MINIMUM CAPITAL REQUIREMENT FOR COVERING CREDIT RISK UNDER THE NEW BASEL CAPITAL ACCORD – BASEL II

3rd part

Ing. Asadullah Asadullah, PhD.
Economics Faculty of the Matej Bel University in Banska Bystrica

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The Basel Committee for Banking Supervision of the Bank for International Settlements (BIS) was established in 1975 with the aim of ensuring stability in the banking sector around the world. To this end it has developed approaches, methods and prudent banking rules for commercial banks. The Committee's first integrated paper was approved in 1988, entitled the Basel Capital Accord (BCA), termed also Basel I. This document has so far formed the basis for the activity and rules of national regulators around the world. With regard to the new trends in financial markets and approaches to risk management, the Basel Committee in 1999 began a widespread international consultation process for revising the BCA. The results of these five years' of endeavour, consultation and compromise have resulted in the New Basel Capital Accord (NBCA), termed also Basel II, which was approved on 26 June 2004 with effect as of 2007. This approval of the New Basel Capital Accord represents a further step towards unifying the rules for banking supervision and raising the stability and transparency of the world's banking system.

Receivables towards small and medium-sized enterprises

The IRB approach brings benefits for businesses with an annual turnover of less than EUR 50 million in the form of a lower risk weighting. This reduction of the risk weighting results from the decrease in the value of the correlation with the systemic risk factor, i.e. R, according to the relationship:

$$R = 0.12 \cdot \frac{1 - e^{(-50 \cdot PD)}}{1 - e^{-50}} + 0.24 \cdot \left(1 - \frac{1 - e^{(-50 \cdot PD)}}{1 - e^{-50}}\right) - 0.04 \cdot \left(\frac{K - 5}{45}\right) \qquad (9)$$

Where K is the annual turnover of a business in EUR million and its minimum amount is set at the level of EUR 5 million. This means that businesses with an annual turnover below this minimum limit will be deemed businesses with an annual turnover of EUR 5 million. The other approach is the same as in the previous case, i.e. the risk weighting (RW) is calculated according to (8).

For analysing the development of the risk function for these businesses we took as an example a business with an annual turnover of EUR 10 million. The RW function of this business in the case of LGD = 45%, or 75% and M = 2.5 reaches its maximum (209%, or 349% under LGD) where PD = 32.7%. From this it results that the reduction in the value of the correlation according to the relationship (9) is manifested, compared to the preceding case, in a reduction of the RW maximum and in a growth in the PD at which this maximum is reached.

In the case of a PD in the interval 0.03% to 10% the RW function is growing, where it gives on average 21% lower values than in the case of business with an annual turnover above EUR 50 million. PD values at which a risk weighting less than 100% are reached are also in this case sufficiently low (2.9%, or 0.57% depending on the LGD).

Retail receivables:

For all three segments of this portfolio a single risk weighting function is set in the IRB approach, which in contrast to the preceding cases does not take account of the effect of the loan repayment period:

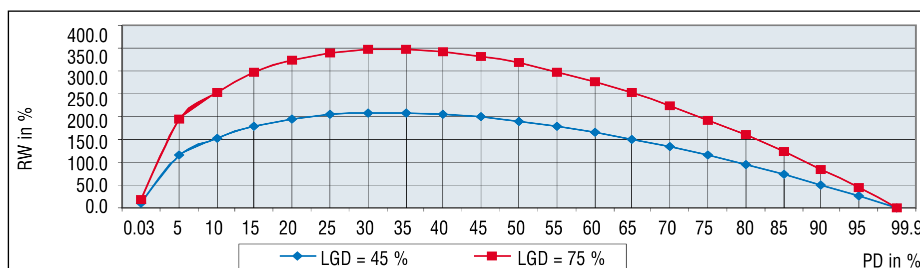
$$RW = 12.5 \cdot \left[LGD \cdot \Phi\left(\frac{\Phi^{-1}(PD) + R^{0.5} \cdot \Phi^{-1}(0.999)}{(1 - R)^{0.5}}\right) - PD \cdot LGD\right] \qquad (10)$$

Other differences lie in the amount, or manner of calculating the value of the correlation with the systemic risk factor R, where for mortgages this value is set at 0.15, for revolving loans 0.04, and for other retail receivables it is calculated as shown below:

$$R = 0.03 \cdot \frac{1 - e^{(-35 \cdot PD)}}{1 - e^{-35}} + 0.16 \cdot \left(1 - \frac{1 - e^{(-35 \cdot PD)}}{1 - e^{-35}}\right) \qquad (11)$$

It is necessary to emphasise the fact that receivables towards small and minor businesses with a loan of up to EUR 1 million may be included among other retail receivables, thus yielding the advantage of a low risk weighting. The benefits brought here are great. For instance, the risk weighting of receivables in the segment "other retail" is, at

Graph 3 Risk weighting in % in the case of LGD = 45%, or 75%, M = 2.5 and PD in the interval 0.03% – 10% (Business with an annual turnover of EUR 10 million)



Source: own processing

the same LGD values, with a PD in the interval from 0.03% to 10%, on average 56% lower than the risk weighting for businesses with an annual turnover above EUR 50 million and is 44% lower than for businesses with an annual turnover of EUR 10 million. We shall quantify the minimum capital requirement and its influence on the price of credit according to the individual Basel I and Basel II methods using an example of a SKK 20 million receivable towards a business, where we shall use all the methods analysed, with the following alternatives and characteristics:

I. Basel I

II. Standardised Approach (SA):
1. large business with an external rating A+ (risk weighting 50%)
2. business included in the retail portfolio.

III. Foundation IRB Approach (FIRB):
1. business with an annual turnover (AT) of more than EUR 50 million,
2. business with an annual turnover (AT) of EUR 6 million.

IV. Advanced IRB Approach (AIRB):
1. business with an annual turnover (AT) of more than EUR 50 million,
2. business with an annual turnover (AT) of EUR 6 million.

V. IRB-retail: business included in the segment “other retail”,

VI. Basic components: PD = 0.15% and EAD = receivable = SKK 20 million (for all methods of the IRB approach), LGD = 30%, M = 1.5 (for AIRB and IRB- retail).

Other variables and results are given in the table.

Conclusion

Since the publication of Basel I in 1988, Basel II represents the most significant change in the conception and rules of banking supervision around the world. Basel II is, through its complexity, scope and demands, a challenge not only for banks and supervisory authorities, but also for business subjects.

The analysis shown here has confirmed that the new methods allow a differentiated approach to be taken in quantifying the risks of individual receivables. Given the size structure of businesses in Slovakia, the advantages provided to small and medium-sized enterprises are of especial significance. In connection with the new methods (particularly the Advanced), the quantification of credit risk will often mean a reduction in the capital requirement and a decrease in the cost of credit. In this article we have shown that the more sophisticated methods of Basel II form only one of the preconditions for a reduction in the capital requirement and the cost of credit, where a further and key condition becomes the

Quantification of the influence of the methods of calculating the minimum capital requirement on the cost of credit.

line	Credit characteristic	Calculation methods							
		Basel I	Basel II						
			SA	IRB					
			Business	Retail	FIRB		AIRB		IRB Retail
					RO>50	RO=6	RO>50	RO=6	
1	Loan amount in SKK mill.	20	20	20	20	20	20	20	20
2	Return on equity in %	15%	15%	15%	15%	15%	15%	15%	15%
3	Risk weighting in %	100%	50%	75%	37%	30%	19%	15%	10%
4	RWR in SKK mill. (lines 1 – 3)	20.0	10,0	15.0	7.5	5.9	3.9	3.1	2.0
5	RC need in % of line 4	8%	8%	8%	8%	8%	8%	8%	8%
6	RC_{mina} in SKK mill. (lines 4 – 5)	1.60	0.80	1.20	0.60	0.47	0.31	0.24	0.16
7	RC_{minb} in % (line 6 x line 1)	8.0%	4.0%	6.0%	3.0%	2.4%	1.5%	1.2%	0.8%
8	Cost of capital in % (lines 7 – 2)	1.2%	0.6%	0.90%	0.45%	0.36%	0.23%	0.18%	0.12%
9	Refinancing costs	4%	4%	4%	4%	4%	4%	4%	4%
10	Risk premium	0.10%	0.10%	0.10%	0.07%	0.07%	0.05%	0.05%	0.05%
11	Operating costs	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%
12	Total costs (line 8 – 11)	5.50%	4.90%	5.20%	4.72%	4.63%	4.48%	4.43%	4.37%
13	Profit margin	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
14	Total cost of credit	5.80%	5.20%	5.50%	5.02%	4.93%	4.78%	4.73%	4.67%

Source: own processing

client's rating. The influence of the new rules on a bank will therefore be given not only by the method implemented, but also by the quality of its clients. Gaining a good rating requires from business subjects the systematic and constant improvement of their financial-economic situation and more intensive communication with banks. Since a client's good rating and lower risk is also in the bank's interest, these factors should strengthen banks' advisory activities to businesses, particularly to small and medium-sized enterprises in Slovakia.