From the Banking Regulation and Supervision Agency:

COMMUNIQUÉ ON THE CALCULATION OF CAPITAL REQUIREMENT FOR MARKET RISK OF OPTIONS, USING STANDARDIZED APPROACH

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SECTION ONE
Purpose and Scope, Basis and Definitions

Purpose and Scope:

ARTICLE 1 – (1) The purpose of this Communiqué is to set down procedures and principles relating to calculation of banks' capital requirement for market risk of options, using standardized approach.

Basis:

ARTICLE 2 – (1) This Communiqué is issued by virtue of and in reliance upon articles 43, 45 and 93 of the Banking Law no. 5411 dated 19/10/2005, and fourth paragraph of article 9 of the Regulation on Measurement and Assessment of Capital Adequacy of Banks.

Definitions:

ARTICLE 3 – (1)
The terms used in this Communiqué shall have the meanings designated to them below;

(1) Call Option: Option that gives the option buyer the right to purchase the underlying assets in the quantity and at the price specified in the contract at the end of maturity or at any time until the end of maturity of the contract;

(2) Bank: Banks defined in article 3 of the Law;

(3) At The Money Option: tThe situation where the market price of the underlying asset is equal to the strike price of option;

(4) Delta: Sensitivity of option price to possible changes in price of the underlying asset;

(5) Floor: Lower limit of interest rate to be applied on a floating interest rate underlying asset;

(6) Cap: Upper limit of interest rate to be applied on a floating interest rate underlying asset;

(7) Gamma: Sensitivity of option delta with respect to possible changes in price of the underlying asset;

(8) General market risk rate: General market risk capital requirement rates relating to relevant positions and financial instruments as mentioned in articles 18 and 21 of the Regulation;

(9) In The Money Option: The situation when it is advantageous for option buyer to use an option right when the market price of underlying asset is compared to the strike price of option;

(10) Short call option position: Position of the contractor selling the call option;

(11) Short put option position: Position of the contractor selling the put option;

(12) Strike price: The price at which the right to buy or sell the underlying asset may be used during or at the end of maturity;

(13) Agency: Banking Regulation and Supervision Agency;

(14) Delta equivalent of option: The amount calculated by multiplication of the underlying asset position, by market price of this asset and later by delta of this option;

(15) Option premium / option price: The payment made by the option buyer to the option seller in exchange for its rights arising out of the contract;

(16) Option contract: Contract which entitles the option buyer and obliges the option seller to purchase or sell economic or financial indicators, money or capital market instruments, commodities or foreign currencies of a predetermined quantity and quality at a predetermined price, either at the end of the specified maturity (European style options) or at any time during the specified maturity (American style options);

(17) Intrinsic value of option: The difference between strike price of In The Money Option and market price of the underlying asset ;

(18) Rho: Sensitivity of option price to the change in interest rate;

(19) Put option The option that gives the option buyer the right to sell the underlying assets in the quantity and at the price specified in the contract at the end of maturity or at any time until the end of maturity of the contract;

(20) Specific risk rate Specific risk capital requirement rates of relevant positions and financial instruments mentioned in the third section second part and in article 21 of the Regulation;

(21) Swaptions: An option type granting the right to receive fixed interest (variable interest) against variable interest (fixed interest);

(22) Theta: The rate of change of option price by time;

(23) Long call option position: Position of the contractor buying the call option;

(24) **Long put option position**: Position of the contractor buying the put option;

(25) **Vega**: Sensitivity of option price to change in volatility of price of the financial instrument being the subject of option contract (i.e.underlying asset);

(26) **Volatility**: Measure of size and frequency of fluctuations in prices or rates of financial assets;

(27) **Regulation**: Regulation on Measurement and Assessment of Capital Adequacy of Banks;

(28) **Out-of-money Option**: Situation when it is to the detriment of option buyer to use an option right when the market price of underlying asset is compared to the strike price of option.

SECTION TWO
Calculation of Capital Requirement For Market Risk, Using the Standardized Approach

General Principles:

ARTICLE 4 – (1) Capital requirement to be calculated pursuant to the provisions of this Communiqué is included in the calculation of Risk Weighted Exposure amount for Market Risk under the standardized approach as determined according to second paragraph of article 9 of the Regulation.

(2) Financial instruments which include options, but where the effect of option is negligibly small may be held exempted from the provisions of this Communiqué. Such assets as convertible bonds/notes may be considered and treated as bonds, notes or equities depending on their characteristics. A financial instrument granting the right of early payment to the issuer of bonds or notes is considered and treated as a normal debt instrument and takes its part in the relevant maturity band according to its most probable payment time.

(3) If the option component is dominant, the underlying assets are decomposed by any one of two methods described below:

(a) To be subject to an analytical separation as options and underlying assets; and

(b) To create a synthetic portfolio the risk profile of which is composed of options and basic financial instruments.

Methods To Be Used in Measurement of Market Risk of Options:

ARTICLE 5 – (1) Alternative methods that may be used in measurement of market risk of options are applied as described below:

(a) Banks which only buy option contracts may use the simplified method.

(b) Banks which additionally sell/write option contracts are under obligation to use the method of weighting by delta factor (*translator's note: delta-plus method as in Basel II*) or the scenario approach.

(2) Banks the portfolio activities of which are largely dependent on option trading are required to use more developed methods.

Simplified Method:

ARTICLE 6 – (1) Banks which only buy option contracts of limited number and types may use the simplified method for the option positions specified in the following table and for the asset positions being the subject of the relevant contract. Capital requirement is calculated for each individual option position held by the bank. The resulting figure is added to the relevant capital requirement calculated by standardized approach, depending on the type of assets being the subject of option contract.

Simplified Method

Positions	Application
Long position and long put option relating to the underlying asset or Short position and long call option relating to the underlying asset	Capital requirement is calculated by subtraction of intrinsic value of In The Money Option from the result of multiplication of market price of the underlying asset by the total sum of specific and general market risk rates.
Long call option or Long put option	Capital requirement is the smaller one of the following: • Multiplication of market price of underlying asset by the total sum of specific and general market risk rates. • Market price of option.

(2) For the purposes of this Article:

(1) If the underlying asset cannot be clearly and exactly identified, the asset to be obtained as a result of application of option is considered and treated as the underlying asset.

(2) In such cases as interest ceiling, interest base and swaps when the market value is zero, nominal values are used as market price of the underlying asset.

(3) For options with a time to maturity of longer than six months, the strike price is compared to forward trading price rather than market price.

(4) If market price of an option cannot be determined, registered value of option may be used instead of market price.

(5) If the underlying asset is exchange rate or commodity, in calculation of capital requirement, eight percent is used for exchange rate, and fifteen percent is used for commodity, instead of total sum of specific and general market risk rates.

Method of Weighting By Delta Factor (*translator's note:* ***Delta Plus Method*****):**

ARTICLE 7 – (1) Capital requirement calculation by this method is composed of indirect capital requirement calculation and capital requirement calculation for gamma and vega risks within the frame of procedures and principles set forth in Article 8 hereinbelow. In indirect capital requirement calculation, option writer banks include the delta equivalent of their options as a position relating to the option's underlying asset in capital requirement calculations of the Regulation for general market risk, specific risk, foreign exchange risk and commodity risk within the framework of risks to which this asset is exposed. In this case, for the bank that writes the option, call options are taken and treated as a short position of underlying asset, while put options are taken and treated as a long of underlying asset.
(2) In case the underlying asset is a debt instrument or interest rate, delta equivalents are slotted into the time-bands under interest rate risk calculations. A two legged approach is applied to these options, just as it is applied to the other derivative instruments subject to interest rate risk calculation. In case the underlying contract is a derivative instrument such as an interest rate futures, the maturity of the position –as in the interest rate risk calculations- is determined by the starting date of the underlying contract and the maturity of the underlying contract and positions are treated as per these determined maturities.

(3) Floating rate instruments with caps or floors will be treated as a combination of floating rate instruments and a series of European-style options.

(4) If the underlying asset is an equity, the options traded in different stock exchanges of countries are considered and treated as separate instruments in this calculation, even if they are of the same nature.

(5) If the underlying asset is a futures contract based on a stock index or a stock index, these options are included in the calculations mentioned in first paragraph hereof as a futures contract based on a stock index equal to their delta equivalents.

(6) If the underlying asset is a commodity or a commodity based derivative instrument, the delta equivalent of option also represents a position of the type of commodity being the subject of option.

(7) Net delta equivalent of exchange rate and gold based options in each currency and gold constitutes and represents a position based on the relevant exchange rate or gold as the case may be.

(8) The Agency may request the banks using At The Money Options with a short time to the end of maturity to use scenario approach or internal models method by taking into consideration the adequacy of their internal control, internal audit and risk management

systems. The Agency may further use this power also on the basis of option types within the frame of the same principles, regardless of the time to maturity.

Calculation of Capital Requirements For Gamma and Vega Risks:

ARTICLE 8 – (1) Capital requirement for gamma risk is equal to total sum of absolute values of net negative gamma impacts. Each option based on the same asset has a positive or negative gamma impact. Positive or negative net gamma impact is calculated by adding individual gamma impacts for each financial instrument. However, only negative net gamma impacts are included in capital requirement calculation.

(2) Gamma impact for each individual option is calculated by the following formula:

Gamma impact = 1/2 x Gamma x $(FD)^2$

Where:

(a) GE = Gamma impact
(b) FD = Price Change (Change in price of underlying asset)

(3) Price change mentioned in the second paragraph is calculated as detailed below:

(a) For interest rate options, if the underlying instrument is a bond or note, market value of the underlying instrument is multiplied by risk weights of maturity band corresponding to the maturity to be determined in accordance with second paragraph of Article 7 hereof in the maturity ladder table given in Article 18 of the Regulation. If the underlying asset is an instrument, the return of which is associated with interest rate, other than bonds and notes, an equivalent calculation is carried out again by considering the assumed return (interest rate) changes shown in the maturity ladder table given in Article 18 of the Regulation.

(b) For options on equities and equity indices: market value of underlying is multiplied by eight percent.

(c) For exchange rate and gold options, market value of underlying is multiplied by eight percent.

(d) For options on commodities, market value of underlying is multiplied by fifteen percent.

(4) For the purpose of calculations to be done pursuant to the first paragraph, positions relating to the following items should be treated as the same underlying asset:

(a) For interest rates, each maturity band specified in the maturity ladder table given in Article 18 of the Regulation; and

(b) For equities and equity indeces, each country market; and

(c) For foreign currencies and gold, each foreign currency pair and gold; and

(d) For commodities, each commodity type.

(5) Capital requirement for vega risk is calculated by addition of absolute values of individual capital requirements of options based upon the same asset. Individual capital requirements of options based upon the same asset are calculated by multiplication of total sum of vegas relating to the options based upon the same underlying by a proportional shift in volatility of ± twenty-five percent.

Delta, Gamma and Vega Values:

ARTICLE 9 – (1) Delta, gamma and vega values to be used in calculations to be made pursuant to articles 7 and 8, are found on the basis of the bank specific option pricing model. A document for the assumptions and technical details of the banks' option pricing model should be available for inspection.

Scenario approach:

ARTICLE 10 – (1) Banks using advanced options techniques and/or having sophisticated options portfolios may, while calculating the amount of capital required to be held against market risks for options or related hedging positions, use scenario matrix analysis under the scenario approach. According to this method, with a view to calculating the capital requirement, banks make revaluation of option portfolios by using matrix for simultaneous changes in such risk factors as price/rate of underlying asset relied upon by the options and their volatility. This is done by identifying the fixed change intervals relating to risk factors in option portfolio and later by considering the portfolio value changes at various points on the matrix.

(2) A different matrix will be set up for each individual underlying. As an alternative, banks intensely engaged in options trading base their calculations for interest rate options on minimum six sets of maturity bands. In application of this method, maximum three of maturity bands given in the maturity ladder table shown in Article 18 of the Regulation are placed in the same group.

(3) Options positions are considered within a particular band below and above the market price of the underlying asset. This step is the first stage of matrix preparation. For interest rate, this band should be consistent with the assumed return (interest rate) change shown in the maturity ladder table given in Article 18 of the Regulation. Banks employing the alternative method described above for their interest rate options make their calculation by using the highest one of the assumed return (interest rate) changes belonging to each maturity band included in the same group. Range of change for equities, foreign exchange and gold is ± eight percent, and range of change for commodities is ± fifteen percent. For all risk categories, at least seven equal observation intervals, including the current interval, are used.

(4) Second stage of matrix preparation is related to change in volatility of underlying rate or price. It is sufficient to take into consideration a shift in volatility of ± twenty-five percent in volatility of underlying rate or price. However, the Agency may, if and when deemed necessary, request the use of a different change and/or rate in volatility, and/or a calculation at the points to be identified at interim levels in the matrix.

(5) Following calculation of matrix, each cell contains net profit/loss of the option and the underlying hedge instrument. Capital requirement for each underlying is considered as the largest loss contained in the matrix.

(6) Capital requirement for specific risk is calculated by multiplication of delta equivalent of each option by the relevant specific risk weight.

(7) Apart from the risks described above, options contain such risks as theta and rho as well. Even though these risks are not included in the valuation models and risk management systems used, the banks having a significant options portfolio are required to closely follow up these risks and to report to the Agency how they follow them up.

(8) Banks' use of scenario method is dependant upon compliance of the requirements and aspects for such an analysis under this method and The Agency's appropriate opinion. Use of scenario method as part of the standard method is subject to Agency's permission and is subject to assessment based on the qualitative and quantitative requirements for risk measurement models used for calculation of Risk Weighted Exposure amount for Market Risk.

SECTION THREE
Miscellaneous and Final Provisions

Repealed Communiqués:

ARTICLE 11 – (1) The Communiqué on Calculation of Capital Requirement For Market Risk Arising Out of Options by Standardized approach, and the Communiqué on Consideration of Credit Derivatives in Calculation of Capital Adequacy Standard Ratio by Standardized approach, promulgated in the Official Gazette edition 26335 on 3/11/2006, are hereby repealed and superseded.

Effective Date:

ARTICLE 12 – (1) This Communiqué becomes effective as of 1/7/2012.

Enforcement:

ARTICLE 13 – (1) The provisions of this Communiqué will be enforced and executed by the President of the Banking Regulatory and Supervision Agency.