

Notes on the BIS Consultative Document 'Strengthening the resilience of the banking sector'

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1 Remarks on the risk modeling assumptions underlying the capital requirements

The Basel II approach is tied closely to a somewhat arbitrary distinction between market and credit risk, and to an overly strong reliance on historical and backward-looking loss evidence instead of market-implied quantities or forward-looking measures. For portfolios whose composition and / or risk drivers can change quickly, especially derivative or securitization exposures, this leads to limited reliability of the risk metrics of the approach.

1.1 Limitations of the credit risk modeling approach

The reform proposal suggests a new calibration of some parameters in the underlying asymptotic single risk factor model, such as asset correlations in application to exposures towards the banking sector or residential mortgages, but does not address the root weaknesses of the model in use. The model can be expected to approximate the actual risk potential only under very strong assumptions on the uniformity / homogeneity and diversification of

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the credit exposures. With a view towards the cases critical for the current crisis - such as cascading losses due to excessive concentration of low-default probability high loss impact securitization exposures or CDSs - it seems much more realistic to introduce the refinements of the single risk factor model that take contagion into account explicitly at the level of the models themselves, such as the functional correlation approach developed by Neu and Kuehn.¹

From a theoretical perspective, Frey and McNeil have made explicit the conditions that must apply in Bernoulli mixture or threshold models for passage to the limit in the calculation of quantiles of loss distributions to be feasible.² The reform proposal does not address the interaction of the problems made clear by the crisis events to the shortcomings of the Pillar 1 benchmark model. These are as follows:

- levels of collateralization have proven to be far from independent from the systematic drivers of credit risk, which are scaled by the probability of default in the ASRF model
- interbank markets have exhibited contagion, so that not even the unimodality of the asymptotic loss distribution remains a feasible assumption
- asset portfolios containing re-securitized exposures often exhibited hidden name concentration - certainly at the refined level of credit quality migration probabilities, since at that level only very few writers of protection ultimately dominated the markets, and did suffer downgrades or deterioration of their financial strength during the crisis.

1.2 Shortcomings of VaR, perverse incentives and systemic instability

At any given confidence level, the insensitivity of VaR to the severity of losses materializing with extremely low probabilities leads to perverse risk taking incentives in well-known ways. The practical consequence of this is that risk premia earned by holders of senior bank debt, including depositors and implicit guarantors (i.e. the taxpayer), are distorted. The reform proposal does

¹Neu, P., Kuehn, R. (2004): Credit risk enhancement in a network of interdependent firms, *Physica A* 342, 639-655

²Frey, R. and McNeil, A.J. (2003): Dependent defaults in models of portfolio credit risk. *Journal of Risk* 6 (1):59-92

not address this by passing to risk measures immune to this problem, such as expected shortfall, but tries to mitigate the consequences by an increase of the confidence level or by the quality of capital.

However, this is a sub-optimal way of mitigating the effects on systemic risk. Assuming a given level of risk capital available to support the banking sector and a given level of demand for credit, the systemic risk generated by the potential spill-over from the low probability high impact losses not captured by VaR are better taken care of by introducing further capital requirements based on hybrid securities which serve to enhance the recovery of senior bank debt in the event of failure. This approach has the extra merit of focusing directly on the problem of mitigating the likelihood of regulatory forbearance induced by overly costly wind-down of Too-big-to-fail financial institutions.³

2 Recommendations for the re-calibration process of capital requirements and Pillars 2 and 3

Bearing in mind the demands of practical implementation and harmonization across sectors and nations in the banking industry, the above theoretical criticisms are not enough to call into question Pillar 1 in its basic structure. They merely imply that the recalibration procedure for the confidence levels and the asset correlations must take the shortcomings of the modeling approach into account.

Similarly, the recommendations for carrying out on-site examinations in Pillar 2 and 3 can be adjusted to take care of the above facts. In particular, stress testing and scenario analysis should explicitly take into account these subjects.

³For details we refer to our Working Paper 'Subordinated debt in bank funding and financial market stability', <http://ssrn.com/abstract=1581515>