LEHMAN BROTHERS

Quantitative Risk Management

Policy Manual

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CONFIDENTIAL

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OVERVIEW

As a leading global investment bank, risk is an inherent part of Lehman Brother's (the "Firm's") business. Financial markets, by their very nature, are characterized by uncertainties and subject participants to a variety of risks. The main risks the Firm faces are credit, market, liquidity, legal, reputation and operational. Risk management is considered to be of paramount importance in the Firm's day-to-day operations. Consequently, the Firm allocates substantial resources (including investments in personnel and technology) to the measurement, analysis and management of risk.

Overall risk limits and risk management policies are established by the Firm's Executive Committee. The Risk Committee, which consists of the Firm's Executive Committee, the CRO and the CFO, meets weekly to discuss all risk exposures, position concentrations and risk taking activities. The Global Risk Management Division (GRMD) is an independent global corporate governance function within Lehman Brothers. It is independent of the trading areas and reports directly to the Firm's Global Head of Strategic Partnerships, Principal Investing and Risk. The GRMD includes Market Risk Management (MRM), Credit Risk Management (CRM), Operational Risk Management (ORM), Sovereign Risk Management (SRM), IMD Risk Management (IRM) and Quantitative Risk Management (QRM). Combining all those risk management disciplines in a closely knit division facilitates a fully integrated approach to risk management. The GRMD maintains staff in each of the regional trading centers as well as in key sales offices. Risk management personnel have multiple levels of daily contact with trading staff and senior management at various levels within the Firm.

QRM reports into the CRO and is responsible for developing, implementing and maintaining the risk methodologies and systems used by MRM, CRM, ORM, SRM and IRM as well as validating the pricing models used by the trading units of the Firm. QRM is a globally integrated organization with members deployed in New York, London, Hong Kong and Mumbai.

QRM is comprised of four sub-groups:

- Market Risk Analytics
- Credit Risk Analytics
- Operational Risk Analytics
- Model Validation

The Market, Credit and Operational Risk Analytics groups are responsible for the development, maintenance and operation of the risk quantification methodologies supporting market, credit and operational risk. Those methodologies include VaR, stress tests, scenario analyses, counterparty potential future exposures, Risk Appetite and Risk Equity.

The Model Validation group is responsible for independently reviewing and approving the pricing models used across the Firm as well as for assessing "model risks." The group works closely with MRM, CRM, ORM, SRM, IRM, Business Units, Technology and Product Control to ensure a sound and robust model control environment by establishing policies and procedures for model control, participating in model control committees and setting standards for model documentation, testing and review.

QUANTITATIVE MODELS

The Firm uses quantitative models for valuation, risk measurement and risk aggregation.

Valuation Models

Pricing models are used by the Firm's trading units to value, aggregate and hedge risk positions. In general, the models are based on a well-established body of financial-economic theory, mathematics, probability theory and statistics as well as market data. The models are designed to price risks relative to the costs of their static or dynamic replicating strategies. The models contain assumptions about the stochastic processes followed by market prices, implied volatilities and correlations. The most intensely used models are well-known, industry-standard models (e.g. Black (1976), Black-Scholes (1973), and HJM (1991)). The Firm also employs internally developed models. The pricing models produce valuations and risk-factor sensitivities (e.g. deltas, vegas, gammas) which feed into the risk models used by the GRMD. The pricing models are developed by Quantitative Research. They are implemented by various technology groups dedicated to each business. The Business Units, Quantitative Research, Technology, the GRMD, and Product Control have specific responsibilities in the model control processes. Quantitative Research is responsible for developing, testing and fully documenting the models. QRM works closely with the Quantitative Research groups from the early stages of model development. The Model Validation Group (part of QRM) independently reviews and validates the models. Additional documentation, explanations and tests may be required during the independent review process. Product Control validates the inputs and outputs of the models on an ongoing basis. External price sources are used where available to validate model inputs. Some models contain parameters or inputs that are not readily observable in the market and prudent model valuation adjustments are assessed when required. Technology maintains and controls the computer code of the models, implements regression tests and provides notifications of code changes and releases. Model-related issues are addressed in the monthly meetings of the Model Control Committees of the Fixed Income and Equities Divisions. Those committees are staffed by representatives of the Business Units, Quantitative Research, GRMD, Technology and Product Control.

Risk Measurement Models

The Firm uses Value-at-Risk (VaR), Maximum Potential Exposure (MPE), Risk Appetite and Risk Equity to measure and aggregate market, credit, event and other risks.

Value-at-Risk (VaR)

VaR is an estimate of the potential decline in the value of the Firm's trading portfolios due to "normal" market movements over a one-day holding horizon at a 95% confidence level. The VaR model accounts for general and specific risks. It also accounts for the fact that the values of certain positions are non-linear with respect to the underlying risk factors. For the general market risk factors (e.g. interest rates, foreign exchange rates) the Firm uses historical simulation based on the most recent four years of data. The correlations between general market risk factors are implicitly determined in the historical simulation methodology. The data is weighted to emphasize the most recent period (the Firm currently uses an exponential decay factor of 10% per month). Individual stock prices are used for the simulation of equities risk wherever those series are available. Thus, the equities-risk methodology automatically captures the general and specific risks of stock returns. When there are not enough data on a recently issued stock (e.g. recent IPO), the Firm employs an interim model using a proxy for the individual stock return: either the

closest stock index (when there are less than 60 data points) or linear regression model based on the closest index (when there are 60 data points or more). For debt-related instruments, general risk is represented by bond indices constructed for currency-rating-maturity-industry buckets. The specific risk component is simulated based on the characteristics of the empirical distribution of the individual bond return residuals with respect to the return of its bucket. All simulated specific risks are assumed to be independent of every other general and specific risk factor in the VaR model. The VaR model has been developed and implemented by the GRMD. QRM has primary responsibility for the methodologies and implementation of the VaR model. MRM managers work jointly with QRM to ascertain that the risk models are properly designed and effectively implemented by Risk Technology.

Maximum Potential Exposure (MPE)

The MPE models use various simulation techniques to assess the potential future exposures of the Firm to its counterparties. The MPE models were designed to account for the specific characteristics of the exposures generated by each product line. Interest-rate products tend to generate long-dated counterparty exposure profiles and are predominantly driven by general market risk factors. Foreign exchange products generate intermediate-term counterparty exposure profiles and are predominantly driven by general market risk factors. Securities financing transactions generate short-dated exposure profiles driven by general and specific market risk factors. Equity and credit derivatives generate intermediate-term exposure profiles driven by general and specific risk factors. The MPE models recognize legally enforceable netting rights as well as initial and variation margin terms contained in collateral agreements. Trades that are not part of the MPE simulations are accounted for via various analytical approximations, proxies and add-on techniques. The MPE models have been developed and implemented by the GRMD. QRM has primary responsibility for the methodologies and implementation of the MPE models.

Risk Appetite

The risk tolerance of the Firm is primarily expressed through a framework called Risk Appetite which is grounded in our financial targets. The Risk Appetite represents the amount of money that the Firm is "prepared to lose" over one year due to market, event and counterparty credit risk. Risk appetite is measured at a 95% level of confidence. The framework combines market, event and counterparty risks.

"Market risk" measures the potential mark to market loss on positions from adverse moves in all risk factors. It is computed by historical simulation (similarly to daily VaR) assuming "constant risk" over a one-year horizon.

"Event risk" measures the potential loss beyond those captured in market risk such as losses associated with a downgrade for investment-grade bonds, defaults of the high-yield bonds and loans, loss on real-estate-backed loans, etc.

"Counterparty credit risk" measures the potential losses across all of the Firm's forward settlement, financing and OTC derivative transactions.

Risk Equity

Equity represents a cushion to absorb potential economic losses to which the Firm is exposed. These economic losses may arise from specific positions and counterparties, as well as general operating business or legal risk. The maintenance of the appropriate level of equity is central to

the Firm's ability to raise capital and to transact with credit-worthy counterparties. The Risk Equity Model determines the amount of required equity at the Firm level, and for each of the Firm's businesses, on both a global and a regional basis. It is measured on a fully diversified, after-tax basis. We use our Risk Equity Model to determine the equity to be allocated to each of our businesses.

The components of our Risk Equity Model are:

- Economic equity: market risk, event risk, counterparty credit risk
- Operating risk
- Legal risk
- Other corporate asset charges

"Market risk" measures the potential mark to market loss on positions from adverse moves in all risk factors. It is computed by historical simulation (similarly to daily VaR) but at a higher confidence level of 99.5% and assumes "constant one-day risk" over a one-year horizon.

"Event risk" measures the potential loss beyond those measured in market risk such as losses associated with a downgrade for investment-grade bonds, defaults of the high-yield bonds and loans, loss on real-estate-backed loans, etc.

"Counterparty credit risk" measures the potential losses across all of the Firm's forward settlement, financing and derivative transactions.

Operating risk measures business risk. Legal risk measures the potential loss arising from litigation with investors, customers and employees, net of applicable insurance recoveries.

Other corporate asset charges represent the equity associated with other assets in the Firm (for example buildings). They are allocated to each business as part of the operating component of equity.

Operational risk framework

The Firm's operational risk management framework is designed to ensure the safety and soundness of its franchise by addressing the many different facets of operational risk. The Firm believes that the formal statement of the operational risk framework, and its evolution as necessary, is imperative in an operating environment characterized by increasing product complexity, globalization and technological advancements.

The operational risk analytics group identifies potential operational risks across the Firm and develops risk assessment tools and techniques for monitoring the Firm's risk exposures. Also, it collaborates with the business areas to evaluate, control and mitigate operational risks in existing and new products. The identification and tracking of operational risks (including the risks of suitable proxies where the risks are not directly observable) is the first step in the risk management process. In order to identify operational risks, and in addition to appropriate risk indicators, the flow of transactions through internal processes and systems must be tracked and documented. From this analysis, obtained through the development of process flows, an assessment of the operating and control environments is done. The operational risk analytics group collects internal loss data and business control environment indicators. This data is supplemented by an external database.

In order to measure the operational risk exposures, the Firm uses a model known in the industry as "Hybrid VaR". The Hybrid VaR is computed in one of several ways: 1) Monte Carlo simulation of the aggregate loss distribution estimated from historical internal losses (LDA approach); 2) calculations from self-assessments of frequency and severity of losses from the Risk Control Self-Assessment (RCSA) module, 3) Litigation Self-Assessment from Firm's legal department on open cases against the Firm, 4) assessment by insurance department of replacement cost of damaged assets and cost of business interruptions. The Hybrid VaR model is back-tested against losses on a daily basis. This model is capable of including the effects of insurance into the calculation.

In addition to the Hybrid VaR model, operational risk analytics also developed a "multifactor causal model". This model aims at linking the losses to a certain root causes and provides a multifactor regression analysis relating operational losses (the dependent variable) to the key risk indicators – KRIs - (the independent variables). Examples of KRIs are "number of failed transactions", "amount of failed transactions", "number of transactions amended", "amount of transactions amended", "employee headcount", "transaction count", "transaction amount", etc… The multifactor model assumes that internal losses are linearly related to KRIs with normally distributed regression error term.

SPECIFIC RESPONSIBILITIES OF QRM'S SUB-GROUPS

Market Risk Analytics

The Market Risk Analytics Group shares responsibility with MRM on the following functions:

1) Develop the quantitative methodologies used to measure market risk. Those methodologies are incorporated into the risk measurement frameworks VaR, Risk Appetite, Risk Equity, stress tests and scenario analyses.
2) Provide specifications, prototypes and analytics code for the market risk models to be implemented by the Risk Technology group.
3) Specify and execute the validation and back-testing procedures for the market risk measurement models.
4) Provide analyses and consultation on market risk quantification issues as they relate to the risk measurement frameworks in place as well as new transactions.
5) Fulfill the regulatory requirements relative to market risk models.

Credit Risk Analytics

The Credit Risk Analytics Group shares responsibility with CRM on the following functions:

1) Develop the quantitative methodologies used to measure credit risk on a current and potential exposure basis. Those methodologies are incorporated into the risk measurement frameworks: MPE, Risk Appetite, Risk Equity, Credit Risk Valuation Adjustment, stress tests, scenario analyses and exposure reporting.
2) Provide specifications, prototypes and analytics code for the credit risk models to be implemented by the Risk Technology group.
3) Provide transaction / portfolio analyses and consultation on credit risk quantification issues to CRM.
4) Fulfill the regulatory requirements relative to credit risk models.

Operational Risk Analytics

The Operational Risk Analytics Group shares responsibility with ORM on the following functions:

1) Develop the quantitative methodologies used to measure operational risk. Those methodologies are incorporated into the operational risk frameworks used by the Firm.
2) Develop the data modeling framework indicating the types of data to be collected and used in the risk measurement.
3) Provide specifications, prototypes and analytics code for the operational risk models to be implemented by the Risk Technology group.
4) Provide analyses and consultation on operational risk quantification issues as they relate to the risk measurement frameworks in place as well as new processes contemplated by the Firm.
5) Justify models and economic and regulatory capital figures to ORM, regulators and auditors.
6) Fulfill the regulatory requirements relative to operational risk models.

Model Validation

The Model Validation group, working with business units, Quantitative Research, Product Control and Technology is responsible for:

1) Develop and implement the internal controls on valuation models used across all business units of the Firm.
2) Collect and archive documentation on the pricing models including description of the models, calibration, numerical algorithms used to solve the models, testing results, assessments of model risk.
3) Review and approve the pricing models as well as the risk models (VaR, MPE).
4) Participate in Model Control Committees with Business Units, Quantitative Research, Product Control and Technology to discuss and deliberate model-control-related issues and policies on an on-going basis.
5) The policies and procedures for model risk management and control are established by the Model Control Committees. Those policies are evolutionary in nature and changes to them are approved by the Committees.