

Basel III – Between Global Thinking and Local Acting

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Abstract. *The financial crisis has demonstrated that self-regulation is not sufficient to markets and financial institutions with systemic importance.*

Permissive regulatory policies, allowing the development speed of global banking financial system, have played an important role in emphasizing the upward slope of the financial crisis.

The new regulations known as Basel III framework aimed the strengthening of prudential capital and liquidity of financial institutions and create a stronger banking and financial system more resilient to shocks.

Basel III is trying to eliminate the shortcomings of Basel II, by more extensive rules on integrated risk management in banking and financial environment.

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JEL Codes: G01, G21.

REL Codes: 11B, 11C.

The new set of regulations known as Basel III, approaches in an integrated manner the risks issue and its complexity, focusing on aspects that were highlighted by the actual financial crisis, with clear role for gradual implementation and performance and value creation added to the whole banking and financial system. The new provisions establish core capital ratio to 4.5%, double of the current level of 2%, plus a liquidity surplus of 2.5%. We appreciate that capitalized banks will fit in a buffer of liquidity, but will be new approaches for payment of dividends and bonuses. The new rules will be implemented from January 2013 and it is estimated that the process will end by January 2019.

Reforms target

- Micro-prudentiality, which will help increase the resilience of individual banks in times of stress;
- Macro-prudentiality, system wide risks that can develop in the banking sector and cyclical amplification of these risks over time.

Micro-prudentiality vs. Macro-prudentiality

Micro-prudentiality policies are those directed to insure health of individual financial institutions. Micro-prudentiality reform focuses on risk control in an intermediate frame, reducing but not eliminating the possibility of failure.

Regulatory instruments may be similar when it comes to micro and macro prudentiality, but macro-prudentiality policy applies them differently. For example, regulatory capital requirements would increase the contribution to systemic risk. This contribution depends on the intermediate interconnection and on the risks level translated into institutions' balance sheet risk, and is often correlated with size. To be effective in limiting the systemic threats, a surcharge of regulatory capital will probably increase more than proportionally the likelihood of systemic risk.

To counteract systemic risk, prudential regulators also may require pro-cyclical capital requirements. Thus, capital requirements would increase to create a capital buffer against adverse shocks.

Basel III highlights new aspects of integrated risk management banking, in a global regulatory framework, but with significant local impact over the banks' strength to shock waves. It addresses in a comprehensive manner risks generated by capital market transactions but also the capital diversification and its quality issues, in order to cover risks not sufficiently considered in the previous agreement or inefficient covered by capital requirements.

Some important indicators were reconfigured:

- *Liquidity coverage ratio* was lowered: the run-off⁽¹⁾ rate was reduced, and available funding period for long term lending rate (net stable funding ratio)⁽²⁾ was extended.
- *Leverage ratio*: the minimum required considered adequately is 3%. Multiplier effects will be monitored over four years, starting in January 2013, and new regulations will be implemented in January 2018.
- *Tier1 capital ratio*: less stringent rules for exclusion, intangible assets (e.g. software) and deferred tax assets (net DTA) were removed from the list of exclusions of the based capital ratio required; deferred tax assets (net) and investments in shares of financial institutions (the limit is 10% of component shares of the bank) were partially reintroduced.
- *Gradual introduction period* is about eight years. Application of new rules on liquidity coverage ratio and leverage will begin in January 2018.

Regarding liquidity, Basel III objectives are clearly formulated: to increase the liquid assets proportion held by banks and to reduce short-term financing. These objectives will cause banks to stop using models adopted from 1970-1980, when the models for the management of liabilities were implemented. New models of asset management will be adopted, so the size of the balance sheet will be determined by all financial resources that the bank may increase (liabilities), and the total assets will be adjusted to match available liabilities. Thus, a macro-prudential⁽³⁾ policy is implemented.

Banks will be forced to Tier1 capital rate from 2% to 7% in 2019. This report is a good measure against potential losses for banks. Under this interpretation of the new Basel III, there are different arguments for implementation in the banking community.

Below we highlight a few elements that can be interpreted as a response to the Basel III, given by banks and by regulatory authorities.

1. Capital

One of the new requirements of Basel III is the restructuring of the capital levels that banks use to solve the problem of minimizing possible losses.

2. Bail-ins

Bail-ins⁽⁴⁾ are a direct response of Basel III to the credit crisis and must be regarded as a gap, before a bank to be rescued by authorities/taxpayers, by liquidity injection. Reducing funding for short-term loans, in close agreement

with attracting deposits to reduce capital inadequacies, tends to be significant and may actually represent a physical correction of bank balance.

Basel III capital adequacy approach stems from the fact that, in the past, the stability of banks was generally measured only at the expense of capital levels and divides into the categories of risk assets weighted. We believe that banks that failed in the credit crisis may have had, no doubt, capital issues, but inevitably blocking was generated by the funding difficulties and also by liquidity problems.

3. Impact on market

The concentration of liquid assets of the commercial banks in government securities, the resultant of Basel III agreement, may lead to some disturbance in the economy. A solution would be to increase the possibility of banks to create liquid assets from other sources also, such as, for example, bills of exchange or other debt instruments.

Banks need liquidity sources that allow them to adjust their cash flow fluctuations, according to requirements. Before the financial crisis, a large proportion of liquidity came from unsecured deposits from the interbank market, but this is less likely to provide the liquidity needed in future. Since the beginning of the financial crisis, central banks deposits have become the main source of liquidity.

Considering the requirements for financial stability, possible liquidity crisis will have to be approached on integrated basis, by authorities reducing of the minimum rate of liquid assets, so that liquidity may be put into circulation and by central banks buying of a wide variety of eligible assets/extension of the collateral mix used.

Models that can be applied in the context of Basel III

When asked What impact may Basel III requirements have on performance and economic fluctuations?, in order to give an answer, some can use the tools of quantitative analysis. The methodology is based on appropriate scenarios of macroeconomic models. In essence, a version of a given scenario of new regulations is introduced in a model, entering input data and parameters and interpreting results, the equilibrium values (mean or mathematical expectation) and volatility (standard deviation) of macroeconomic variables.

The most used models are the DSGE type (Dynamic Stochastic General Equilibrium). They are used due to the fact that they are the only hypothetical experiments (based on scenarios) allowing to be performed in a consistent

manner. The VECM type models (Vector Error Correction Models) or “semi-structural” can be used, but they can give a concise answer only about economic performance and not on the fluctuations in the economy. In the DSGE model type, bank balance and credit markets are modeled explicitly. Thus, it creates a unified framework to analyze how it affects capital requirements and bank liquidity conditions (spread and loan) and finally output. Moreover, the effects of policy change can be studied not only on the equilibrium value of economic variables, but also on long-term variability.

Basically, we consider that three basic elements have changed in the new economic framework assumed by Basel III: increasing the minimum rate of capital, increasing the quality of the capital and liquidity requirements are more stringent. To quantify the impact of Basel III will have on performance and economic fluctuations, the three changes are required to be entered into a macroeconomic valid model. It should be considered that some models do not provide a characterization of bank liquidity or capital, or both. Moreover, even if the models would provide information about liquidity or capital, they are usually estimated or calibrated based rather on capital size than the TIER1 capitalization level specified in Basel III agreement.

Impact on the variability of output is determined using all type DSGE models. Basel III has introduced new rules on capital counter-cyclical requirements. To assess the effects of introducing a buffer to economic variability, we use models that take into account bank capital and capital requirements according to the dynamics of a key macroeconomic variables. Let’s consider the dynamic system:

$$u_t = (1-\rho_u)\bar{u} + (1-\rho_u)\chi_u \times X_t + \rho_u \times u_{t-1}$$

where

u_t is targeted capital ratio at different times, \bar{u} is the equilibrium rate of capital. We define X_t as part of long-term credit report/income. u_t 's changes when X_t changes are given by the sensitivity parameter $\chi_u > 0$. Parameter values are chosen ad hoc. In particular, set $\rho_u = 0.9$. Values of χ_u specific to the model we choose so as to produce reasonable changes of u_t around his \bar{u} : a rate of $\pm 2\%$ is considered reasonable. This is broadly in line with the level of 0 to 2.5% announced by the regulatory authorities for countercyclical capital buffers (Wellink, 2010, BCBS, 2010). Once the above equation is introduced in the model, unconditioned variances can be calculated and they may compared with the values recorded in the basic version of the model.

Models to quantify the EAD

As the new Basel III is also a response to financial crisis of 2008, and as one of the factors that have brought the crisis was entered in default of debtors (EAD, Exposure-of-Default), we analyze the a model to quantify the risk of EAD.

By Basel II agreement, banks were given two options to evaluate the necessary capital. The first is the standard approach, similar to that used in the Basel I, but the weights used are refined, provided by rating agencies. The second one is the approach based on internal ratings (IRB, Internal Rating Based), which allows banks to calculate capital requirements on their own methods. There are two sub-cases. First, the bank can calculate the probability of default (PD), but losses when counterparty goes bankrupt (LGD) are provided by experienced agencies (basic methodology). The second is the advanced methodology, which allows banks to calculate both PD and LGD.

Unlike Basel I, Basel II refers to market risk (related to the uncertainty of future revenue due to changes of prices and effects of various market rates). Against this, Basel II proposed VaR, completed with IRB methods.

With the new provisions, we consider that Basel III may improve VaR method. The main purpose is to increase capital reserves against counterparty credit risk, to reduce pro-cyclical trends and to provide incentives to move OTC derivatives market on the standard market, in order to reduce systemic risk on financial markets. Meeting these requirements requires more capital to the banks and thus increases the confidence level of banks' own economic capital models. The Basel III will be a stress test on the VaR, which will be calculated during the last financial crisis, which will increase the risk coefficients used by banks internal models to determine counterparty credit risk. Basel III extends the risk margin period from 10 days to 20 days for expected potential exposure to OTC derivatives. Incremental risk⁽⁵⁾ is calculated using the banking methodology, with a time horizon of less than one year, with 99.7% confidence level.

Risk measurement using VaR

This method is probably the most often used in financial institutions. VaR measures the risk of having a portfolio of risk assets for a period of time, Δ . The idea of VaR is to introduce confidence intervals in the equation and to define the maximum loss that will not be exceeded, with a high probability. However, the VaR results are sometimes interpreted too precisely, which may harm. Model's risk is inherent in risk management models. This risk occurs when the

model is not specified correctly or when some of the basic assumptions are not true. To determine the economic capital, used to estimate VaR, it requires a high level of trust, which causes the risk of the model. VaR disregards market liquidity. A market is liquid if an investor can sell and buy a large quantity of securities in a short time without the price to be affected. Modeling the effects of a illiquid market is extremely difficult. The transition from liquid to the illiquid market is considered as part of market risk (Embrechts et al., 2005, p. 40).

Specific to Basel I is current exposure method, based on VaR methodology. More important for the calculation of EAD are standardized methods (Standardized Models-SM), used by banks that did not meet the requirements to calculate the derivative exposure by themselves, but wanted a greater risk sensitivity than that provided by VaR.

Exposure is calculated using the formula:

$$EAD = \beta \times \max[CE, \sum_j RP_j \times CCF_j]$$

where

CE (current exposure) is the market value after reduction and compensation of guarantees, NRP are absolute values of net portfolio risk hedging and CCF are the credit conversion factors applied to these open positions. β factor is fixed by the authorities to 1.4 and is used as a reserve for potential extra-economic crisis and cover model risk. Standard models incorporate many of the key features offered by internal models method (IMM). Banks may choose to use their EAD calculation model at different times. SME is the most sensitive approach for calculating EAD risk, the work frame required under the Basel III (Gregory, 2010, p. 319). Exposure before the bankruptcy of the debtor, by SME, is:

$$EAD = \alpha \times EPE_{actual}$$

where

α is a multiplier set by the Basel III agreement and EPE actual is the actual expected positive exposure. α is a coefficient of correlation between market and credit risk, credit portfolio assumptions, concentration risk and model risk.

SMEs have many advantages over non-internal methods. For example, it determines an average exposure and not necessarily that all transactions have the same maturity. In addition, keep in mind that the basic market factors, hence the value of derivatives, are not perfectly correlated, arguing the benefits of diversification. It should be also considered the transactions performed in opposite direction, eliminating the problem of double counting.

Conclusions

The reform of counterparty risk in accordance with Basel III is specifically designed to improve systemic risk. This reform is a response to financial crisis of 2008. The regulatory framework agreed globally has significant influence within the activity of local banks and hence the local economies. Banks are in a complex exercise for making strategic decisions regarding the compliance policies and thus adapting to the customer segments and to the specific operations. However, proactive involvement of regulatory authorities in the acceptance liquidity coverage rate, including asset classes, might establish a formula widely accepted by financial markets banking.

However, even with this new framework aimed to increase liquidity, to improve the quality of capital to cover risks, the integrated risk approach can not exclude the future emergence of other classes of vulnerabilities in the financial and banking systems.

Notes

- (1) Run-off - Monitoring index of attracted sources.
- (2) Net stable funding ration – index that calculates the proportion of financed long-term assets.
- (3) Macro-prudentiality, used as a concept for the first time in 1978 by Cooke Committee.
- (4) Bail-ins - process in which corporate bonds can not be converted in equity.
- (5) Incremental risk includes the risk of default and migration risk for securitized credit products.

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