15

citigroup
corporate and
investment banking

March 6, 2006

Ronald H. Frake
National Bank Examiner
Comptroller of the Currency
Administrator of National Banks
880 Third Avenue, fifth floor
New York, New York 10022

Re: Management Response to the OCC Examination of the North America Credit Trading and North America Structured Credit Derivatives Examination

Dear Mr. Frake,

Thank you for your December 22, 2005 letter with respect to the review by the Comptroller of the Currency ("OCC") of the North America Credit Trading and North America Structured Credit Derivatives (the "Business"). We appreciate your candor in evaluating the Business' price and transaction risks with respect to management processes and controls. Management of the Business and of the Global Fixed Income Division ("GFI") are committed to building and maintaining a strong control environment and recognize that we need to prioritize this in light of the complexity of the Business's risks and products.

Please be assured that Management is firmly committed to fostering a strong and robust control culture and continues to take steps to address the weaknesses in our infrastructure and management oversight processes.

We share your concerns relating to business growth. The Business, Independent Market Risk Management (MRM), Product Control, GFI middle office, and Technology have been working on processes that will lead to the development of a robust monitoring system, including infrastructure control metrics that we will track against business growth.

In our on-going assessment of control infrastructure build-out, GFI management and its control functions continue to explore our Middle Office organization. We believe this work dovetails with concerns you raised during your on-site examination in November 2005. In the current organizational structure, with two significant exceptions, all functions typically described as "Middle Office" are managed by Capital Markets and Banking (CMB) Operations. The exceptions are: (1) Trade Capture (which we also commonly refer to as middle office), the function which enters and enriches transaction data in the firm's risk management, financial, and settlements and clearance systems; and (2) Product Control, the function which produces the daily product P&L. Trade Capture reports through selected Chief Administrative Officers to GFI's Chief Operating Officer, a reporting line which is independent of the trading desk business heads. Product Control reports to the Financial Division.

Six months ago, senior management of GFI and senior CIB management began discussing alternative Middle Office organizational structures that both provide control transparency and better support our growing Derivative businesses. The group includes:

- the co-Heads of GFI,
- COO and CFO of GFI,
- CFO and Deputy CFO of the CIB,
- CIB Head of Operations
- the CIB CIO.

Currently, analysis is being led by CMB Operations in conjunction with GFI management to determine the optimal reporting relationships, plans for integrating other product sets and the advisability of co-location. This effort has moved at a considered pace, given our concerns about potential turnover resulting from organizational changes. We will report our findings and plans as soon as they are concluded but no later than the end of 2Q06. We will provide a written document supporting our decision.

We have put tremendous emphasis on infrastructure build out throughout 2005 and are dedicated to improving the control environment surrounding the business in 2006 and beyond. Our objective is to establish practices that will be viewed by the OCC as industry "Best Practices".

Below are our responses to your Matters Requiring Attention (MRA):

1. *Management needs to develop a formal process to ensure that business growth is within infrastructure capabilities...Management needs to develop a comprehensive plan that details forecasted growth in a fully controlled fashion. This action plan should include limits tied to the capacity and resiliency of the processing and risk management infrastructure of the business. MIS should be developed to monitor key dependencies such that the business does not grow beyond its infrastructure.*

Management takes this recommendation very seriously and views the matter as an opportunity to develop an actionable framework for future business growth and control.

Credit derivatives infrastructure investments absorbed significant management attention and financial resources throughout 2005. After three years work the capstone achievement was the New York implementation of Calypso into production in June 2005. All single name credit default and index swaps (approximately 60,000 trades) held by both the credit trading and correlation trading desks, were thus price- and risk-managed in a robust infrastructure. On the back of this larger core effort, PT was implemented for the correlation desk synthetic tranche and bespoke trades in New York. Following release into production, both major systems required significant stability enhancements that, in the case of Calypso, management considered substantially complete at 4Q05. PT stability enhancements continue unabated in 2006. Lingering control and stability concerns on the correlation desk, both NY and London, prompted management to slow trading momentum in May 2005 and finally dramatically reduce execution of new risk-taking transactions on September 23, 2005. The Correlation Desk continues to operate within significant trading constraints.

The Correlation Desk has assessed the current state of its infrastructure and has identified additional measures needed prior to increasing new business development efforts. Until those measures have been implemented, new business activities will be monitored closely. New transactions will be limited in volume and discussed by the GSCD Correlation Steering Committee, monitored by pipeline reports, and escalated as outlined in the accompanying "Global Correlation Trading Status Report: Reconciliation and Infrastructure." Management's detailed evaluation of recent remedial actions taken, current state of the business, new governance process, and additional infrastructure and control needs is available in that report.

A framework for renewed growth in the correlation business requires that critical questions be addressed to ensure a continuously well-controlled business. To that end, we are developing a metrics based analysis that will answer the following four critical questions:

- Are trades booked timely and accurately?
- Is market risk reporting timely and accurate?
- Is P&L timely and accurate?
- Is the technology infrastructure capable of supporting the business?

These business Key Risk Metrics will also enable Management to more readily assess the status of the Desk's infrastructure support. The Business intends to publish its first set of monthly metrics in March 2006. Effective immediately, in its weekly GSCD Correlation Steering Committee meetings, members will review the Correlation Desk key risk metrics. Any negative trends in the daily or weekly metrics deemed significant by any member of the GSCD Correlation Steering Committee will be escalated immediately to Chad Leat and Geoff Coley by the Market Risk Manager.

Going forward, trend analysis on the metrics is expected to clarify meaningful escalation points. Management Action Triggers, to ensure that business growth does not exceed infrastructure capacity, will be proposed and revised during 2Q/3Q06 and finalized after three Quarters of data is reviewed. (Key risk metrics will be developed for selected other trading desks beginning in 2Q06.) The Business has implemented a Structured Credit Derivatives Correlation Steering Committee (as outlined in the "Global Correlation Trading Status Report: Reconciliation and Infrastructure"), to meet formally on a weekly basis to review proposed and executed transactions, assess business resource needs, and critique infrastructure controls and progress, such as adequacy of risk reports, model concerns, or price verification issues. Key Business Metrics will be one tool at the disposal of the Steering Committee.

Following assessment of its own resource constraints, Credit Trading has significantly reduced trading volume in its index business since November 2005. In an effort to ease infrastructure capacity constraints, there has been no reduction in middle office staffing levels despite the 93% decrease in index credit default swap trade volume. The average monthly volume has decreased from $26.67billion (June-November 2005) to $1.8billion (December 2005 – January 2006).

Importantly, the firm has decided to establish a North American "Infrastructure Risk Committee", consisting of senior CIB business and control group representatives, which will review infrastructure control issues throughout the CIB and provide oversight to ensure remediation plans are developed. The "IRC" is discussed at greater length in RMA #2c below.

2. *Management needs to review the effectiveness of the New Products Approval policy. Three matters management should specifically address are:*

(a) Implementation of an adequate process to ensure that all new products meeting the bank's policy definitions are submitted to CMAC for review. As far as could be determined, the correlation product was never reviewed by CMAC, even though it triggered a number of policy criteria.

Although 20 individual synthetic CDO transactions were brought for CMAC approval between 2003 and 2005, Correlation Trading was never referred to CMAC for review and approval as an "on-going business" in its evolution from a series of isolated transactions to a replicable business. Management believes that processes are now being put in place to ensure that growing and evolving businesses receive requisite scrutiny. Implementation of the IRC, increased attentiveness to infrastructure issues in the CMAC approval process, and a formalized monitoring of CMAC Approval Conditions, as described in detail below, are key. In this spirit, the Correlation Trading business will present the "Correlation Trading Status Report: Reconciliation and Infrastructure" to the IRC and CMAC before March 31, 2006.

The Business will also continue its efforts to ingrain CMAC and Key Policy awareness into the culture of the organization by means of a four-pronged strategy:

- Training-The GFI Risk and Control Team will organize refresher training on the New Products Approval Policy (CMAC) and other Key Policies. Mandatory training sessions are planned for 2Q06.

- Information Sharing-Following London's initiative, the New York Structured Credit Derivatives business has implemented monthly pipeline meetings with CMAC staff to facilitate early stage, informal discussions between the business and CMAC. These discussions will help identify structures potentially requiring CMAC attention and ensure that CMAC is aware of all transactions under consideration. The first meeting was held January 26, 2006. The Business' weekly meetings are also being enhanced to emphasize any process and control concerns.

- Monitoring-With respect to monitoring, the Structured Credit Derivatives business continues to rely upon its monthly "Key Control Policy Procedures for North America Structured Credit Products". These procedures involve management review of exception reports, pipelines, and deal logs, all of which are designed to facilitate management scrutiny of day-to-day activities.

- Testing - The Business and GFI Risk and Control continue to expand RCSA testing of adherence to the CMAC Policy. Additional tests will be developed in 2Q06:
    - To ensure that transactions were appropriately categorized for key control policy applicability
    - To ensure adherence to proposed "CMAC Approval Conditions" (see 2.c below)

Compliance will, upon completion of the RCSA amendments and their associated tests, review those amendments to ascertain the degree to which Compliance can rely upon a validation of those tests, or otherwise to design or execute further independent testing.

(b) A clear articulation of business strategy at the CMAC stage. This allows all control and support functions to better plan their developmental activity to support the initiative. We believe that a Product program would likely be useful for this purpose. This would be particularly useful when a product moves from a one-off mode to becoming "replicable".

The CMAC Transaction Memo guidelines (Appendix A to the Policy) currently instruct the Business to describe the product or transaction, including identifying whether CMAC approval is sought for a specific transaction, or for a "program", i.e. a series of transactions. During the 2nd Quarter, CMAC will revise the Transaction Memo guidelines to more clearly delineate the type of approval (transaction or "program") the Business is seeking.

Where "program" approval is sought, the Business is currently asked to include a description of parameters defining the "program", including transaction characteristics, type of counterparties, and size limitations. Going forward, the guidelines will be modified to prompt the Business to include a more detailed description of the overall business strategy, as well as additional information such as projected future transaction volumes, proposed infrastructure platform, and scalability of infrastructure, as applicable. In January 2006, CMAC enlisted several control functions, including Product Control, Operations, Technology and Market Risk Management, to assist in modifying the Transaction Memo guidelines to include an expanded list of infrastructure-related information that the Transactor should consider when preparing the CMAC Memo. It is important to note that this expanded list of information may not be relevant for all transactions and products being reviewed by CMAC and is intended as a guide for Transactors. Transactors are required by the CMAC Policy to include all material information in their Memo and in the course of the CMAC review (including pre-screening), the CMAC Chairs and the affected control areas use their judgment and discretion to determine whether they have received adequate information, including infrastructure, to approve a proposal. The revised CMAC Memo guidelines will address items such as the adequacy and scalability of the current infrastructure platform, the need for any incremental staffing, and any limitations or triggers identified and imposed by the control functions during prescreening due to infrastructure considerations. Revised guidelines are anticipated in 2Q06.

For existing trading businesses, GFI Management continues to believe that the following six Limit and Monitoring functions provide a substantial and stable control framework:

(1) Permitted Product List
(2) Market Risk Limits
(3) CMAC review

(4) Business monitoring of CMAC approval conditions and limits
(5) on-going business Key Risk Metrics
(6) Infrastructure Risk Committee (discussed below)

Should existing trading businesses wish to significantly grow or change their business mandate or trading profile, various control groups may require the business to present them with a detailed plan, listing all new program parameters and requisite infrastructure support needs, prior to approving those changes. The IRC is expected to review those businesses deemed to have key infrastructure dependencies both in the initial start up phase and upon planned significant expansion. It is anticipated that the IRC will refer on-going businesses to CMAC for review and approval, as deemed appropriate.

(c.) A detailed assessment of the resiliency and capacity of the product infrastructure (e.g. people, processes, systems). Event triggers should be set by appropriate control functions that provide for escalation and assessment of situations where infrastructure adequacy may become constrained. MIS should be developed with metrics and diagnostics that allow monitoring of key dependencies such that the business does not grow beyond its infrastructure.

Our strategic approach to the development and monitoring of MIS will be guided by a "Three Pillar" approach embedded in a governance framework.

<u>Pillar One:</u> "CMAC Approval Conditions" metrics and monitoring

Pillar One will consist of "approval metrics" derived from triggers or limitations imposed as part of the CMAC approval as well as "Escalation Procedures", which will detail the steps the Business needs to take should these triggers or limits be approached or reached. The Business is responsible for monitoring itself against these triggers or limits and also for reporting on a periodic basis to the relevant control groups.

Metrics monitoring is expected to commence in 3Qtr 2006.

<u>Pillar Two</u>: Business "Key Risk Metrics"

These Business "Key Risk Metrics" provide a trading desk specific framework for a well-controlled business and are intended to answer the four questions identified in MRA #1.

We are in the process of establishing metrics for the Correlation Desk as detailed in the accompanying presentation. Once the initial metrics are established, limits and triggers will need to be set and escalation procedures put in place. These trading desk-specific, limits and triggers, along with their "escalation procedures", will govern future business growth. The Business will continue to work with CIB Operational Risk Management to ensure consistency with Citigroup direction, policy and procedures.

As noted above, assessment of metric trends will provide a valuable tool for the Structured Credit Derivatives Steering Committee. Monthly Correlation Desk key risk metrics will be published beginning in March 2006.

Pillar Three- "Key Infrastructure " Control Unit Risk Metrics

Several Key Risk Indicators "KRIs", are already being collected and presented in Operational Risk reports. As you are aware, CIB Operational Risk Management is working closely with product and function management to expand their use of KRIs during 2006.

Governance framework

The purpose of "The Infrastructure Risk Committee, is to discuss control issues brought to its attention (referred by Control Groups, by the Business, by Audits and/or RSCA process or identified by existing Control Reports) and to provide oversight to ensure that appropriate plans are devised to ensure resolution. Comprised of senior members of Control Groups, including Operations, Legal, Compliance, Technology, Finance, Risk Management and CIB Business Management, the IRC will hold monthly scheduled meetings, but will meet with greater frequency as needed. An initial meeting is planned for March 16, 2006. The IRC will: review Control Group Risk metrics packages similar to the Derivatives Operations Weekly Control Report and Operational Risk reports already being produced. In addition the group will leverage the business level metrics where applicable. Based upon an analysis of these metrics, the IRC will identify and meet with those businesses/departments identified as "at risk" for potential infrastructure support issues, i.e. those select businesses that may be straining existing resources. Quarterly, the IRC will prepare an Infrastructure Risk report for the Global Head of Capital Markets identifying potential risk areas and issues.

3. *Management should ensure that all model restriction and limitations are adhered to, with specific responsibilities assigned for follow-up. The correlation business is beset by a number of complex modeling issues, notably those related to rescaling and recalibration of the correlation skew. The model used by the correlation business is referred to as the Proxy Integration Model and is documented in Model Validation Report 771. Due to known limitations in the approximation of risk measures for certain tranches, the model validator indicated that the methodology should be checked against a full Monte Carlo calculation monthly. We found no evidence of this testing.*

The Business acknowledges that it failed to follow the model validator's recommendation to periodically compare a full Monte Carlo simulation to the proxy integration model given the latter's shortcomings. While this recommendation was not a condition for approval, as evidenced by the lack of any restrictions imposed by the model validator in Model Validation Report 771, two corrective actions are underway.

First, the Trading Desk and Research have completed an initial analysis comparing the proxy integration model to a full Monte Carlo simulation on the Correlation desk's portfolio of bespoke and index tranche synthetic CDO/CDO^2 trades. The initial results, which are in the process of being reviewed by Market Risk Management and the Model Validation Group, showed a difference in the portfolio's net present value of $2MM (or less than 1% of the current portfolio MTM) between the two methodologies.

Second, Market Risk Management has begun a complete review of all credit-related models that have restrictions and recommendations imposed on them and will establish a monitoring process to ensure ongoing compliance with the relevant model validation approval. This will include a description of the action or information required by the business, as well as the required frequency. The initial review is expected to be completed by the end of 1Q06.

In recognition of the complex modeling issues surrounding the Correlation business, GFI Management hired an external consultant in July 2005 to perform a review of the adequacy of the modeling infrastructure used by the desk. Upon completion of that review, the consultant made a number of recommendations that are currently being considered by the trading desk and GFI research, from both a modeling, as well as practical systems integration, standpoint.

With respect to additional questions posed on model documentation, the documentation of models developed by Research are kept in a central controlled website repository which meets the firm's COB requirements. Appropriate control restrictions are placed on the repository to protect against unauthorized access. Changes to models are initiated by requests from the trading desk or Market Risk Management, the detection of bugs, or changes in theoretical approach. All such changes to models are documented and revalidated as required following the firm's model validation policy. In addition, the source code for the model libraries is kept under CVS control. The Global Credit Derivatives Research Group continues to adhere to the "Model Documentation, Control, and Testing Policy."

4. *The reserving analysis for the correlation product needs improvement to ensure that levels are adequate, sufficiently sophisticated and dynamic, and fully documented as to its rationale. Presently, model risks are captured in liquidity reserves, correlation reserves and EITF reserves, but they are bluntly defined and do not address or account for all sources of uncertainty associated with model risk and parameter uncertainty. Reserving processes should be better defined and more quantitative and dynamic.*

   Business Management, Product Control and Market Risk Management will perform a comprehensive review of its existing MVAs/reserves for the Credit Derivatives Trading business to identify weaknesses in the current methodologies and will develop action plans to ensure reserves are better defined and more quantitative in nature. (TDI: 2Q06)

The resulting improved reserves will incorporate the following:

- Utilization of existing and enhanced risk measures. For example, we will utilize the bucketed correlation sensitivities to allow for more transparent correlation bid/offer and liquidity reserves;
- Improved benchmarking and calibration of reserves to the market via CDX, and Markit static baskets;
- Automation of the calculation;
- Consistency of reserving approaches between regions;
- Clearly defined procedures and approval processes for updating factors utilized in reserving methodologies. (TDI: 3Q06).

In addition, Product Control will ensure all MVAs/reserves are fully documented to include:

- Description;
- Rationale / Justification;
- Calculation Methodology;
- Frequency of recalculation;
- Identification and limitations of reserving methodology;
- Approvals (TDI: 3Q06).

5. *The risk tools available to Market Risk Management need improvement. The correlation desk does not have an effective P&L attribution capability, although one is in UAT in London. Further, Market Risk Management is unable to monitor recovery rate and correlation risk measures and accordingly, no limits have been set for these risks. Their absence prevents the market risk management function from fully discharging its responsibilities.*

Management agrees that the risk tools available to Market Risk Management for the Correlation Desk need improvement. There are two major initiatives nearing completion that will directly address this:

The Correlation desk is in the final stages of implementing an enhanced daily risk feed from PT to GMR that will capture sensitivity to recovery rates and correlation on bespoke and index tranche synthetic CDOs in GMR. This new GMR feed is being implemented in two phases, the first of which went into GMR production on February 21, 2006, which captured risk exposures from the European Correlation Desk in GMR for the first time. The second phase involves the migration of the US Correlation desk from its current interim GMR feed to the enhanced feed, with a current target date of March 31, 2006. Until this new GMR feed is in production for the US book, Market Risk Management is monitoring the US Correlation desk's correlation 01 exposure via PT's cube risk reports, with a target date for establishing formal limits on correlation and recovery rates of April 15, 2006.

PT now has risk-based Profit Attribution Analysis (PAA) functionality that is available daily via PT's Cube risk reports. The individual P&L components are calculated by multiplying each factor sensitivity by the change in the corresponding market input on a daily basis. Market inputs captured include credit spreads, bucketed correlation, recovery rates, interest rates, FX rates, and time decay. PT Technology recently developed a data feed from PT to the Solar application for use by Product Control. While further enhancements to make the PAA functionality more robust are scheduled for 2006, initial backtesting results performed by the business indicate that unexplained differences are not material.

6. *Unverified trades should be reduced. A large proportion of unverified trades in New York result from being unable to convert forward fees for distressed names observed in the market into spread curves used by internal systems. Management should assign quantitative resources to assist Product Control in developing a solution.*

   Unverified inventory will be reduced using independent market quotes/pricing services or alternative procedures, when available. As of November 30, 2005, $3.2 billion (or 22%) of tested inventory for US Credit Derivatives activities was unverified and $2.1 billion (or 9.1%) of tested inventory for US Credit Trading is unverified. Specific areas that we have or will be targeting for reductions in unverified inventory are detailed below.

   US Credit Derivatives

   - Index Tranches – As of January 31, 2006, Product Control was able to price verify $727 million of previously unverified index tranches. Specifically, Product Control is now sourcing independent third party quotes for equity index tranches that it is delta adjusting to the same index level that we use to price verify the index CDS trades. The delta adjusted quotes are then being utilized to perform a comparison of our own equity index tranche marks for verification purposes.

   - Bespoke CDO Tranches - Active CDX index tranche trading, coupled with consensus tranche pricing received from Markit on static bespoke tranches, will be utilized to price verify our bespoke CDO tranches. Business Management and Product Control will enhance its methodology to allow for a comparison between CDX/Markit tranches and our internal bespoke tranches for verification purposes. (TDI: 3Q06)

   - Tranche Netting - The gross balances of fungible tranched CDX contracts is currently being utilized to derive the unverified balances assigned to these contracts. Product Control intends to net fungible index tranches to more accurately reflect its unverified balances. (TDI: 1Q06)

Credit Trading

- Upfront fees – Markit Partners, the vendor for single name CDS, does not provide upfront fee levels. A Calypso/GCDR enhancement is being developed that will allow upfront fees as an input to the system. In the short term, upfront fees will be converted into spreads using Bloomberg. Independently, Product Control will utilize market observed running spreads to compare these converted spreads for price verification purposes. As of January 31, 2006, Product Control was able to price verify approximately $1 billion of previously unverified inventory trading with upfront fees.

- Indices - As of1/31/06, Product Control was able to price verify $49 million of previously unverified CDS indices by comparing break even spreads in Calypso to those provided by vendors (Bloomberg and Markit). For those curves without outside vendor data, Product Control is working to utilize intrinsic data to verify the curves as an alternative procedure. (TDI: 2Q06).

- Differences between pricing services and internal spread levels - Certain spreads provided by vendors may not reflect market levels. Product Control will perform additional analysis based on broker quotes and actual market trades to assess the quality of these curves. If additional sources are robust enough, Product Control will utilize the additional data to re-classify the refuted levels as an alternate procedure. (TDI: 1Q06).

In addition to ongoing efforts to reduce unverified inventory, additional analysis of unverified inventory is performed by Product Control and Market Risk to categorized it as high, medium or low risk. High risk unverified is defined as inventory having significant price risk with little market transparency. As of November 30, 2005, the high risk unverified inventory totaled $355mm, or 6.7% of unverified inventory for US Credit Derivatives and US Credit Trading activities.

7. *Better control over recovery rate assumptions is needed. Currently, recovery rate assumptions for a given name can be different across credit derivatives products (e.g., GM recovery rate can be different for single name CDS versus bespoke trades), potentially effecting P&L and risk measures. Further, traders have access to – and can change – these assumptions. We note that the price verification process for liquid products partially mitigates the risk of valuation error.*

Management agrees that better control over recovery rate assumptions is needed. Until recovery rates become more transparent in the market, the business will continue to treat them purely as a market-related assumption and not a directly observable market input subject to the usual independent price verification requirements. Product Control and Market Risk Management will periodically review the recovery rate assumptions for reasonableness. In addition, Product Control will monitor a daily report reconciling recovery rates between GCDR, the central repository of market inputs for all single name and index credit default swaps, and risk systems, such as PT and Calypso. The development activities for both these actions will be complete by 2Q06.

In conclusion, GFI re-iterates its commitment to continued improvements in our governance, infrastructure controls, and risk management processes. We would be pleased to arrange follow up meetings with your team to update you on the deliverables we have identified in this letter.

If you have any questions, comments or concerns, please feel free to contact me directly.

Sincerely,

Geoff Coley
Co-Head
Global Fixed Income Division

Cc: R. Barker; D. Bushnell; C. Leat; C. Dark; R. Druskin; E. Greene; M. Helfer; B. Howard; T. Maheras; S. Krawcheck; J. Palmer; L. Kaden; T. Rollauer, M. Wong

Confidential

Global Correlation Trading Status Report:
Reconciliation and Infrastructure

March 1, 2006

citigroup