

## **Impact and Limitations Deriving from Basel II within the Context of the Current Financial Crisis**

**Oana Miruna DĂNILĂ**

Bucharest Academy of Economic Studies  
oanamirunadanila@yahoo.com

**Abstract.** *The Banking sector risk management framework, geared towards maintaining a solid capital adequacy level, has witnessed a permanent evolution, determined by the global economic and financial reality.*

*Basel II has brought an improvement of the risk management framework by adding minimum capital levels corresponding to market and operational risk and by the introduction of internal rating models. However the current crisis has brought forward some adverse effects as well as limitations.*

*This paper analyses the evolution of prudential rules and regulations introduced by Basel II and their impact on the banking system together with outlining certain limitations.*

**Keywords:** Basel II; Basel II limitations; financial crisis; prudential rules.

**JEL Codes:** G01, G21.

**REL Codes:** 11B, 11C.

## 1. Introduction

The banking system plays a major role in the global economy, as the main provider of liquidity and payments platform. According to Benjamin Cohen, the banks are “a lubricant to grease the wheels of commerce”. In order to fulfill this function, the banking system has to have access to necessary resources in order to properly respond to any economic imbalance. In this respect, the banking rules and regulations together with maintaining safety limits have been a top priority for specialists, authorities and market supervisors.

The current financial crisis has clearly shown serious failings in the supervision and regulation of the international financial system. Its causes have been a favorite topic for specialists and theorists and a multitude of factors have been identified, on both micro and macro levels.

The amplitude of the crisis was generated also by a relaxation of the global financial market safety nets: decrease of provisions (especially during 2001-2006), relaxed capital margin rules (actual level - minimum level as per regulation) due to large inflows of foreign funds, unwillingness of bank shareholders to increase the capital and introduction of hybrid (debt/equity) products categorised as equity, relaxed capital adequacy rules through preference towards low capital consuming products (i.e. trading, sovereign etc.), the emergence of “shadow banks” (funds, financial services providers) which raise funds from the market but are not guaranteed by authorities, the lack of early intervention of the financial authorities (Cannata et al., 2011)

Considering this relaxation of the safety nets, the banking system has lacked the necessary resources to deal with the subprime crisis generated losses. During H1 2008, the top 10 global financial institutions recorded a cumulated loss of USD 490 billion (Cannata et al., 2011). And the bankruptcy of Lehman Brothers in September 2008 amplified the effects of the crisis and generated massive withdrawals on the monetary market together with the collapse of commercial debts and international interbank market.

On top of this, some specialists consider that the limited introduction of Basel II (coming into force only at the beginning of the crisis) and lack of correlation between prudential and accounting regulations have also fueled the crisis (Ranjit, 2009).

Within this context, this paper analyses the evolution of the main Basel II requirements and provisions and the impact of the financial crisis on the prudential rules and regulations.

## 2. Basel accords timeline

The Basel I accord has been promoted by the Basel Committee in 1998 and subsequently implemented by the banks starting with 1992. The starting point was represented by the document published in December 1987 by the Basel Committee, on unifying the measurement methods for capital adequacy and establishment of capital adequacy standards for international banks. This document was issued due to increasing concern with respect to deterioration of capital ratios due to increased credit risk.

Basel I considered only the credit risk in the measurement of capital adequacy and covered at first issues related to capital measurement (1st and 2nd tier), risk weighting (associated to various asset classes – 0%, 20%, 50% and 100%) and capital adequacy rules (8% ratio of capital to risk weighted assets).

By studying the timeline of Basel I provisions, I consider as important certain changes (amendments) which in my opinion brought value to the original rules: provisioning/reserves for credit losses (1991), assessment within the capital adequacy framework of the credit risk generated by off-balance items (July 1994) together with its improved rules and regulations (April 1995), introduction of market risk within the capital adequacy measurement methods (January 1996). With respect to market risk, two alternative methods for capital adequacy measurement were introduced: standardised approach and internal VAR models – rules subsequently improved in September 1997.

Although extremely complex and revolutionary at that time, Basel I rapidly failed to address the rapid developments of the financial markets so a new capital adequacy framework was needed. So, in June 1999 the Basel Committee issued a proposal regarding changes to capital measurement and capital adequacy rules for international banks.

Basel II was published in June 2004, following a large scale consultation process with representatives of the banking sector, authorities and businesses. In 2005 the capital standards were revised and improved by adding new rules on market risk and repeat losses; in June 2006 the full version of the accord has been published.

Basel II is built on three pillars: minimum capital requirements (flexible but advanced rules on measuring the minimum capital based on credit risk, market risk and operational risk), prudential supervision process (qualitative approach) and market discipline (detailed reporting requirements on shareholders, exposures, capital adequacy), with the final aim of increasing the safety and stability of the international financial market.

The novelty of Basel II, with major impact on risk management process, derives mainly from:

- Capital requirements associated with operational risk (losses or loss of profit deriving from internal factors: procedures, employees, fraud or external factors: economic environment etc.);
- Introduction of several methods to assess the capital requirements. Three such methods are promoted (each with its own degree of complexity) in order to measure capital requirements deriving from credit and operational risk; the banks can choose one of the methods based on their necessities, abilities and strategy of their authorities;
- A strong connection between capital measurement and capital adequacy, improved supervision process and market discipline.

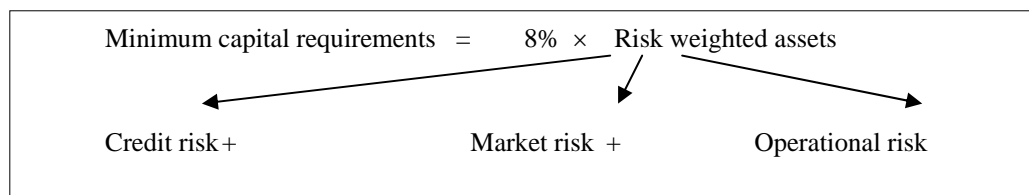
Beyond the above mentioned issues (to be discussed in the next chapter), Basel II maintains key elements of the 1998 Basel I and its subsequent improvements as 8% rule, eligible capital definitions as well as capital requirements associated with market risk (as per 1996 amendment).

### 3. Basel II framework

In order to substantiate the Chapter 2 topics, I will outline the main characteristics for each of the Basel II pillars.

#### I. First pillar – minimum capital requirements

The 8% of the risk weighted assets minimum capital requirement, based on credit, market and operational risk, is determined separately for each of the three types of risk (see Illustration 1)



The minimum capital requirements or capital adequacy ratio is determined based on the following formula:

$$\frac{\text{Total Capital}}{\text{Credit risk} + \text{Market risk} + \text{Operational risk}} = \text{Capital adequacy ratio (minimum 8\%)}$$

To evaluate each risk category, Basel II is proposing several options (BIS, Basel II, 2006):

- For credit risk: standardised approach, internal rating approach (IRB) and advanced internal rating approach (A-IRB);
- For market risk: Standardised approach and internal Value at Risk (VAR) models approach;
- For operational risk: basic indicator approach, standardised approach and advanced measurement approach (internal forecasting).

### **I. Credit risk approaches**

*Standardised approach* – various risk weights (as indicated by international rating agencies) are allocated to various types of exposures to banks, companies and sovereigns (governments, central banks, local or central public sector entities).

*IRB approach* – the banks are using their own predictions on probability of default (PD) associated with each client. The additional risk factors – Loss given default (LGD) and Exposure at Default (EAD) are set by the supervision authorities. The banks have to adhere completely at certain standards set by such authorities.

*A-IRB approach* – risks are estimated internally; this approach is applied only by institutions wishing to adhere to the most rigorous market authorities standards. Credit risk decrease methods are employed i.e. collateral quality, credit derivatives etc.

The standardised approach is widely used by banks given its compatibility with Basel I rules and its fast implementation; nevertheless more and more banks are switching to IRB or A-IRB (targeting a more accurate risk assessment).

### **II. Market risk approaches**

The market risk measuring methods set by the Basel 1996 amendment are still valid – the standardised approach (based on supervision authority standards) and internal VAR models approach; Basel II has brought only minor changes.

### **III. Operational risk approaches**

*Basic indicator approach* – a basic indicator (i.e. revenues) is chosen and a percentage indicated by the supervision authority is applied;

*Standardised approach* – the bank's activity is divided into several business segments; for each segment a basic indicator is chosen and a percentage indicated by the supervision authority is applied;

*Advanced measurement approaches* – by using internal risk prediction models, to be validated by the supervision authority.

With respect to the operational risk measurement I consider the main challenge to the banks to be represented by developing a complete and accurate database dealing with operational risk losses for each business segment.

### **Second pillar – prudential supervision process**

According to Basel II, the bank's management is directly responsible to manage the risks and maintain capital to such levels in accordance with the institution's risk profile; at the same time the authorities are responsible for creating a proper regulation environment and supervise its applicability (proper capital requirement measurements and associated actions to correct potential imbalances).

In this respect Basel II outlines several principles:

- The banks have to have internal processes and procedures for capital measurement, according to their risk profiles, together with strategies for dealing with any contingencies;
- The supervision authorities are required to evaluate such internal procedures and strategies together with each bank's capacity for monitoring and compliance;
- Also the supervision authorities are expected to ensure that capital requirements levels are maintained across the banking sector above the minimum acceptable figures. In this respect, levels above minimum may be required by authorities overall or for certain individual categories;
- Supervision authorities have to be capable of early intervention if any capital requirement negative developments are spotted, in order to demand swift action from the affected institution(s).

### **Third pillar – market discipline**

In order to ensure an optimum level of market discipline, Basel II introduced certain periodic reporting requirements (half year or quarterly) for critical information on bank's activity, in order to provide reliable info to all current or potential bank counterparties on risks and financial performance.

### **Basel II status as at end of March 2012**

Basel II can be considered as fully implemented only if all its three pillars are applied. A minimum implementation can be considered the application of first pillar only.

From a purely legal point of view, Basel II is a set of recommendations provided to international banks, avoidance of implementation cannot be officially sanctioned. However, as a parallel initiative, the European Commission revised its own requirements pertaining bank capital in order to create a common set of rules across the European Economic Community.

The new requirements have been developed by both institutions (Basel Committee and EC) through consultations with representatives of the supervision authorities, banking system and corporates in order to meet a spectrum of requirements as broad as possible, resulting in an European Directive implemented across EU countries.

According to the Bank for International Settlements, as at 31 March 2012, Basel II is functional in EU, Australia, Brazil, Canada, Hong Kong, India, Japan, Korea, Mexico, Saudi Arabia, Singapore, South Africa and Switzerland. A partial application is currently in Turkey, China and Indonesia and Argentina is considering the switch from Basel I to Basel II when it comes to credit risk.

In Russia, the second pillar will be introduced not earlier than 2014; the basic approaches for credit, market and operational risks are already introduced. In US all international banks are required to adopt advanced approaches for credit and operational risks – these banks are currently performing dual reporting: Basel I and Basel II while the other banks are reporting only based on Basel I requirements.

#### **4. Basel II impact on capital requirements**

Based on various European and international studies, I am going to analyse the Basel II adoption impact on credit institutions.

I am starting by presenting in Table 1 the impact on minimum capital requirements according to the results of impact study 5 (BIS, QIS5, 2006) done by the Basel Committee on 383 G10<sup>(1)</sup>, and CEBS<sup>(2)</sup> (Committee of European Banking Supervisors) banks non-G10<sup>(3)</sup>.

Table 1

**Capital requirement variations following the switch from Basel I to Basel**

	Standardised	IRB	A-IRB	Most probable approach
G10 group 1	1.7	-1.3	-7.1	-6.8
G10 group 2	-1.3	-12.3	-26.7	-11.3
CEBS group 1	-0.9	-3.2	-8.3	-7.7
CEBS group 2	-3.0	-16.6	-26.6	-15.4
Non G10 group 1	1.8	-16.2	-29.0	-20.7
Non G10 group 2	38.2	11.4	-1.0	19.5

Source: BIS – QIS5.

An analysis of the data shows significant deviations on capital requirements depending on the chosen approach (IRB or Standardised); the banks using the standardised approach being at disadvantage: for G10 group 1 banks an average increase of 1.7% for Standardised approach compared with a 1.3% decrease for IRB and 7.1% for A-IRB. The G10 Group 2 banks record a steep decrease for A-IRB; however, given the most probable chosen method the forecasted decrease would be of 11.3%.

The same trend of capital requirements decrease is valid for CEBS (group 1 and 2) and non-G10 group 1 banks, especially considering IRB approach. At the same time, the results pertaining non-G10 group 2 banks are widely spaced, mostly due to the presence of many niche banks and differences in national rules and regulations.

Appendixes 1 and 2 outline the effects on capital requirements based on types of exposures, segmented on G10, CEBS and non-G10 banks.

It is obvious that in the case of standardised approach the retail portfolio (especially mortgage loans) triggers the greatest reduction of capital requirements for all six groups of analysed banks, generating impacts between -3.2% (non G10 group 2) and -11% (CEBS group 2) depending on the weight of retail in total business.

A significant reduction appears in the SME portfolios (approximately -20%), but the overall impact is reduced given the small share of such business in total bank exposures.

The capital requirements are however higher for sovereign and interbank exposures, but, like SMEs, the overall impact is reduced (small share in total business). It is clear that emerging market exposures are going to generate higher capital requirements given both sovereign and interbank considerable flows towards such areas.

The operational risk determines an increase of capital requirements across all segments, its impact ranges between +3.5% for non-G10 group 1 and +13%



non-G10 group 2 (extremely diversified sample), between +5.6% and 8.3% for G10 banks and between +5.5% and 9% for CEBS banks.

If we are to look at the most probable approach to be implemented results, for all six groups there is a reduction of capital requirements ranging between -4.5% (G10 group1) and -20.7% (non-G10 group1).

As I mentioned, the decrease of capital requirements is mainly driven by the retail portfolio (50% decrease for G10 and CEBS banks, 75% decrease for non-G10 group1). Its impact on total portfolio ranges between -8% G10 group 1 and -20% CEBS, based on its weight in total business (G10 group 1 are banks more focused on corporate and international business while group 2 is more retail focused). A particular situation appears for non-G10 group2 banks, for which the retail portfolio determines an increase of capital requirements of 6.5%, due to higher PD and NPL levels.

Unlike standardised approach, by employing IRB approach the corporate portfolios registers a decrease of capital requirements of approximately 20–25% with an impact on overall portfolio of approximately -3 – -5%. Also, the equity investments portfolio does not have a major impact by using standardised approach; nevertheless if using IRB this portfolio generates additional capital requirements between 80% and 130% (impact on total portfolio + 3%).

The operational risk determines an increase of capital requirements across all bank categories with 6%–7%.

## **5. Overall impact and limitations of Basel II**

The analysed studies show the fact that the Basel II impact on capital requirements is being influenced by both the utilised approach and bank's risk profile. At a quick glance it becomes clear that the banks utilising standardised approach are at disadvantage compared to the ones employing IRB or A-IRB approaches.

Considering the risk profile, the local retail banks, especially those registering large mortgage exposures, can benefit from important reductions of capital requirements while at the opposite the investment and emerging markets banks are going to be subject to additional capital requirements.

On long term, Basel II should trigger a reduction of the cost for the banks (reduced capital requirements for several lines of business); however most probably we will witness negative impacts for a while due to implementation costs and/or the efforts of smaller banks to raise additional capital.

In my opinion, Basel II has definitely added value to the prudential rules and regulations, answering in many instances to the need to promote increased safety of the financial sector. The new requirements improved the prudential

framework by adding minimum capital requirements for market and operational risks, improved assessment of risk sensitivity (more classes of assets and types of exposures) and introduction of internal models for credit risk.

Nevertheless real life implementation proved several negative impacts and limitations of Basel II, especially in the light of the current financial crisis.

One of the main negative impacts is represented by significant reductions of capital requirements for banks utilising internal models not correlated with their ability to withstand systemic crises – an overestimation of their capacity to properly assess risks by using internal models. The “model risk”, generated by the lack of macro variables and improper internal mechanisms for risk measurement, triggered an imbalance between exposures and capital (unjustly amplifying the leverage and volatility of capital requirements) (Georgescu, 2012).

Too much emphasis on the external ratings is another negative side of Basel II: rating agencies have been too optimistic in setting the ratings (basically no rules in force in this respect) and Europe (especially Eastern Europe) has benefited much later (1990s) from the presence of external ratings and rating agencies compared to US.

Basel II provisions also generated an underestimation of capital requirements in relation to the banks’ trading books by employing untested and unrealistic VAR models (Atik, 2009).

Securitisation transactions have also contributed to the contagion effect and triggered systemic risks, which are not fully addressed by the current rules.

One other limitation worth mentioning is represented by the fact that liquidity risk is improperly addressed by the Basel II framework on both financing side and individual asset liquidity (Georgescu, 2012).

One last remark refers to the fact that Basel II generated competitive advantage for the large banks owning infrastructure and resources to implement its requirements and also for non-banking financial institutions not subject to Basel II requirements.

## **6. Conclusions**

The framework of prudential rules and regulations has been witnessing a permanent change in order to adapt. Triggered by concerns regarding the capital of the large international banks, Basel I became soon unfit for capturing the full spectrum of risks associated with banking activity - it utilised a limited number credit risk weights and did not address means and complex supervision procedures for credit institutions.

Basel II brought a clear improvement of the prudential framework by offering banks a larger range of alternatives to determine capital requirements associated with credit risk. The three proposed approaches enjoy different degrees of complexity, allowing banks to choose the most suitable one, according to their necessity, risk profile or supervision authorities strategy. Another positive issue is represented by the introduction of capital requirements associated with market and operational risks.

Basel II also sets up clear and strong connections between calculation rules for capital, adequacy standards, market supervision and market discipline. The rules are more risk sensitive than those outlined in Basel I, however not sufficiently adequate in order to strengthen the banking system enough to be able to respond to the challenges of the financial crisis. The current financial crisis has put under the spotlight some negative aspects of the Accord: lack of macro variables, procyclicality, liquidity risk improperly addressed, trading book related issues. Excessive reliance on external ratings and incorrect internal rating models also allowed for artificial reduction of capital requirements and decrease of banks' capacity to withstand systemic crises.

Nevertheless, Basel II represented an important step forward in the prudential framework through the creation of clear standards for risk sensitive capital regulations.

Given all the above, an improvement of the rules and regulations framework has become a must; the next step – Basel III is targeting new capital and liquidity regulations in order to significantly improve financial stability at the same time maintaining the basic principle of Basel II – direct connection between risk and capital. Of course, it remains to be seen if, as intended, these new rules will considerably strengthen the banking system's resilience when confronted with serious crises.

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## Notes

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- (1) 56 banks in G10 group 1, 146 banks in G10 group 2. G10 – the 13 countries member of Basel Committee – Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Spain, Sweden, Switzerland, UK and USA.
- (2) CEBS Group – EU and EC member countries: G10 and Bulgaria, Cyprus, Czech Republic, Finland, Greece, Hungary, Ireland, Malta, Norway, Poland and Portugal.
- (3) Non-G10 countries – Australia, Bahrain, Brazil, Chile, India, Indonesia, Peru, Singapore.

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Appendix 1

Overall results – standard approach relative to Basel II

Portfolio	G10						CEBS						Non-G10					
	Group 1			Group 2			Group 1			Group 2			Group 1			Group 2		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Corporate	27	3.2	0.9	16	-6.5	-1.0	17	-1.9	-0.3	10	-6.1	-0.6	20	2.1	0.4	35	-0.5	-0.2
Banks	4.9	30	1.5	5.1	4.3	0.2	6.0	29	1.8	6.0	-11	-0.7	1.9	64	1.2	5.1	45	2.3
Sovereign	0.4	55	0.2	0.5	-14	-0.1	0.4	98	0.4	0.2	27	0.1	0.1	81	0.1	0.9	1643	14
SME corporate	8.6	-2.5	-0.2	16	-0.5	-0.1	8.3	-5.1	-0.4	13	1.5	0.2	9.9	0.5	0	6.5	-1.2	-0.1
Special credit	4.6	-5.5	-0.3	1.5	7.2	0.1	5.4	-6.4	-0.4	1.7	-0.6	0.0	1.7	-2.5	0	0.2	79	0.1
Retail:	26	-27	-7.1	36	-25	-9	33	-27	-9	41	-25	-11	17	-24	-4.1	21	-15	-3.2
-Mortgage	22	-28	-6.3	22	-28	-6.2	28	-28	-7.8	24	-28	-7.2	14	-29	-4.1	3.6	-3.3	-0.1
-Revolving	0.6	-20	-0.1	1.2	-22	-0.3	0.7	-23	-0.2	1.4	-22	-0.3	1.3	-3.1	0	2.3	-25	-0.6
SME retail	1.8	-23	-0.4	5.8	-20	-1.2	2.7	-22	-0.9	8.1	-21	-1.7	0	73	0	3.7	-22	-0.8
Capital	3.2	53	0.2	3.2	-0.9	0.0	1.2	18	0.2	1.8	1.8	0	0.1	-1.5	0	2.2	-1.1	0
Purch. receivables	0.3	-6.2	0	0.3	-3.4	0	0.1	-19	-0.1	0.2	-0.7	0	0	0	0	0.6	9.4	0.1
Securitisation	3.0	7.4	0.2	17	31	0.5	2.6	13	0.4	1.2	5.0	0.1	0.3	102	0.3	0.8	-18	-0.1
Counterparty risk.	1.2	35	0.4	0.1	42	0.1	1.6	34	0.9	0.1	46	0.1	1.3	67	0.9	0	1739	0.6
Specific risk	1.3	5.4	0.1	0.3	1.7	0	1.3	6.5	0.1	0.4	2.6	0	0.9	12	0.1	1.6	306	5.0
Market risk	1.6	0.6	0	1.2	0	0	2.1	0.9	0	1.7	0	0	1.8	0	0	633	22	1.4
Related entities	4.7	16	0.8	1.7	41	0.7	5.7	20	2.0	2.3	37	0.9	7.5	0	0	5.2	124	6.4
Other deductions	3.5	0	0	2.3	0.6	0	5.0	-0.5	0	3.2	-1.2	0	32	0	0	2.6	-25	-0.6
Others	3.9	-1.1	0	4.21	1.3	0.1	4.2	-3.2	-0.2	5.4	1.2	0.1	2.7	-19	-0.5	0	0	0
Operational risk	-	-	5.6	-	-	8.3	-	-	5.5	-	-	9.0	-	-	3.5	-	-	13
Total	100	-	1.7	100	-	-1.3	100	-	-0.9	100	-	-3.0	100	-	1.8	100	-	38

1- size;

2- variation,

3- contribution.

Source: Impact Study 5 (QIS5).

## Appendix 2

## Overall results most likely IRB approach relative to Basel II

Portfolio	G10						CEBS						Non-G10					
	Group 1			Group 2			Group 1			Group 2			Group 1			Group 2		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Corporate	27	-18	-5	17	-27	-5	23	-17	-4.0	13	-29	-3.6	16	-27	-4.3	23	-18	-4
Banks	3.8	10	0.4	4	2.4	0.1	4.3	-4.5	-0.2	4.3	-0.1	0	2	9.5	0.2	4.9	-19	-0.9
Sovereign	0.5	239	1.3	0.4	139	0.6	0.5	179	0.9	0.1	391	0.5	0.2	40	0.1	0.2	40	0.1
SME corporate	6.9	-19	-1.3	15	-14	-2.2	7.2	-18	-1.3	13	-19	-2.4	10	-33	-3.3	3.2	78	2.5
Special credit	3.4	-11	-0.4	2.4	7.8	0.2	4.2	-17	-0.7	2.7	5.8	0.2	3	-13	-0.4	0.3	88	0.3
Retail:	17	-46	-8	34	-51	-17	20	-44	-8.9	37	-54	-20	20	-75	-15	21	32	6.5
-Mortgage	12	-64	-7.6	21	-58	-12	14	-65	-8.9	23	-62	-14	17	-83	-14	0.4	183	0.7
-Revolving	1.5	23	0.3	1.1	-19	-0.2	1.6	49	0.8	1.3	-28	-0.4	1.6	37	-0.6	5	48	2.3
SME retail	2.9	-49	-1.4	7.2	-46	-3.3	4.1	-50	-2	8.8	-45	-4	1.6	-72	-1.1	0.3	26	0.1
Capital	3.1	85	2.6	2.8	130	3.6	1.3	82	1.1	1.7	127	2.2	0.2	66	0.1	0.1	63	0.1
Purch. receivables	0.1	17	0	0.2	18	0	0.1	-40	0	0.1	-14	0	0	0	0	1.6	150	2.4
Securitisation	2.8	0.5	0	1.7	-24	0.4	2	8.6	0.2	1.3	-27	0.4	1.3	-35	-0.5	1.9	-60	-1.2
Counterparty risk.	1.9	15	0.4	0.3	26	0.1	2.3	9	0.2	0.3	14	0	1.2	8.8	0.1	2	-50	-1
Specific risk	1.4	4.1	0.1	0.9	-0.6	0	1.5	5.1	0.1	1.1	-1	0	0.9	11	0.1	1.9	-26	-0.5
Market risk	2.5	-0.7	0	1.6	0.4	0	2.9	-2.1	-0.1	1.9	0.4	0	1.8	0.1	0	12	-64	-7.6
Related entities	6.8	8.1	0.6	3	44	1.3	6.9	13	0.9	3.6	43	1.6	6.7	-0.3	0	3	65	1.9
Other deductions	12	-0.1	0	2.2	3	0.1	13	0	0	2.9	0	0	29	-0.8	-0.2	3	0	0
Others	2.8	9.3	0.3	4.8	3.9	0.2	3.1	12	0.4	6	3.8	0.2	3	-19	-0.7	0	0	0
Operational risk			6.1			7.5			5.8			7.7			4.5			6.8
Total	100		-4.5	100		-14.	100		-7.5	100		-18	100		-21	100		-5.4

1 - size;

2- variation,

3- contribution.

Source: Impact Study 5 (QIS5).