improve the quality of capital.
2. It will improve market discipline by reducing the concentration of wealth.
3. It will increase the market's access to skills and expertise.

For these reasons, this is particularly useful for all emerging economies in preparing themselves for the effects of Basel III. In order to increase market discipline, emerging economies would also need to restructure deposit insurance (taking into account the moral hazard associated with higher deposit insurance structures versus the large scale losses, loss of confidence, and bank runs associated with too little deposit insurance). In terms of increasing the minimum capital requirements of the accords, it appears that many emerging economies already impose much higher capital adequacy standards than required by Basel (e.g. Argentina just like Bosnia and Herzegovina 12%, India at the level of 9%). It is anticipated that the newest higher standards (minimum capital requirements plus capital buffer, 10.5%) will push most emerging economies to increase their regulatory capital requirements in order to attract more deposits.

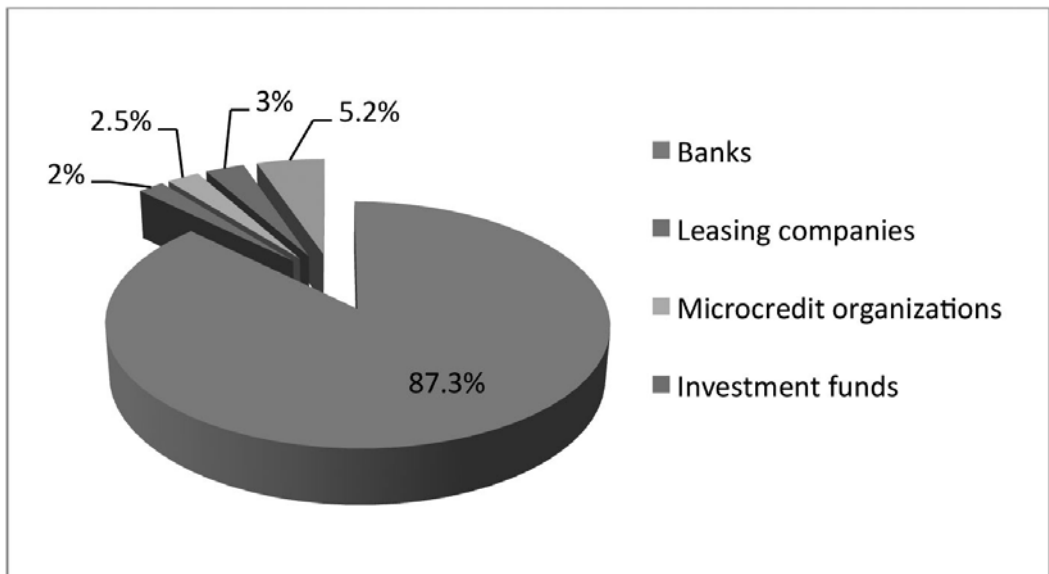
The search for a regulatory standard that best fits the needs of emerging economies should continue, but both developed and emerging countries need to take steps to prevent negative effects. It is not only in the interests of emerging countries to do so, but also in the interests of developed countries, taking into account the interconnectedness of lending in today's globalized financial world (Dissanayake, 2012b: 378-385).

### 3.2 Perspective of Basel III in the Bosnia and Herzegovina Banking Sector

#### 3.2.1 An Overview

The financial system in B&H is basically bank-centric. The total assets of B&H financial assets are dominated by banks (see Figure 2). Moreover, the banks' share is constantly on the increase (for example, according to the data at the end of 2006, 80.69% of the assets of all financial institutions in B&H belonged to banks' assets; this number increased to 84.3% in 2010, while at the end of 2014 it reached as much as 87.3%). Although the banking sector is basically healthy and stable, the fact that non-banking financial institutions (particularly institutional investors such as investment funds) are not developed does not contribute to the development of financial markets (primarily capital markets), and consequently, to the further economic advancement of the country.

**Figure 2** Share of different types of financial institutions in the value of the financial system assets in B&H on 31/12/2014



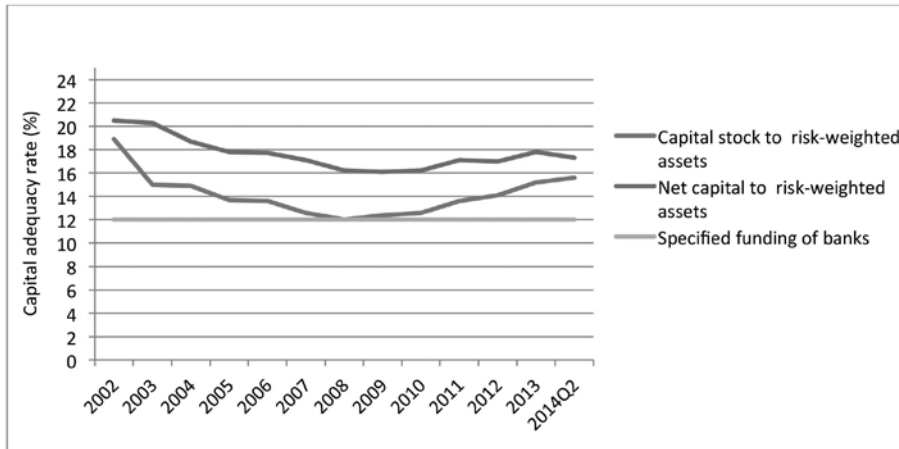
Source: The Central Bank of B&H, *Financial stability report for 2014*, p. 67, ([http://www.cbbh.ba/files/financial\\_stability\\_report/fsr\\_2014\\_bs.pdf](http://www.cbbh.ba/files/financial_stability_report/fsr_2014_bs.pdf))<sup>6</sup>

There are 26 active commercial banks in B&H right now (17 in B&H Federation and 9 in Republic of Srpska), mainly under foreign private ownership. The leading B&H banks are de facto “branch offices” of large European banks or subsidiaries of large European groups. This is why it is rather important to ensure unique rules for the “market competition” with regards to the European Union (EU) which B&H aims to join. This means that domestic regulations need to be adjusted to the European ones, so that these banks would not leave the B&H banking market as a consequence of potential overregulation. In other words, the implementation of globally harmonized Basel standards in B&H is even more significant.

The stability of the banking sector of B&H shall be discussed in this paper by means of certain indicators belonging to the set of the so called financial soundness indicators, from the global financial crisis onwards, as well as in the identical period prior to the crisis.<sup>7</sup> Analytical reasons force us to take the end of 2008 as the period when the crisis “spilled over” to B&H, when B&H citizens withdrew some BAM 550 million, and the Central Bank of B&H, which functions under the currency board, reacted by reducing the rate of obligatory reserve from 18% to 14% (and later to 10%) on banks' short term de



Figure 3 Indicators of capital adequacy of the banking sector of B&H



Source: Authors

posits, while the rate of obligatory reserve for long term deposits is relatively stable at 7%. This made the banks' BAM 722 million available for credit placing. The level of ensured deposits was increased from BAM 7,500 to 20,000, later to 35,000 until the current amount of BAM 50,000, which is still way below the EU average (EUR 100,000).

### Capital adequacy indicators

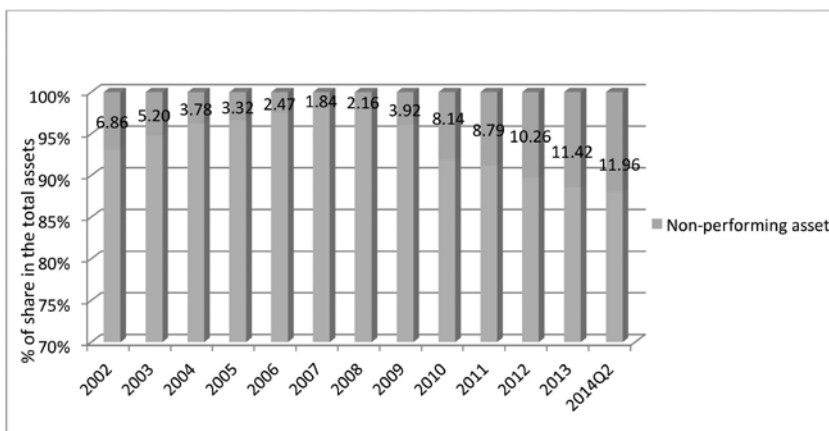
The banking sector in B&H is generally believed to be well capitalized, not only in terms of the net-capital and risk-weighted assets ratio (minimum 12%), but also in terms of the capital stock and risk-

weighted assets ratio. At the end of 2008, this ratio fell somewhat below 12% to 11.93%, which is illustrated in Figure 3.

### Assets quality indicators

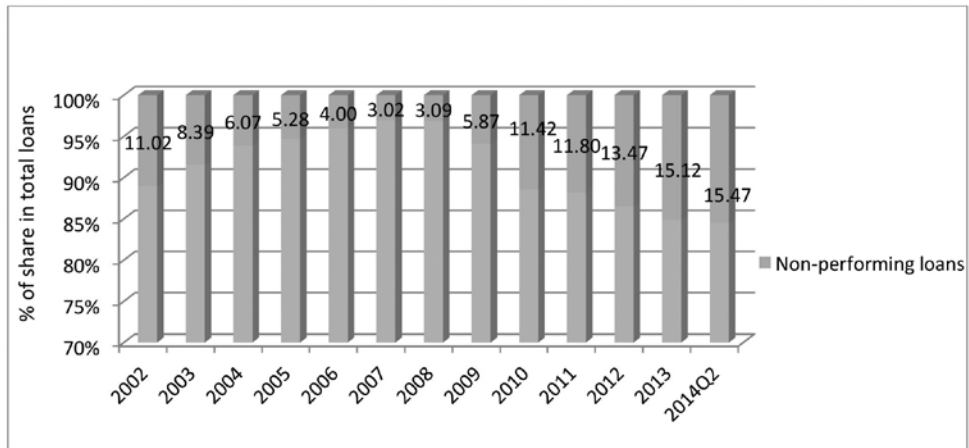
The share of non-performing assets in the total assets of the B&H banking sector in the observed period, 2002-2014Q2, was the lowest in the pre-crisis year of 2007 (only 1.84%), while at the end of the first semester of 2014 it was as much as 11.96% and constantly increasing.

Figure 4 The share of non-performing assets in the total assets of the B&H banking sector (in %)



Source: Authors

**Figure 5** The share of non-performing loans in the total loans of the banking sector of B&H

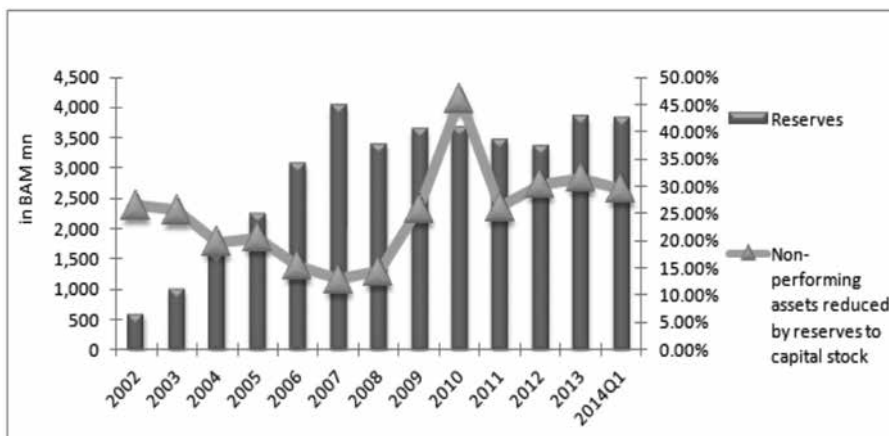


Source: Authors

By analogy, while the share of non-performing loans (NPLs) in the total loans in the B&H banking sector was only 3.02% in 2007 (not far away from the average in developed countries which is 1-1.5%), it is somewhat over 15% nowadays, which is still significantly lower than in other Western Balkan countries.<sup>8</sup>

The trend of non-performing assets reduced by reserves to capital stock (Figure 6) as the third indicator of asset quality was similar to the previous two.

**Figure 6** The trend of non-performing assets reduced by reserves to capital stock of the banking sector of B&H

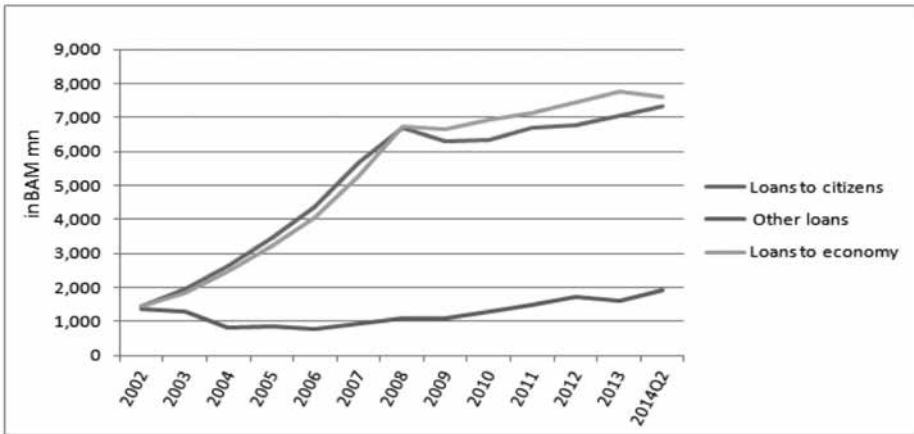


Source: Authors

When the claim structure based on approved loans is observed, the largest share is taken by private non-financial companies and households, while the government sector takes only a minor part of the total claims. The average of claims for the period 2002-2014Q2 is BAM 5.273 billion for companies, BAM 5.134 billion for households and BAM 1.250 billion for government institutions.

The term structure of loans shows a faster growth of long term than short term loans, which forces banks to provide relatively stable and long term sources of financing (savings deposits take somewhat more than 50%).

Figure 7 Loan trend – sector structure, the banking sector of B&H



Source: Authors

Figure 9 supports the thesis of a faster growth of long term rather than short term loans created by the banks in B&H.

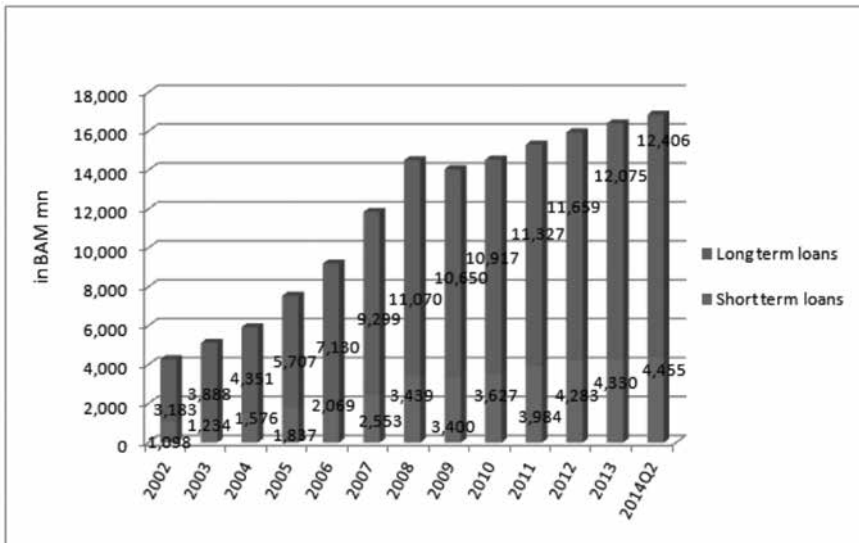
**Indicators of banking sector profitability**

The influence of the crisis on the real sector in B&H is still evident (including the influence of a-one-in-a-century flooding that happened in May 2014).

In the long run, this affects the growth of irrecoverable debt, meaning debtors' inability to service their loans, which requires larger reserves for potential credit losses and consequently increases costs (Figure 10) and reduces banks' business results (Figure 11).

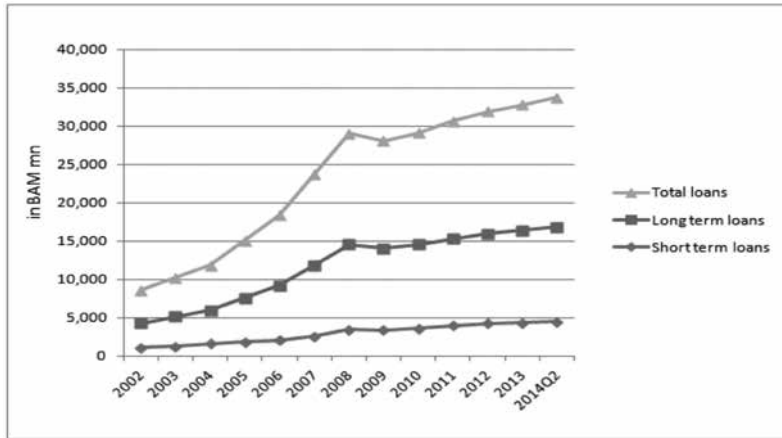
The return on average shareholders' equity of banks in B&H in 2010 was negative (-5.49%) due to a loss that occurred at the level of the total banking sector. After a significant improvement in 2011 and 2012, in 2013 this coefficient was still negative (-1.42%).

Figure 8 Term structure of loans



Source: Authors

Figure 9 Trend of total loans and term structure

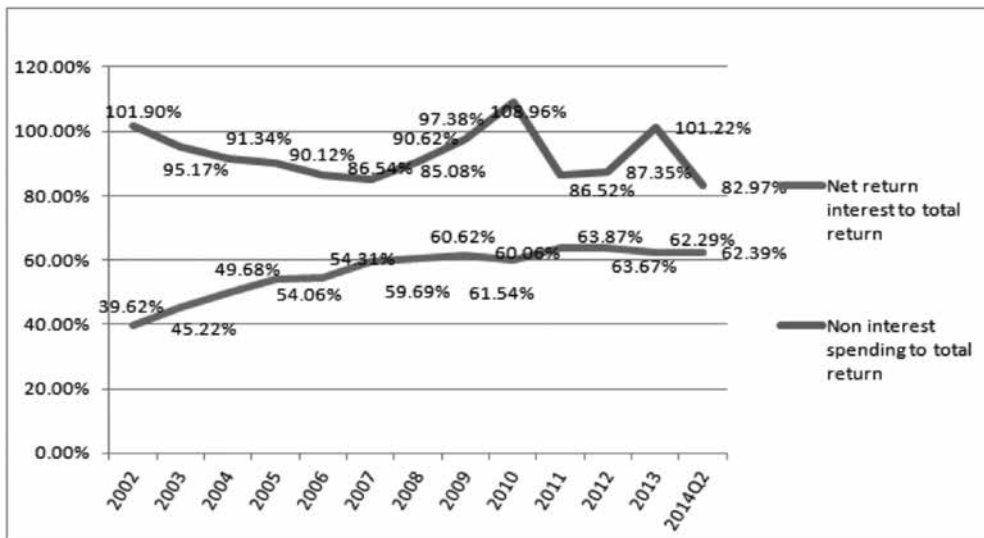


Source: Authors

#### Indicators of banking sector liquidity

In principle, the liquidity of the B&H banking sector in the observed period is at a satisfactory level. The highest liquidity coefficient of 37.67%, measured by the ratio of liquid assets towards the total assets was registered in 2007.

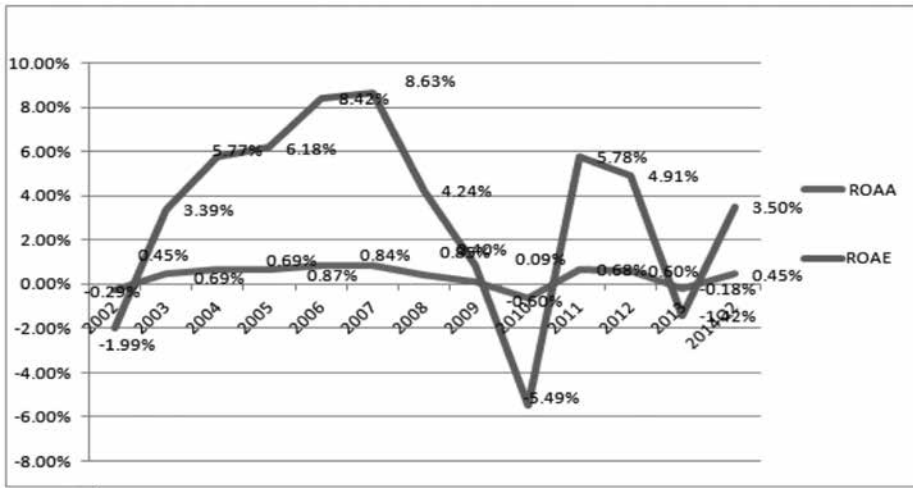
Figure 10 The share of net interest revenues and non interest spending in relation to the total return of the banking sector of B&H



Source: Authors

This shows that the banking sector was able to stand a reduced balance amount of 37.67%, which was the consequence of losing access to sources of financing or deposit withdrawal, before being forced to sell non liquid assets. In the following year of 2008, the growth of credit risk brings a sudden loss of confidence in the banking system and deposit withdrawal. This led to problems with liquidity and a drop in the liquidity coefficient in the period 2008-2012, followed by a mild growth and then another drop in 2013 and the first half of 2014, respectively.

Figure 11 Profitability of the banking sector of B&H



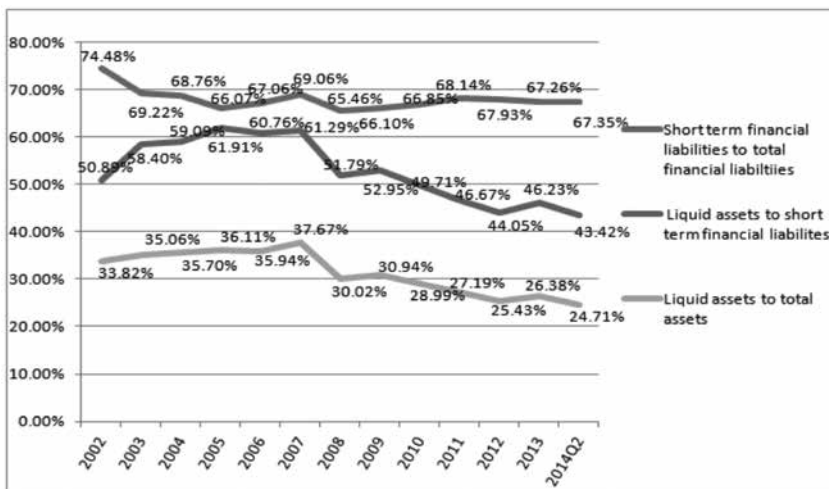
Source: Authors

### 3.2.2 Empirical Research

It should be emphasized that Basel I was reasonably implemented in the B&H banking sector, which guarantees the credibility of the banking sector, while the gradual implementation of Basel II is still underway.

Implementation of Basel II principles was supposed to start at the end of 2008 (by the implementation of the Decision on minimum standards for managing operational risk at banks), to proceed in three stages (2009-2013, 2014-2016, and 2017-2018) and to be finalised by the end of 2018. However, the implementation of this decision was prolonged until the end of 2009 in B&H Federation and mid-2010 in Republic of Srpska. Experiences from around the world teach us that without the implementation of Basel II there is no implementation or prospects for

Figure 12 Trend of liquidity indicators of the banking sector of B&H



Source: Authors

implementation of Basel III. For that purpose the empirical research was conducted to establish the progress and stage of implementation of the Basel II regulations in banks in Bosnia and Herzegovina.

### *Methodology*

The empirical research into the implementation of Basel II in BiH was conducted in mid-2012 using a questionnaire with 25 open/closed-ended questions and included 12 randomly chosen B&H banks. This research sample covered almost 50% of the B&H banks at that time, as two B&H banks were under receivership and two were entity's development and not commercial banks.

The questionnaire consisted of three sections. The first section covered 11 questions aiming to get answers about the knowledge of the area and the application of Basel II in B&H banks. The second section covered 6 questions focused on the minimum capital requirements (Tier 1), examination of the current situation as well as finding suitable ways of improving the quality of non-performing bank offerings in order to reduce the overall bank credit risk exposure. The third section covered the remaining 8 questions related to risk management issues, namely management of operational, market, and liquidity risks.

### *Results and discussion*

Although the survey results were analysed using descriptive and inferential statistics, only the key findings will be summarised here, due to article size limitations. This research led to the general conclusion that the implementation is at stage one, with the following main observations:

- In all segments of implementation, the largest progress was indicated by the domestic banks that were related to large parent banks and consequently had an easier access to implementation, with clear instructions and support by the headquarters.
- On the other hand, the banks not related to the large foreign banks indicated small or no progress in terms of Basel II implementation.
- In terms of regulators, the defined action plan did not include clearly constructed segments which banks should have already implemented. Thus,

it was difficult to draw parallels between the planned and the implemented at the particular point in time.

- Banks belonging to larger groups seriously accepted the process of Basel II implementation, and with assistance of parent banks made headway in implementation, even beyond regulators' requirements.
- Banks with lower assets, whose results were devastating in the context of Basel II implementation, would have to improve and speed up implementation by 2014, when stage two of Basel II implementation starts, so as to adapt their business activities to regulators requirements.
- Inability to check or harmonize the past processes between banks and regulators was also one of the aspects that should be taken into account more in the future. The reason for this lies in the structure of banks operating in B&H, which is rather diverse; some banks in the implementation of Basel II principles would progress ahead of their regulators, while others would lag behind. All this certainly depends on the size of parent banks, since they certainly went through year-long preparations for Basel II implementation and could transfer their experiences to the daughter banks in B&H.
- Education is indeed the segment which requires constant updates regarding Basel II implementation, since B&H is certainly faced with a long way to reach the final organization of the financial and banking system in particular, according to the Basel Committee requirements. This is also the segment in which smaller banks would have to invest more effort, taking into consideration that they need to hire experts to raise their employees' knowledge to the level which would enable high-quality implementation of Basel.
- There are a certain number of banks aspiring to a more advanced approach to credit risk measurement. It is thus very important to monitor in the future which banks would really be able to apply such an approach, bearing in mind numerous preconditions that need to be fulfilled.
- Although most banks opted for the basic approach for operational risk measurement, one must bear in mind that operational risk management in B&H banks is still at the beginning stage. Therefore, banks may decide to use the basic ap-



proach, but still not taking into account whether or not this is a good way to reach the appropriate capital requirements.

- In stage two of implementation, more attention should be paid on identifying, measuring, and managing other types of risk, such as market risk, liquidity risk, *etc.*
- Basel II implementation is certainly one of the most important events marking this decade in the banking sector in B&H. Its transfer is expected to last for a longer period of time and the Accord itself would certainly experience some changes, bound to occur at the beginning of 2013 in the developed part of the world, with the introduction of Basel III. However, the most important thing for the banks in B&H is to adapt their business activities to the requirements imposed by Basel II, due to the fact that its implementation contributes to the stability of the financial system on the macro level, as well as encourages banks to improve their risk management system on the micro level.
- As previously stated, regardless of all the progress made over the three-year period, the process of reforms ahead of this sector is expected to be a long one. Supervisors are yet to do a lot of work and face many challenges on the road to the implementation of Basel II or Basel III. The biggest challenges awaiting supervisors would include the need to increase the supervisory body so that all the relevant risks on the market would be monitored as well as the inappropriate development of other parts of the financial system and management in the public finance sector, which transfer risks onto the banking sector.

### 3.2.3 Regulatory Findings

In mid-2013, the Agency for Banking of B&H Federation<sup>9</sup> conducted the so called Preliminary study of the quantitative effect of standardized approach implementation for calculating capital requirements for credit risk in B&H Federation (QIS)<sup>10</sup>, using the technique of questionnaire on the population of 17 commercial banks (banks from Republic of Srpska were not included in this research). Naming some of the positive consequences of Basel II implementation, banks set apart the following:

- lower capital requirements;
- increased coefficient of capital adequacy;
- improved collateral management;
- better risk control and management;
- decreased capital requirements due to allowing for collateral, implementation of credit risk mitigation (CRM) techniques;
- more precise and realistic calculation of capital adequacy;
- increased capital requirements for higher exposure to risks and decreased requirements for lower risk exposure, *etc.*

Banks also mentioned some of the negative consequences of Basel II implementation as follows:

- significant investment in development or purchase of software solutions;
- movable assets that banks take as collateral are not considered an acceptable type of insurance when calculating capital requirements;
- large investment particularly evident when introducing advanced approaches;
- additional investment into IT infrastructure and human resources, *etc.*

The question now arises in terms of objective expectations of the possibility to accept Basel III in the B&H banking sector, regarding the fact that the timing of complete implementation of Basel II in B&H coincides with the planned deadline for complete implementation of Basel II in the developed part of the world as well as the fact that Basel III draws on Basel II.

Intuitively speaking, Basel III does not necessarily need to have strong consequences on the real or corporate sector in B&H, since the rate of capital adequacy, as stipulated by the Law on Banks in B&H Federation and Republic of Srpska, is 12% (by 50% higher than the international standard). Besides, due to the undeveloped financial market, B&H banks hold the largest part of their capital as primary (shareholders' equity and retained profits) rather than secondary (subordinated shares, valuation reserves, *etc.*). This is most probably why many of the banks already fulfil new, stricter capital requirements. Unlike them, as estimated by the BIS, the world's largest banks should gather a total of EUR 374 billion of additional capital so as to reach the Basel III defined rate of capital stock adequacy

of 7%. Due to the banks' gathering the capital and retaining profit, aimed at the increase of the capital stock, analysts emphasize that Basel III implementation in the short term might result in the negative effects of consumption, investment, and economic growth. However, in the long term, they believe that the implementation of Basel III standards would yield more stable business activities with less risk in the banking sector.

In terms of liquidity requirements, economic analysis almost generally state that B&H banks are too liquid (for example in 2013 they had EUR 700 million over the required level) and that minimum standards for liquidity risk management in the B&H banking sector were even stricter than the globally harmonized regulations.

However, potential consistency with the latest regulatory regime for the banks situated in B&H that are not under foreign private ownership would require significant investment in the following:

- software solutions, for example, the regulations define the implementation of approaches based on internal rating systems for credit risk instead of the past standardized one, or the advanced measurement approach for operational risk instead of the past basic indicator approach, while smaller banks in B&H, due to the nature of their activities and risk profile, do not prefer sophisticated products and complex calculations of capital requirements for certain risks;
- education of not only bank employees but also supervisory staff;
- establishment of institutional capacities within agencies;
- significant amount of new information and their storage, *etc.*<sup>11</sup>

Basically, any bigger regulatory reform will include harmonization costs which B&H banks could not avoid. These are only some of the aspects which the Central Bank of B&H in cooperation with the entity banking agencies and experts of international financial institutions (the International Monetary Fund and the World Bank) will need to consider when making the decision on the implementation of Basel III principles in the B&H banking sector – before or after the total implementation of Basel II, which leaves an open question.

#### 4. Conclusion and Recommendations

Banking regulation has strong impact on the economy, financial intermediation, and the overall perception of the financial system. As capital adequacy is one of the main indicators of the strength and soundness of banks, the Basel Committee on Banking Supervision has promoted “global” (harmonised) standards in the banking business ever since its inception in 1988. Nowadays, the credibility of the banking sector of any country is largely judged by the degree to which Basel capital standards have been implemented in the banks' business activities. Although the Basel Committee includes around 30 members, the Basel rules have been accepted as standard by more than 100 countries.

While the countries of the developed part of the world started Basel II implementation on 31/12/2006, the implementation in other countries is at various stages of progress. Basel II is considered the most important and complex change related to risk management for banks in the past 50 years. The main focus of Basel II is the parallel “construction” of three pillars into banking activities. The first one is related to risk evaluation, not only credit and market, but also operational risks as well, while the second pillar is related to risk management or the process of supervisory review. The final, third pillar is related to risk transparency or market discipline. Ultimately, regulators want Basel II to be implemented as a standard so that the bank's exposure to risks would be measured by sophisticated methods/approaches and balanced with appropriate sources for their absorption (capital in particular).

However, the global financial crisis (2007-2009) highlighted some of the inherent weaknesses of Basel II and opened it to criticism, namely for the overconfidence in the quality of statistical risk measures and tools, risk management herding, liquidity risk neglect, *etc.* As a result, the regulators at the Basel Committee in June 2010 reached a consensus on a new (latest) accord – Basel III. The Basel III Accord is characterized as a successive process by which banks are expected to increase the primary capital ratio from 2% to 7%. Although Basel III basically draws on Basel II, it introduces certain changes in the structure of the obligatory capital (primarily the capital buffer, 2.5% in common stocks), liquidity risk management, banks' leverage ratio, *etc.* Its full implementation in developed countries is expected as early as at the beginning of 2019.

Reactions to Basel III have been both positive and negative, but its actual impact will not be known for several years. Furthermore, despite the fact that Basel III standards are intended for implementation by internationally active banks and in developed economies, other economies (and, therefore, emerging) are also forced to implement the accord due to international regulatory and competition reasons. But the real truth is that Basel accords in general have not yet addressed emerging economy concerns. As far as Basel III is concerned, it uses indicators that are less suitable for assessing bank soundness in emerging economies. It endorses using capital buffer that consists of a category of capital that has lower quality in emerging economies. In addition, there is a serious problem of lack of skills and expertise in emerging economies, which further hinders the overall compliance efforts.

In terms of B&H, it is generally known that its banking sector is the healthiest segment of the overall (bank-centric) financial system. Although the B&H banking sector is well capitalized (the rate of capital adequacy is constantly above the requested 12%), it is evident that NPLs continuously increase due to higher business risks of B&H companies, which is primarily the consequence of recessive economic

trends worldwide (including one-in-a-century flooding in B&H in May 2014). For banks the NPL growth means higher reserves for potential credit losses, resulting in higher reserve costs and lower business results (even negative in 2010 and 2013).

Basel II implementation in B&H is currently at stage one for the private banks with domestic ownership or at stage two mostly for the private banks with primarily foreign ownership (the former ones do not even use sophisticated products which require the change in advanced measurement approaches). This causes large costs for banks, in terms of technology support, education (employees and regulators/supervisors), management of information *etc.* Since the full implementation, which has already been under significant delays, is planned for the end of 2018, the question now arises whether or not it is possible to start implementing principles of the latest accord before this deadline. The question remains open and it must be answered by the Central Bank of B&H and entity banking agencies, after some serious consulting with the experts of international financial institutions, especially since meeting the Basel III standards might be “mission impossible” for smaller domestic banks.

## REFERENCES

1. Bessis, J. (2011). *Risk Management in Banking*. Chichester: John Wiley & Sons.
2. Cathcart, L., El-Jahel, L., Jabbour, E. (2015), "Can regulators allow banks to set their own capital ratios?", *Journal of Banking & Finance*, Vol. 53, pp. 112-123.
3. Chalermchatvichien, P., Jumreornvong, S., Jiraporn, P. (2014), "Basel III, capital stability, risk-taking, ownership: Evidence from Asia", *Journal of Multinational Financial Management*, Vol. 28, pp. 28-46.
4. Dissanayake, A. D. (2012a), "Basel III and Emerging Economies: A Critique: Part I", *Journal of International Banking Law and Regulation*, Vol. 27, No. 9, pp. 353-361.
5. Dissanayake, A. D. (2012b), "Basel III and Emerging Economies: A Critique: Part II", *Journal of International Banking Law and Regulation*, Vol. 27, No. 10, pp. 373-394.
6. Dietrich, A., Hess, K., Wanzenried, G. (2014), "The good and bad news about the new liquidity rules of Basel III in Western European countries", *Journal of Banking & Finance*, Vol. 44, pp. 13-25.
7. Ganić, M. (2012). *Međunarodna regulacija u bankarstvu*. Sarajevo: Internacionalni univerzitet u Sarajevu (IUS).
8. Gavalas, D. (2015), "How do banks perform under Basel III? Tracing lending rates and loan quantity", *Journal of Economics and Business*, Vol. 18, pp. 21-37.
9. Ketcha, N. (2014), "Basel III is bad fit for smaller banks", *ABA Banking Journal*, Vol. 15, No. 6, pp. 16-19.
10. Köffer, T. (2014). *Basel III – Implication for banks' capital structure: What happens with hybrid capital instruments?*. Hamburg: Anchor Academic Publishing.
11. Mendoza, C. R. (2015). *Bank Capital and Basel III Regulations: Implementation and Effects*. New York: Nova Publishers.
12. Rojas-Suarez, L. (2002), "Can International Capital Standards Strengthen Banks in Emerging Markets?", Working Paper No. 01-10, Institute for International Economics, Washington DC.
13. Rossignolo, A. F., Duygun Fethi, M., Shaban, M. (2013), "Market crises and Basel capital requirements: Could Basel III have been different? Evidence from Portugal, Ireland, Greece and Spain (PIGS)", *Journal of Banking & Finance*, Vol. 37, No. 5, pp. 1323-1339.
14. Rossignolo, A. F., Duygun Fethi, M., Shaban, M. (2012), "Value-at-Risk models and Basel capital charges Evidence from Emerging and Frontier stock markets", *Journal of Banking & Finance*, Vol. 8, No. 4, pp. 303-319.
15. Schmaltz, C., Pokutta, S., Heidorn, T., Andrae, S. (2014), "How to make regulators and shareholders happy under Basel III", *Journal of Banking & Finance*, Vol. 46, pp. 311-325.
16. Šverko, I. (2002), "Rizična vrijednost (value at risk) kao metoda upravljanja rizicima u financijskim institucijama", *Ekonomski preglad*, Vol. 53, No. 7/8, pp. 640-657.

## (ENDNOTES)

- 1 Twenty-one systemic banking crises took place in the period 2007-2009, and some are not yet over. What is interesting, these crises took place in the most industrialised countries in the world, most of which are the oldest stakeholders in the Basel Committee. In that regard, Basel regulators have received widespread criticism for failing to prevent two credit crises that hit the U.S. over the last two decades. Nonetheless, banks were considerably overcapitalized prior to the onset of the 2007-2009 subprime crisis compared to those which had undergone the 1990-1991 recession. Therefore, if capital requirements were achieved prior to the subprime crisis, how could the Basel framework be blamed again for having accelerated if not caused another credit crunch? Cathcart, El-Jahel & Jabbour (2015, pp. 112-123) find that the answer to this question lies in the relationship between the capital ratio and the leverage ratio which is governed by risk-weights categories determined by the Basel regulation. They show that changes to risk-weight categories which affect the correlation pattern between both ratios are not reflected in the subprime crisis. This minimizes the implication of the Basel II regulation in the crunch that succeeded its announcement, in contrast to Basel I.
- 2 In other words, the Accord introduces a liquidity coverage ratio so that banks hold enough liquid assets to be converted into cash to meet liquidity needs for 30 days. This test is to be a minimum requirement. The liquidity requirement, however, should be introduced only in 2015. Liquidity itself is hailed by Basel as one of the more important innovations introduced by the new accord.
- 3 Market capitalization is the product of the total number of issued shares and the current market price of a share of the financial company (Šverko, 2002, p. 646).
- 4 The Z-score is computed as the return on assets (ROA) plus the capital-asset ratio divided by the standard deviation of asset returns. It measures the distance from insolvency. Insolvency is defined as a state where losses surmount equity. Thus, the Z-score represents the number of standard deviations that a bank's ROA has to drop below its expected value before equity is depleted.

$$Z = \frac{ROA + CAR}{\sigma(ROA)},$$

where ROA - the return on assets, CAR - the capital-asset ratio (equity/assets);  $\sigma(ROA)$  - the standard deviation of ROA.

- 5 Gavalas (2015, pp. 21-37) found that assuming a 1.3 percentage point increase in the equity-to-asset ratio to meet the Basel III regulations, the country-by-country estimations imply a reduction in the volume of loans by an average 4.97 percent in the long run for the banks in countries that experienced a crisis and by 18.67 percent for the banks in countries that did not experience a crisis.
- 6 Central Bank of Bosnia and Herzegovina, (2015), "Financial Stability Report for 2014", Available at: [http://www.cbbh.ba/files/financial\\_stability\\_report/fsr\\_2014\\_bs.pdf](http://www.cbbh.ba/files/financial_stability_report/fsr_2014_bs.pdf) (Accessed on: August 9, 2015).
- 7 The basis for the formulation and calculation of financial soundness indicator is given in the IMF Financial Soundness Indicators Compilation Guide in 2006.
- 8 When the countries of the region are concerned, the largest share of NPLs in the total loan sum, according to the 2012 data, was in Montenegro 21% (with solvency coefficient of 10%), lately decreased from 15.85% to 8.96%, followed by Serbia with the share of 18.8%. In Albania the NPL share is 16.6% while in Croatia it was 12.2%. In Slovenia, one fifth of the assets (20%) is made of NPLs, which is EUR 9.7 billion.
- 9 Agency for banking of B&H Federation (FBA), (2013), "Preliminary study of the quantitative impact of the application of the standardized approach to calculate capital requirements for credit risk in Federation of B&H (QIS)", Available at: [http://www.fba.ba/images/Publikacije\\_Banke/Preliminarna\\_studija\\_QIS\\_bos.pdf](http://www.fba.ba/images/Publikacije_Banke/Preliminarna_studija_QIS_bos.pdf) (Accessed on: December 19, 2014).
- 10 For more details, see: [http://www.fba.ba/images/Publikacije\\_Banke/Preliminarna\\_studija\\_QIS\\_bos.pdf](http://www.fba.ba/images/Publikacije_Banke/Preliminarna_studija_QIS_bos.pdf).
- 11 Alongside two supplementary capital buffers, the Basel Committee imposed severe pressure on the Value-at-Risk based Internal Models Approach in order to increase. This is to increase the capital base by adding the stressed Value-at-Risk component in an effort to reduce reliance on internal models while keeping the Standardized Approach avenue open. However, even though those measures might appear theoretically correct, evidence gathered for long and short exposures in Portugal, Italy, Greece, and Spain highlights several defects in Basel III. Rossignolo, Fethi & Shaban (2013, pp. 1323-1339) emphasized that leptokurtic models, primarily those derived from Extreme Value Theory, should be enforced in the regulations given their superior performance in market crises, and that Basel II could have shielded against 2008 mayhem provided that heavy-tailed techniques had been employed. Furthermore, Rossignolo, Fethi & Shaban (2012, pp. 303-319) suggested that the inclusion of Extreme Value (EV) in planned supervisory accords should reduce development costs and foster healthier financial structures.

*Emina Kozarević  
Nedžad Polić*

## **PERSPEKTIVE BASELA III: EMPIRIJSKI DOKAZI IZ BOSNE I HERCEGOVINE**

### **SAŽETAK**

Posljednji baselski sporazum, koji se oslanja na Novi sporazum o kapitalu (tzv. Basel II) i čiji su osnovni ciljevi, normativno gledano, poboljšanje sposobnosti bankovnog sektora da apsorbira gubitke proistekle iz ekonomskih neprilika poput globalne financijske krize (2007. -2009.), poboljšanje upravljanja rizicima i upravljanja uopće te jačanje transparentnosti i objavljivanja od strane banaka, operativno promatrano, naglašava potrebu da se unaprijede kvaliteta i kvantiteta komponenti kapitala, standardi likvidnosti i *leveridž ratio*. Implementacija Sporazuma u razvijenim zemljama započela je početkom 2013. godine, a ukupni prijelazni period od okvira Basela II treba završiti do 2019. godine. Kada su u pitanju zemlje s tržištima u nastajanju, postoji nekoliko pitanja na putu njegove implementacije, kao što su potrebne (tehničke) vještine i ekspertiza osoblja banaka, kao i njihovih supervizorskih institucija, sofisticirani mehanizmi i kapacitet za interno rangiranje, značajna količina novih informacija i evidencija itd. U ovome radu, stoga se diskutira o stvarnim i potencijalnim učincima Basela III, prvo u razvijenim zemljama, a zatim i zemljama s tržištima u nastajanju. Poseban naglasak stavljen je na bankovni sektor Bosne i Hercegovine.

**Ključne riječi:** međunarodni bankovni standardi, baselski sporazumi, Basel III, učinci, razvijene zemlje, zemlje s tržištima u nastajanju, Bosna i Hercegovina