January 3, 2014

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**Re: Second Consultative Document Fundamental Review of the Trading Book[1] - BCBS 265 – Proposed revised standardized framework**

Dear Ms. Barger and Mr. Adkins,

This letter contains initial comments from the International Swaps and Derivatives Association, Inc ("ISDA"), the Global Financial Markets Association ("GFMA") and the Institute of International Finance ("IIF", together "the Associations"), on the Basel Committee on Banking Supervision ("BCBS") Second Consultative Document *Fundamental Review of the Trading Book* dated October 2013 ("Fundamental Review" or "FRTB"). It focuses solely on the proposed revised standardized framework.

We propose, in this paper, to recast the standardized framework of the FRTB in terms of the existing risk factor sensitivities, which are currently calculated by the banks' pricing models. The risk factor sensitivities are more readily available, controlled and their utilization would reduce the cost and time of the implementation of the Fundamental Review.

Below we discuss the various components of our proposal as well as topics mentioned in the BCBS's letter of December 17th, 2013. More time is required to specify all those components in detail but we believe that it is very feasible to meet the BCBS's objectives within the framework that we describe.

We stress again our commitment to participate constructively in the consultative process. We do sincerely hope you find our initial remarks helpful.

Yours faithfully,

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[1] Basel Committee on Banking Supervision, October 2013

## 1) Considerations

- The Basel Accords focus on the capitalization of large, internationally active banks.
- We note that this group of banks includes some regional and other banks with relatively limited trading books.
- We expect that national supervisors will be sensitive to the challenges and costs that small, non-internationally active banks could face to implement risk-sensitive approaches (standardized or model-based) and will adopt the proper simplified frameworks for those banks but recognize that certain jurisdictions apply the Basel requirements more widely.

Moreover:

- The vast majority of the trading books of banks are comprised of vanilla and linear instruments.
- For vanilla and linear instruments, risk sensitivities (i.e. the first-order derivatives of the prices of the instruments with respect to the underlying risk factors) capture most of the relevant market risks
- It is unlikely that a standardized approach, no matter how complex it may be, will ever be able to capture all types of higher-order and basis risks.
- Thus, from the start, the framework should be parsimonious and sufficiently conservative.
- Complex, convex, higher-order, etc… risks and instruments can be treated with conservative (less risk sensitive) charges; they can be mapped to special buckets in each risk class.
- Those charges can be based on notional amounts or market values or the absolute values of first-order sensitivities to volatility, correlation, etc…
- The need to source cash flows from trading systems, the build of a large number of interest rate curves and a large number of implied-OAS models, as proposed in CP2, would make the implementation of the standardized framework difficult, time-consuming and costly as well as less controlled.
- Also the discounted cash flow framework would require the development, testing and validation of a large number of models for interest-rate curves, floating/contingent cash flows and implied OAS models. Those models would live outside of the banks' trading systems; they would be used for regulatory capital calculation only. This raises concerns with respect to controls and on-going validation of those models.

We therefore propose a simpler approach that we believe has the benefit both of meeting the TBG's goals and is better aligned with internal risk metrics and management.

In its letter dated 17 December 2013, the Trading Book Group (TBG) asked the industry to address some specific points in the industry's counterproposal:

- *Consistency with the objectives and rationale of the revised Standardized Approach as set out in the October 2013 consultative paper, including the principle of limited model reliance*

As we explain in Sections 2 and 3 below, the TBG's framework will require banks to implement a large number of *new models*. These models will be used for regulatory capital calculation only and they will live outside of the banks' long-established, validated, controlled, use-tested risk management platforms. We see more model and operational risks in the new, to-be-built models than in the current extensively used pricing models.

- *Compatibility with the GIRR, CSR and FX approaches in the draft Accord text (replacing cash flows with sensitivities, but with limited changes to the overall approach and/or calibration)*

As we explain in Sections 4, 5 and 6 below, it is possible to recast the TBG's proposed framework by replacing the discounted cash flows by risk factor sensitivities and thus preserving the key elements of offsetting, diversification and aggregation that were specified by the TBG. The risk weights will need to be recalibrated to reflect the volatilities of the risk factors since they were specified based on the TBG discount factor methodologies and on the fixed legs only.

- *Sensitivities available at the instrument level (for example, this is necessary to recognize hedging for CSR at the level of the name, or to capture basis risk for GIRR.*

Trade level risk factor sensitivities are currently mostly available in the market risk systems of banks.

*The TBG also said that it would give particular consideration to the following features of the counterproposal:*

- *The extent to which non-linear ('convexity') risk is captured*

We describe a possible simple approach to deal with non-linear and other complex risks in Section 6. This is an area that will clearly require more work to refine our simple approach. Notice that in CP2 this area is not completely addressed either.

- *The extent to which the counterproposal gives rise to model risk, or potential inconsistency arising due to the use of models that could vary materially across different firms.*

Model risk is addressed in Sections 3 and 4 below. Standardization and comparability will be achieved by a) precisely *defining the risk factor sensitivities* and b) by using *benchmark trades and portfolios* to verify that the banks' calculations of the sensitivities fall within acceptable tolerance ranges. The benchmark trades and portfolios would give regulators the metrics to enforce consistency.

- *The extent to which sensitivities are subject to adequate independent validation and other measures to ensure their accuracy*

This is discussed in Section 3. Risk factor sensitivities are extensively used, validated and controlled as part of the banks' day-to-day risk management processes and they are critical inputs to various internal and regulatory risk measurement models and stress test frameworks.

- *The extent to which the counterproposal can result in materially different capital outcomes from the cash flow approach*

All else being equal and by itself, the recasting of the framework in terms of risk sensitivities should not be a cause of differences in capital, especially considering that the framework will be fully calibrated via QISs. It is proper to expect that a framework based on risk sensitivities will be more accurate to capture risks and to allocate regulatory capital.

**2) Standardized charges based on instruments' cash flows are difficult and costly to implement in the banks' current risk systems. In addition, they would require banks to develop a large number of "new models" to construct interest rate curves, project floating and contingent cash flows, discount the cash flows and to imply OASs.**

Banks' current trading systems use cash flows to price the trades but they do not *store or export* those cash flows to other risk management systems. A large, internationally active bank may typically have a few million trades whose valuation and risk are calculated by, say, fifteen different trading systems deployed across the organization. Regional and medium-sized internationally active banks may typically have three or more trading systems and several hundred thousand to a few million trades; these systems are often vendor-supplied and vendor-supported. To obtain the detailed cash flow information necessary to calculate standardized capital charges as specified in the FRTB second consultative paper (CP2), banks would have to implement modifications to their trading systems to *store and export* each trade's cash flows to the place where the regulatory capital calculation will take place. They also would have to build

the repositories to receive and store the cash flows so that they can be used in the standardized framework. This will be a substantial technology effort simultaneously with other competing regulatory-driven implementations. It will *consume a large amount of resources* and it is likely to take *a long time to implement*.

After the implementation, testing, and validation of the new data flows, the day-to-day production of the cash flow data will involve a large volume of data movement between the multiple trading systems and a central location where the standardized capital charges would be calculated. Our preliminary and rough assessment of the size of the new data flows suggests that they could increase the current data flows by a factor between two and three. The on-going monitoring and controls of the completeness and accuracy of the new data flows will be sizeable and they will introduce additional demands on the current risk measurement platforms.

In addition to the above, banks will have to create new *discount cash flow (DCF) models* and *implied-OAS models* for many different types of instruments rather than use their existing pricing models that have been developed over many years. Those new models will incorporate bank-specific choices and assumptions about many, possibly thousands, of interest rate curves and curve building methods. The new models will have to be developed, tested and validated. Additional controls will have to be created for the new models since, most likely, they will not be the same models that are used by the banks' current pricing systems. It is unreasonable to expect banks to develop, validate, and develop expertise in the models in several months what would normally take years to accomplish.

Finally, the framework proposed in CP2 does not handle the trades' floating and contingent cash flows. We have already mentioned the need to incorporate these flows in the framework and this would not be an easy task to perform. It would require additional models to project the future values of the floating and contingent cash flows.

**3) The current pricing models used by banks are extensively used, relied upon, validated and controlled. They are at the foundation of all valuation and risk management of banks.**

Banks' pricing models are the tools that are used to value and risk manage their trades on a continuous, ongoing basis. The pricing models are *tightly calibrated to market prices on a daily basis*. The models can be thought of as *interpolators* of the market prices that are relevant to value the particular type of instrument. Large teams of model developers, technologists, independent validators, financial accountants, internal and external auditors, traders, risk managers and regulators examine and use the outputs of those models regularly. Many millions of trades are priced and risk managed on a daily basis and the incident of significant flaws or errors are extremely rare.

It is imperative to firms that these pricing models are appropriately calibrated in order to produce accurate valuations and calculate risk factor sensitivities.

The sensitivity of the price of an instrument to the change of an input risk factor is calculated by shifting the level of the risk factor by a very small amount, recalibrating the pricing model to the new level of the risk factor and re-pricing the instrument. The difference between the final and initial prices is the sensitivity of the price of the instrument to the risk factor shock. Dividing the price difference by the size of the shock, we obtain the sensitivity of the price per unit of the shock.

*Examples: "delta" is the sensitivity of the price of an option with respect to changes of the price of the underlying asset. "Vega" or "kappa" is the sensitivity of the price of an option with respect to the change in the option's implied volatility. Etc…*

Risk sensitivities are extensively used for many different risk management purposes:

a) As part of banks' risk monitoring and limiting frameworks, banks limit the size of those sensitivities with a finely granular mesh of limits at the trading desk level. Some banks can have thousands of limits based on risk sensitivities that are automatically monitored on a daily basis;

b) As input risk positions for models like VaR, stressed VaR, CRM, IRC;

c) As input for stress test frameworks, especially for linear risks;

d) As a tool for decomposing and explaining P&L;

e) As input for regulators' stress test frameworks like the Federal Reserve's CCAR.

The extensive use of risk sensitivities imposes a *substantial amount of discipline and controls on their calculation, testing and validation.* The formal validation of pricing models usually includes a lot of work on the validation of the risk-factor sensitivities produced by the pricing models.

Importantly, the use of risk sensitivities addresses automatically all cash flows, fixed, floating and contingent. Thus, it automatically fixes the problem of CP2 in omitting floating and contingent cash flows.

Finally, the level of sophistication in the pricing models reflects years of experience and fine tuning. The models have evolved over time as banks continue to improve the models and incorporate new market experiences, behavioral changes, etc. With CP2, the Basel Committee would require banks to ignore the history of both market and model experience. Banks would be required to develop and use a model that is on the same order of complexity as the pricing models banks already use, but that has not been tested over time.

**4) Risk factor sensitivities based on pricing models can be tightly defined by regulators and validated against benchmark trades and portfolios for comparability.**

In order to promote uniformity in the calculation of standardized charges, the sensitivities can be standardized across banks. Regulators would define precisely what the sensitivities to be calculated are.

*Example: the sensitivities of the price of an instrument with respect to its underlying interest-rate curve can be defined in terms of partial sensitivities, i.e. the price changes obtained by shocking each vertex of the interest rate par curve individually by 1 basis point.*

*Example: sensitivity of the price of an option with respect to its underlying volatility surface can be defined as the change in price of the option for a 1% parallel shift of the underlying volatility surface.*

Banks would implement those standard definitions and they would test their implementations against a *set of simple and complex benchmark trades and portfolios* that would be specified by the regulators.

Regulators could then compare the results across banks and determine that they are *sufficiently uniform* and lie within *acceptable ranges of variance*. In the case that a certain bank is identified as having calculated risk sensitivities outside of the acceptable range, the bank's regulators could examine the reasons for that and possibly suggest changes in the bank's calculation.

The Associations could propose definitions of the various risk factor sensitivities for each risk class. The definitions would attempt to strike the balance between *appropriate risk capture, simplicity, ability to implement and transparency.* Even if a bank cannot implement the calculation of sensitivities exactly as specified in the rule, the bank can use alternatives and proxies to the extent that those would produce sensitivities that fall within an acceptable range of variance as required by the bank's regulator. The regulator can use the uniform set of benchmark trades and portfolios to gauge the extent of the variance.

The number of risk factors is related to the resolution of the standardized approach to account for the various types of basis risks. The approach could be made simpler for smaller banks whose trading books are simpler by reducing the resolution (i.e. the number of risk factors) of the standardized frameworks for those banks.

**5) Offsetting, aggregation and diversification can be mostly preserved as specified in the FRTB CP2.**

Risk sensitivities can be mapped to the various risk buckets in each risk category similarly to how it is specified in the CP2. Offsetting, diversification and aggregation could proceed mostly as specified in CP2. Of course the risk weights would have to be modified and specified in new units since the risk measures are risk factor sensitivities as opposed to discounted present values of cash flows.

*Example 1: General Interest Rate Risk (CP2, page 63)*

*Each partial interest rate sensitivity would be allocated to the corresponding vertex of the interest rate curve as in paragraph 96, page 64. The correlation matrices on page 65 would be recast in terms of the correlations of the various par yields along the interest rate curve.*

*Example 2: Credit Spread Risk (CP2, page 66)*

*We could define the credit spread sensitivity of an instrument as the price change caused by 1 basis point parallel shift of its credit spread curve. The sensitivity can then be allocated to the credit quality buckets and maturities of the table on page 67. The risk weights in that table need to be recast in terms of credit spread volatilities.*

The examples above show that the recasting of the discounted cash flows in terms of risk factor sensitivities is quite straightforward. This is not a surprise since discounting cash flows and aggregating them in buckets along the maturity spectrum of a curve is essentially a crude mechanism to obtain the price sensitivities to changes of particular points/sectors of that curve.

**6) Special buckets for convexity and, more generally, complex risks in each risk class to determine capital add-ons to risks that are not properly or completed captured by risk sensitivities.**

Notice that the vast majority of trades in trading books, both large and small, are mostly linear and vanilla. Thus, standardized risk factor sensitivities as described above would be sufficient to capture most of the risks. A small portion of trades is more complex and contains risks that are more difficult to fully capture. Those more complex trades could be assigned to special buckets as described below.

There should be special, possibly notional-based or scenarios-matrix based (as opposed to sensitivity-based) buckets in each risk category to calculate special and additional capital charges on risks that are too complex to capture via risk factor sensitivities alone. A capital add-on for option convexity could be charged via those buckets too, if required. Also, the intrinsic complexity of some exotics and structured trades could also be captured in those buckets and properly charged.

Below, we provide a tentative list of categories of trade types that could be used to assess the complexity of the trades. Products in the categories (3) and (4) are the ones that are most likely to be dealt via the special, complex product buckets.

(1) *Linear products*: trades with mostly linear pay-offs (e.g. bonds and equities) and derivative products which have linear pay-offs in the underlying risk factor (e.g. interest rate swaps, FRAs, total return swaps).

(2) *Vanilla options:* European, American and Bermudan put and call options (including caps, floors and swaptions) and other trades with similar features.

(3) *Exotic options:* Asian options, digital options, single barrier options, double barrier options, lookback options, forward starting options, compound options and other trades with these features.

(4) *All other option based products:* basket options, quantos, outperformance options, timing options) and other trades with these features.

This section needs more development but the overall direction is that complex risks will be capitalized more crudely than simple risks. This is consistent with the notion that a standardized framework cannot capture all risks in the most sensitive way.