



Consultative Document. Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches.

Comments for the Basel Committee on Banking Supervision

Ignacio Ruiz¹

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I am a Subject Matter Expert in the field of OTC derivatives risk management and capital. I am writing a response to the Basel's consultative document "Consultative Document. Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches" on a personal basis because I think an independent's view on the matter at stake would help. This document constitutes my personal view and does not reflect any of my previous employers' positions in any way.

Summary

The Basel consultation proposes to remove risk sensitive models, or put floors to them, for Counterparty Credit Risk capital calculations of OTC derivatives.

In the same way that money is central to the exchange of goods and services in modern economies, OTC derivatives are central to the risk distribution and hedging in the economy. Money is the currency used to exchange value; derivatives is the currency used to exchange risk. For that reason, they are central to wealth creation in current times.

The trading of OTC derivatives that takes place in the market should be based in the economics and risks they carry. For banks, a most important part of those economics is how it affects their capital.

¹ iRuiz Consulting. Chester House, 81-83 Fulham High St, London SW6 3JA, UK. ignacio@iruizconsulting.com. www.iruizconsulting.com

The Basel Committee for Banking Supervision feels that removing or flooring the use of risk-sensitive capital models with the aim to “reduce the complexity of the regulatory framework and improve comparability” and “address excessive variability in the capital requirements for credit risk” could be good. In particular, it is proposed to

- Remove the option to use the IRB approaches for certain exposures,
- Adopt exposure-level, model-parameter floors, and
- Provide greater specification of parameter estimation.

I believe that, while the Committee’s objectives are understandable, the changes proposed would have very damaging consequences indeed. In this paper, I will explain my reasons for this view.

In summary, if the capital associated with the trading does not reflect its fundamental economics and risks behind it and, as proposed by the Committee, is instead based in non-risk-sensitive rules and/or floors, then there are inevitable and dangerous economic implications:

1. Systemic risk is created, as when those simple models fail then they will fail in all banks in the world at the same time. This is precisely one of the key risks the regulatory landscape is mandated to remove from the trading system.
2. Market dislocations are created, because trading activity will be steered to those areas with low capital requirements but high relative risk as this is where return on capital will be maximised.
3. The distribution of risk is inhibited, as a consequence of non-economic-based excessive capital flat rules compared to advanced economic-based modelled capital. This would clearly have an (unnecessary) negative economic impact.
4. Banks are un-incentivised to invest in sound risk management practices, as it sends messages to the industry that a bank does not need to be concerned about adopting its own internal risk controls.
5. Innovation is inhibited. Innovation is at the core of any healthy industry, economy and society. Why would a bank invest in research and development of better risk management processes, methodologies and systems when the potential benefits that might accrue have been removed by regulation?

The positive outcome of wide-spreading flat rules for capital is that

1. It makes the job of regulators easier, and
2. Banks can calculate regulatory capital more easily, with the subsequent reduction in operational costs.

No doubt there is some benefit in simplifying rules for both regulator and for some players in the industry, but those benefits need to be balanced out with the reduction in the efficacy of those rules. One of the fundamental goals of those rules is to provide a stable financial system on which the real economy can be based and grow. My intention with this document is to bring to the Committee’s attention the fact that the new proposals materially reduce the efficacy of the capital framework; i.e., that they increase the instability of the financial system and constrain real economic growth.

I do not represent any large corporate or bank and I offer here an independent view. It is clear to me that widespread implementation of non-risk-based capital frameworks would be one of the biggest mistakes that the regulatory community could ever make. All of us, particularly our children and grandchildren, would suffer from it by having to face induced market dislocations, constrained financial services that inhibit economic growth and, potentially, the crystallisation of regulatory-induced worldwide systemic risk.

The Role of OTC Derivatives in the Economy

First of all, we should understand the role of OTC Derivatives in the Economy. OTC Derivatives are to risk what money is to the exchange of products and services. It is central to economic development. Let's see why.

Everyone can imagine a world without money in which good and services are exchanged one-by-one: I give you a few chickens, you give me a few apples, etc. Also everyone can see how money facilitates the fluidity of that exchange of products and services, generating real economic wealth and the subsequent provision of elementary goods and advanced welfare (food for everyone, energy, health services, etc.).

In the same way that money provides the fluent and mature exchange of products and services, OTC derivatives provide the fluent and mature exchange of risk. As a simple example: a US manufacturer makes 30% of its sales in Europe, hence it is exposed to an FX risk that the shareholders do not like. Also, a European company has a similar symmetric exposure to USD. A broker-dealer bank sits between them to provide both of them with FX hedging products: consequently, the US and the European companies do not see any FX risk and the dealer makes a commission for the service it provides. Effectively, the bank transfers the FX risk from one company to the other.

This simple example shows how the market for OTC derivatives provides a very important hedging risk transfer mechanism in modern economies. As a result, OTC derivatives provide an invaluable service by diminishing economic uncertainty for each participant and provides the ground for sound investment and economic growth, with its subsequent benefits to individual and social welfare.

It is important to note that standardised derivatives offer this service only to a limited extent. An airliner, for example, is greatly benefited by being able to purchase derivative products that match its physical risks. If it can only access simple standard products it will be left alone to do that tailoring by itself while, in most cases, it does not have the know-how to do so. This is the reason why OTC derivatives make sense, facilitate the working of a mature economy and why derivative broker-dealers play a crucial role in the economy. OTC derivatives create real value.

The Basel Proposals

There is no doubt that the regulatory landscape for the derivatives market has matured substantially since the 2008 market events. I think one of the most positive outcomes is that banks are now much more sensitive to the risks they carry than they used to be. This is good. Pre-2008, the market was pricing risk incorrectly in a number of areas. The regulatory push has helped to improve the situation

by making banks more aware of the non-hedgeable risks they carry, which is one of the key purposes of capital. Banks are very sensitive to regulatory pressure and as a result we see a deeper and better culture of risk in banks.

It is very important to understand that capital creates a good risk buffer when it is adequate in two ways: first the absolute value of capital needs to be correct, second it must be sensitive to the true risks the institution carries. This can be illustrated with the following real example: for many years and for many purposes all European sovereign debt was seen as equivalent: a Greek, Spanish or Portuguese bond and a German bond were seen as carrying the same risk by a number of “flat” rules. As a result, many banks lent to many European countries beyond the economic fundamentals as a result of the “flat” risk rules that were attached to them because the return on capital they appeared to have was better than lending to countries like Germany. No doubt this influenced the excessive level of debt that a number of EU countries suffer from.

This example illustrates that managing the overall level of risk (i.e. RWA² and its subsequent capital as the regulatory metric of risk) alone is not good enough for capital management: its sensitivities must be accurately captured too. If not, these non-risk-sensitive risk metrics actually encourage risk taking in those pots where return on capital is highest given the over-simplistic allocation of capital, with disastrous consequences as illustrated by the example.

RWA Comparability

However, this leads to the problem of RWA comparability: the Committee has found that the same portfolios can have different measurements of risk from different institutions and it feels this is a problem.

While this may, on the surface, be an understandable reaction, I want to explain why it is actually not so bad in principle.

Let’s imagine we give to two people all the information available and all the time needed for them, independently from each other, to estimate the probability of being involved in a car accident in the next 12 months, for example. Surely both will come up with different numbers, perhaps even quite different. Possibly both models used to compute those numbers can pass a backtesting exercise. Does that mean that one of them is right and the other is wrong? No. The reason why each comes up with a different number is because they are trying to quantify uncertainty, and that is an uncertain business in itself. Calculating capital is estimating unhedged tail risk.³ By construction, there is no unique answer to this question that is ‘the right one’; we have to get used to that idea. Simplifying that calculation and using standard rules is no more than choosing another model that makes us blind to many of the intricacies of the tail risks we actually are exposed to.

In other words, when a number of risk-sensitive models give different answers for the same portfolio, in principle none of those numbers is better or worse as long as they have been obtained sensibly. Indeed, backtesting does not fully tell us if a tail-risk model estimates perfectly future events, rather it highlights if a model is sensible or not to measure uncertainty. For this reason,

²² Risk Weighted Assets

³ One of the main aims of capital is to put a cushion against unexpected losses. Those unexpected losses are estimated at a given confidence level (e.g. the 99.9% point in the tail of the loss distribution) in a time horizon (e.g. 1 year)

different models can all be reasonable and come up with different answers. This is at the core of the science of tail-risk measurement.

It is, therefore, almost inevitable that two parties will have different (but each validly-calculated) views of risk. While this may not feel 'comfortable' to us at first glance, it is not an illogical situation. Nor is it a necessarily undesirable one. The important point is that two specifically-calculated, albeit different, calculations will almost always be more accurate than a flat and standardised measure.

This leads to the problem of how much fluctuation can be tolerated between different advanced capital model implementations. This is a difficult task to tackle and manage; regulators have all my sympathy. However, solving this problem by applying flat rules or floors may solve the problem of variability but at the cost of creating financial instability, as we are going to see in detail in a minute.

Consequences

My intention in this piece is not to focus on any particular proposed change, rather to highlight the consequences of the overall idea. In particular, many of the new proposals:

1. Systemic risk is created, as when those simple models fail then they will fail in all banks in the world at the same time. This is precisely one of the key risks the regulatory landscape is mandated to remove from the trading system.
2. Market dislocations are created, because trading activity will be steered to those areas with low capital requirements but high relative risk as this is where return on capital will be maximised.
3. The distribution of risk is inhibited, as a consequence of non-economic-based excessive capital flat rules compared to advanced economic-based modelled capital. This would clearly have an (unnecessary) negative economic impact.
4. Banks are un-incentivised to invest in sound risk management practices, as it sends messages to the industry that a bank does not need to be concerned about adopting its own internal risk controls.
5. Innovation is inhibited. Innovation is at the core of any healthy industry, economy and society. Why would a bank invest in research and development of better risk management processes, methodologies and systems when the potential benefits that might accrue have been removed by regulation?

Creates Systemic Risk

Let's imagine a world in which every bank calculates capital using exactly the same model. We can be sure that sooner or later that model is going to fail because no model is perfect and, in that case, it is going to fail in ALL the financial institutions at the same time. This is precisely the definition of systemic risk.

One of the most basic rules of risk management is to diversify risk. The trading of derivatives is currently highly driven by its capital cost. Making all banks in the world comply with the same simplified models defeats that basic rule at the global macroeconomic level.

Even further, having banks with different RWA outputs (for the same portfolio) using risk-sensitive models is not only not bad, but it is actually good for the stability of the financial system as long as each of those models has been sensibly developed and implemented. Indeed, this is the role of advanced capital waivers that regulators provide. This framework of multiple sensible interpretations of the same advanced modelling framework actually decreases systemic risk; imagine a world with all banks using absolutely identical models for capital even if they are risk-sensitive. That risk-sensitive model will be less likely to fail compared to a flat-rule model, but it will surely fail one day, and it will do so at the same time in all banks in the world.

For this reason, having a variety of interpretations of the advanced RWA models in the world is actually good for every citizen in my view. Having an identical capital model in every bank is bad as it creates systemic risk, both if it is flat-based or risk-sensitive one.

Creates Market Dislocations

Building on the previous point, having all banks with the same flat rules for capital will surely create trading incentives that are not aligned with the underlying economic fundamentals. We have already seen an example of that in the European sovereign debt space. Arguably another example was the excessive credit trading encouraged by CDOs in the early 2000s: now we know well that the pricing models were wrong but since everyone was using the same wrong models, the industry did not notice how wrong until it was too late.

Flat non-risk-sensitive rules for capital will inevitably create pockets of high return on capital in places where the fundamental economics allow. Trading activity will surely go there and dislocate the market. Experience has taught us that these incorrect trading incentives tend to be corrected by sudden shocks that quickly destroy the economic value created over many years.

Inhibits the Distribution of Risk

As already described, derivatives are the mechanism that banks offer to the players in an economic activity to transfer risk between them. We have seen that OTC derivatives play an important role in tailoring this risk transfer mechanism to the needs of the economic activity. Also, as we learnt in 2008, if derivatives are not well managed then they can create instability.

If the risk management and capital of derivatives is driven by over-simplified rules, those rules will surely be conservative (if we do not know how much risk something carries we tend to pump up the risk number, so we are 'on the safe side'). As a result, global flat rules for risk and capital will inhibit the risk transfer they provide beyond what it is needed and consequently dampen economic development, employment and many other welfare measures will not be able to develop as they could.

Striking the right balance between complex risk-sensitive and simple measures is a very difficult task, but it is surely the case that flat rules and floors across the board would inhibit the healthy development of the derivatives market beyond what it is needed for financial stability and damage economic development unnecessarily. The fact that this task is difficult is not a sufficient reason for regulators to try to avoid it, in my view.

Penalises the “Good Guys”

If regulatory risk and capital are reduced to a number of simple, flat rules, the message that regulators are sending to the industry is “to those that have done a good job in the past and have invested in good risk management: all that investment is for nothing, as we are setting the global standard at the lowest common denominator”. This is, to say the least, very unfair and, more importantly, sends a wider message that institutions should not waste their time on trying to improve risk-management.

Indeed, I am finding that the mere existence of this Basel proposal document has done its damage: every bank I have spoken to in recent months that has advanced models and risk practices approved, as well as every non-advanced banks that had plans to improve risk management via application of the advanced capital framework, has frozen all such projects to improve its capital-associated risk practice “until Basel decides what it is going to do”.

It would be a big mistake to set the global standard of risk at the lowest common denominator, as opposed to at the highest possible standard.

Inhibits Innovation

The importance of innovation to economic development is incontrovertible. It has been an accepted part of general economic theory since Joseph Schumpeter’s work in the 1940s⁴ and, as highlighted in a report earlier this year by the Information Technology & Innovation Foundation, “Robust innovation is essential for economic growth and social progress around the world”.⁵

Knowledge-based technology advances are generating so much value across almost every industry (consumer goods, transportation, telecommunications, media, tourism, etc.). If banking is at the core of all economic activity, surely this is the industry in which it is most important to encourage innovation in the accurate measurement and management of risk. Turning our backs on advances in the science of risk would not only be a case of intellectual denial but also, given the potential to reduce the danger of failure in the banking system, could have unforgiveable consequences for the global economy.

The role of regulators in this space should be to encourage innovation in the banking industry if such innovation can improve the way in which risk is managed safely. If the Committee believes that this innovation will generally make the management of risk less safe then it misunderstands these developments. Technology innovation can deliver exactly what regulators want: a derivatives market

⁴ “Capitalism, Socialism and Democracy”, Joseph Schumpeter, 1942

⁵ “Contributors and Detractors: Ranking Countries’ Impact on Global Innovation”, ITIF, January 2016

that is **more robust** and **less exposed** to catastrophic failure. This is achieved through developments in two fronts:

1. Better methodologies. Two examples: when I started working in risk management Wrong Way Risk (WWR) was seen as “impossible” to model. However, right now, after all the intense thinking that has been put into it by several people in the world, there are good non-linear models that can compute WWR efficiently and that can be properly calibrated.^{6,7} Also, good backtesting used to be “mission impossible”, while now we know of much more robust methodologies for it.⁸
2. Better hardware, software and implementation techniques: at present advanced capital calculations are limited by the computational capacity. There has been and there is currently a lot of development in that space including CPU farm computing, cloud computing, GPU computing, Adjoint Algorithmic Differentiation (AAD), Algorithmic Pricer Acceleration (APA), American Monte Carlo (AMC), etc.

A more rapid, sensitive and specific measurement of risk is central to its appropriate understanding and management, as opposed to the denial of the real factors that generate risk for participants.

Adopting a flat approach for capital would be a case of such denial and have significant consequences.

Why would a bank invest in better ways to manage and compute risk when it has limited or no regulatory incentive for it? Why would a small financial institution invest in new techniques that gives them a competitive edge if it is going to be penalised by its regulators and will not be able to profit from it? Shouldn't a bank that invests wisely in risk management technology benefit from it? Why should financial regulators set themselves outside of the innovation phenomenon that is permeating every sector of the economy?

Recent years have shown that the banking industry is extremely sensitive to regulatory action. Therefore regulators actually have an ideal opportunity to encourage good innovative risk management technologies, methods and processes. However, setting flat rules or floors for everyone is missing out on that opportunity. The proposed regulatory reforms encourage risk management stagnation as opposed to innovation towards good risk management methods and processes.

Floors vs. Full Standard Models

It is important to note that if floors on risk-sensitive models are applied, this may **seem** less damaging than applying full flat-models, but it is also very damaging.

⁶ *Optimal Right- and Wrong-Way-Risk from a Practitioner Standpoint*. Ignacio Ruiz, Piero del Boca and Ricardo Pachon. Financial Analyst Journal, Volume 71, Issue 2. March/April 2015.

⁷ See *XVA Desks: A New Era for Risk Management*, Chapter 10, by Ignacio Ruiz, published by Palgrave MacMillan, for an overview of available methodologies.

⁸ *Backtesting counterparty risk: how good is your model?* Ignacio Ruiz. Journal of Credit Risk, Volume 10, Number 1 (March 2014)

For a floor to be 'useful' it must be set at a meaningful level; that is, it must be set so that many bank's capital under the advanced approach will fall below the floor. Otherwise, what would be the point of that floor?

In that case, for the many banks that will be affected by it, why would each of them look for strategies that decrease its risk when, regardless of what it does, it cannot decrease its capital beyond the given fixed point? For example, what would be the capital encouragement of trading with low default counterparties? If a netting set is net long a risk factor, what is the capital encouragement to enter into new trades in the opposite direction, that would decrease the future Exposure at Default?

If a 'useful' floor is set, lots of banks will be affected by it and then systemic risk is generated, market dislocations encouraged, the risk distribution that OTC derivatives carry to the real economy gets greatly constrained, it rewards those banks with poor risk management and it dis-encourages innovation towards sound risk management practices nearly the same way a 100% floor (i.e. full flat rules) would do.

Conclusions

These newly proposed changes to the regulatory landscape would create systemic risk and market dislocations; they would constrain economic development and penalise those that take risk management seriously; and they would inhibit investment in better risk management techniques. Each of these consequences are very negative.

There would be one and only one benefit: a regulatory landscape that were easier to manage. Regulatory risk measurement and capital would become more straightforward and quasi-effortlessly transparent.

However, this ease of regulatory activity would come with consequences that were precisely contrary to the mandate regulators have: to create a stable financial system that provides the ground for sound economic growth. I have no doubt that the proposed changes would create a less stable (i.e. riskier) banking system and, given that banks are at the very centre of all the economic activity, this would feed into everyone's life in a negative way.

If fact, I can easily pinpoint a number of areas of the model-based regulatory framework that could be improved so that, with limited effort, regulators could encourage better risk-sensitive capital that will be better at preventing the next crisis and better at making a solid banking systems in adverse conditions. However, to my surprise, this proposal moves precisely in the opposite direction.

I hope this note explains why what might initially appear to be an appealingly simplifying approach to risk regulation would actually have profound and dangerous consequences. I cannot emphasise too strongly, for all the reasons explained here, that these proposed changes constitute one of the biggest mistakes the banking regulatory community could ever make and I appeal to the Committee to reconsider them.

I would be more than happy to provide further detail on any of the points raised in this note or to attend a meeting with member of the Committee to give evidence in person.

About the Author

Ignacio Ruiz is a Subject Matter Expert in the field of financial risk management and capital for OTC derivatives, offering advice, solutions and training in that space. Clients include tier-1, tier-2, tier-3 banks, regulators, asset managers and corporates. Before this he held various positions of responsibility at tier-1 investment banks like Credit Suisse and BNP Paribas. He is the author of “XVA Desks – A New Era for Risk Management” and has published several articles in risk management. Ignacio holds a PhD in Physics from Cambridge University.

www.iruizconsulting.com

ignacio@iruizconsulting.com