

TAKASBANK INTERNAL DIRECTIVE ON CENTRAL COUNTERPARTY RISK MANAGEMENT IMPLEMENTATION PRINCIPLES

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TAKASBANK INTERNAL REGULATION ON CENTRAL COUNTERPARTY RISK MANAGEMENT IMPLEMENTATION PRINCIPLES

CHAPTER ONE

Purpose, Scope, Basis, Definitions and Abbreviations

ARTICLE 1 - Purpose

(1) The purpose of this Regulation is to stipulate the implementation principles regarding the Central Counterparty risk management activities carried at Istanbul Settlement and Custody Bank Incorporation (Takasbank); without prejudice to the issues stipulated in the Capital Markets Law No. 6362, the General Regulation on the Establishment and Operating Principles of the Central Clearing and Settlement Institutions, the Istanbul Settlement and Custody Bank Incorporation Central Counterparty Regulation and the Banking Law No. 5411

ARTICLE 2 - Scope

(1) Activities carried by service units and internal system departments of Takasbank for the management of risks undertaken as CCP, which are not exclusively stipulated by other legislation fall within the scope of this Regulation.

ARTICLE 3 - Basis

(1) This Regulation has been prepared on the basis of Article 12 of the Articles of Association of Istanbul Settlement and Custody Bank Inc. and Article 13 of the General Regulation on the Establishment and Operating Principles of the Central Clearing and Settlement Institutions.

ARTICLE 4 - Definitions and Abbreviations

(1) Terms used in the implementation of this Regulation shall bear the following meanings;

- a) **Modified duration:** The change in the price of interest-bearing debt securities caused by a unit change in interest rates.
- b) **Initial margin:** Collateral amount requested to open trade positions in order to cover the risks that, in case of occurrence of any default event in future, may be exposed during the time period elapsed from the date the default has occurred to the closing date of the positions.
- c) **BRSA:** The Banking Regulation and Supervision Agency.
- ç) **BİAŞ/Exchange:** Borsa Istanbul Inc.
- d) **Basic CPMI-IOSCO principles (PFMI):** The principles published for the financial infrastructure institutions by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO).

- e) **Variation margin:** Collateral which is requested as a result of the gaps arising out of the valuation of outstanding trade positions with the market prices.
- f) **Sensitivity test:** The analysis which is used to measure the changes in margin requirements caused by a unit change in the risk factors.
- g) **Physical delivery margin:** Collateral which is requested to cover the risks that may be exposed, in the futures contracts subject to physical delivery, due to the price changes in the underlying asset throughout the physical delivery period.
- ğ) **Guarantee Fund:** The fund/funds established with the contribution amounts of the CCP members for utilization in the event that clearing and settlement obligations relating to the markets or capital market instruments to which central counterparty service is provided are failed to be fulfilled.
- h) **General business risk:** Any potential impairment in the income and expense balance of Takasbank arising from unpredictable business conditions depending on its CCP activities.
- ı) **General Manager:** The General Manager of Takasbank.
- i) **Backtesting:** The tests aim to measure the performance of risk measurement models used in determining the margins.
- j) **Internal system departments:** The Internal Audit Department, Internal Control and Compliance Department and the Risk Management Department that report to the Board of Directors through the Supervision Committee.
- k) **Website:** The corporate webpage of Takasbank.
- l) **Margin requirement:** Initial, variation and physical delivery margins and any other margins that may be established for risks arising from the positions.
- m) **Law:** The Capital Markets Law No. 6362.
- n) **Covered risks:** Risks to which Takasbank is exposed due to the central counterparty service it renders, but are protected through margin requirement, guarantee fund contribution amounts and the portion allocated from Takasbank capital.
- o) **Concentration risk:** The probability of Takasbank to face large losses at a level which may threaten the capacity to carry on its core activities or the financial structure due to the default of a limited number of members or collateral debtors on whom the margin requirement amounts in the markets that CCP service is provided for are heavily concentrated.
- ö) **Hedging transaction:** Engaging in any counter-transaction which would eliminate the risk undertaken either entirely or in part.
- p) **Credit risk/specific risk:** The probability of loss that may arise from the failure of the institutions having a membership or credit/deposit relationship with Takasbank to perform their obligations against Takasbank in a complete or timely manner and/or from the

depreciation in the market values of the capital market instruments accepted as collateral due to the default or decreased creditworthiness of the issuers of those assets.

- r) **Board:** The Capital Markets Board.
- s) **Liquidity risk:** The probability of loss that may result from Takasbank's failure to fulfill its payment obligations in a complete or timely manner, the inability to convert the collaterals into cash or converting them into cash with the prices lower than those estimated as a result of declined depth or extreme fluctuations in the markets.
- ş) **Macaulay duration:** The method estimating the average principal repayment/recovery period of the financial assets and liabilities by weighting the present value of all cash flows within the term with the number of payment periods.
- t) **Financial Analysis and Rating Team:** The team carries out the financial analysis, intelligence, assessment and credit rating activities to measure and monitor the financial capabilities of the institutions to whom Takasbank has allocated/will allocate any credit, risk, collateral, custody or trading limit or with whom it has established/will establish a membership relationship.
- u) **Central Counterparty Department:** The department is in charge of CCP risk, collateral and default management activities together with financial analysis and risk monitoring operations and comprises of the Central Risk Management Team, the Collateral and Default Management Team and Financial Analysis and Rating Team.
- ü) **Central Counterparty (CCP) service:** The activity where Takasbank ensures settlement finality, becoming buyer to the seller and seller to the buyer through open-offer, contract novation or any other legally-binding method on the basis of the markets or capital market instruments deemed appropriate by the Board.
- v) **CCP:** Central counterparty.
- y) **CCP Regulation:** Istanbul Settlement and Custody Bank Incorporation Central Counterparty Regulation published in the Official Gazette dated 14/08/2013 and numbered 28735.
- z) **Central clearing:** The central counterparty-based settlement.
- aa) **Operational risk:** The probability of loss resulting from inadequate or failed internal processes, people and systems or from external events, which also includes the legal risk.
- bb) **Market:** Places wherein Takasbank is authorized by the Board to provide CCP service.
- cc) **Market risk/Investment risk:** The probability of loss that may be incurred as a result of the change in the market values of the financial instruments acquired or accepted as collateral and/or of the trading positions due to the interest rate, currency, commodity and stock price risks or specific risk.

- çç) **Market directive:** The arrangements for the markets and capital market instruments to which Central Counterparty service is/will be provided, which have been adopted by the Board of Directors and approved by the Board.
- dd) **Portfolio-based margining:** Calculating the collateral amounts to be requested from the CCP members by considering risk mitigating effects of the correlations between the positions held in the same account.
- ee) **Procedure:** The arrangements, approved by the General Manager, comprising the rules, principles and procedures for the functioning and implementation of CCP activity, which have been prepared pursuant to the general framework stipulated in the CCP Regulation, market directives and regulations.
- ff) **Risk Management Team:** The internal systems team in charge of risk control and reporting, which operates under the responsibility of the Supervision Committee established in the Board of Directors in accordance with the Banking Law No. 5411 and the Regulation on the Banks' Internal Systems and Internal Capital Adequacy Assessment Process.
- gg) **Capital market instruments:** Securities and derivative instruments as well as other capital market instruments, including the investment contracts, determined by the Board as falling into this scope.
- ğğ) **Specific Wrong-Way Risk:** The risk that may result from the existence of wrong-way correlation between the market value of the collateral provided for any risk and the current value of the risk being exposed.
- hh) **Stress testing:** The adoption of parameters, assumptions and scenarios reflecting the stressed market conditions to the models used for margining in order to measure the capacity of the financial resources that may be used by Takasbank for the CCP risks to cover the risks arising from extreme market volatilities with low probability.
- ıı) **Clearing and Settlement:** All of the processes that enable the transfer of cash and/or assets between the parties through fulfillment of the obligations arising in relation to the transactions conducted in the market by the CCP members within the deadlines and on conditions set forth by Takasbank.
- ii) **Takasbank/Bank:** Istanbul Settlement and Custody Bank Incorporation.
- jj) **Collateral:** Assets deposited by the central counterparty members to Takasbank as margin requirement and guarantee fund contribution amount in order to cover the risks that may arise from the transactions they conducted.
- kk) **Collateral valuation haircut:** The haircut which is applied to the assets accepted as collateral and reflects the depreciation that may be incurred on their market values when the need for liquidating them arises.

- ll) **Member:** The institutions that are found eligible by Takasbank to become a party to the rights and obligations arising from the transactions conducted in the markets for which CCP service is provided as well as to the liquidation of those rights and obligations.
- mm) **Senior management:** The general manager, the assistant general managers and other managers who are responsible at the executive level for the management and administration of the functions at Takasbank.
- nn) **Volatility:** The change in the prices of the financial assets or the level of risk factors recorded over a given period of time.
- oo) **Legal risk:** The probability of loss that may arise from the misinterpretation of or incomplete knowledge about the law or regulations, the unforeseeable amendments in the law or regulations, the unenforceability or invalidity of the CCP contracts, rights and responsibilities, either completely or partially, due to the legal barriers.
- öö) **Board of Directors:** The Board of Directors of Takasbank.
- pp) **Implied volatility:** The volatility inherited in the prices of option contracts traded in the market.

CHAPTER TWO

General Principles

ARTICLE 5 - Legal risks

- (1) Takasbank initiates the necessary actions at the Board and other relevant authorities for the identification and elimination of the legal risks related to the CCP activities, particularly for the protection, utilization, segregation and porting of the member and client collaterals. Holding both Takasbank and the CCP members and their clients harmless from the legal risks related to the CCP activities is essential.

ARTICLE 6 - The fact that Takasbank's other operations pose no risk for CCP activities

- (1) Clearing and settlement and CCP services are the core business activities of Takasbank as central clearing and settlement agency.
- (2) Execution of all types of other activities at Takasbank which are associated or not associated with the central clearing and settlement in the manner not to interrupt the CCP service and to constitute any significant risk on such activity is essential.
- (3) In order to prevent the contagion of risks that may be posed by other operations to the CCP activities, the General Manager is authorized to take all types of measures or to make proposals to the Board of Directors to enable those measures to be taken, including capital allocation, termination of risky operations or their transfer to the existing legal entities or to those to be established.

ARTICLE 7 - CCP risk management principles

- (1) The risks must be measured and monitored in an efficient manner to ensure complete and timely fulfillment of the members' obligations against Takasbank in all markets for which CCP service is provided. Accordingly;
 - a) The initial margin level must be periodically calculated in a manner to include the major financial volatilities experienced in near past and they must be monitored continuously by taking into account the market conditions and must be revised when needed.
 - b) The size of the guarantee fund must be established by using confidence levels which represent the low probability but high-severity financial volatilities.
 - c) The adequacy of the margin requirement amounts must be monitored in a manner to cover the intraday price movements as well as the position changes.
 - ç) The adequacy of the margin requirement amounts, guarantee fund contribution amounts and the resources allocated and committed from Takasbank capital for the CCP risks must be monitored through stress tests in regular intervals.
 - d) The financial capabilities of the members must be continuously monitored and the transactions they will conduct must be restricted via the limits to be designated by taking their financial strengths into account.
- (2) The risk management activities outlined in this Regulation shall, unless otherwise explicitly stipulated, be performed by the Central Counterparty Department. Except for the consultancy or validation services outsourced under incidental conditions, the CCP risk management activities cannot be outsourced.
- (3) Takasbank Central Counterparty Regulation on Collateral Management Implementation Principles and Takasbank Central Counterparty Regulation on Default Management Implementation Principles are supplementary to this Regulation.
- (4) Procedures may be issued in order to provide guidance for the operations, processes and rules to be followed in the implementation of principles stipulated in this Regulation.

ARTICLE 8 - Compliance with the international standards and principles

- (1) International standards shall be observed for CCP risk management activities and services. In the implementations, unless there is no arrangement and contrary provision in the legislation, the basic principles of the CPMI-IOSCO for the central counterparties shall be taken as reference.

CHAPTER THREE

Central Counterparty Risk Management Organization

ARTICLE 9 - Board of Directors

- (1) The body responsible at the highest level for setting the objectives and strategies of Takasbank as CCP agency, establishment of an efficient risk management function in relation to the CCP activities within Takasbank and the observance and supervision of the adequacy of such function is the Board of Directors.
- (2) The Board of Directors executes its roles and responsibilities through the service units and internal system departments under the responsibility of the General Manager.

ARTICLE 10 - Senior management and special responsibilities

- (1) The General Manager, Assistant General Managers and other senior managers bear the responsibility for;
 - a) Carrying out the CCP activities in accordance with the objectives and strategies set forth by the Board of Directors,
 - b) Establishing the compliance and internal control procedures that would enable to attain the targeted objectives.
 - c) Taking the measures to ensure that Takasbank's other operations shall not pose any significant risk for the CCP activities.
 - ç) Allocating sufficient resources to the risk management, internal audit, and internal control and compliance functions.
- (2) The Assistant General Managers in charge of CCP and Financial Services, the directors and service managers in charge of Takasbank Central Counterparty Department are responsible for, at the higher-level, performing the CCP risk, collateral and default management activities in accordance with the legislation and the international principles. The Manager of Takasbank Central Risk and Collateral Management serves as the most senior officer responsible for the CCP risk management activities.
- (3) The assistant general manager, directors and service managers of Takasbank information technologies are in charge of and responsible for, at the higher-level, establishing technological infrastructure at the international standards and reliability and ensuring its continuity as required by CCP activities. The Assistant General Manager of Takasbank Information Technologies serves at the most senior officer responsible for the information system activities related to the CCP services.
- (4) The assistant general manager, directors and service managers in charge of Takasbank budget, accounting and reporting functions are responsible for, at the higher-level, carrying out financial recording and reporting operations necessitated by the CCP activities at the international standards and allocating adequate resources to the CCP risk management activities.

- (5) Directors and service managers in charge of human resources are responsible for, at the higher-level, carrying out managerial operations necessitated by the CCP activities at the international standards and allocating adequate resources to the CCP risk management activities.
- (6) The assistant general managers, managers and service managers in charge of the Operations and Markets are responsible for, at the higher-level, maintaining relationships with the CCP members, conducting the membership transactions, setting the fees, opening and running the position and collateral accounts, and the clearing and settlement and reconciliation processes, the collateral depositing and withdrawal processes, the variation margin and interest distribution processes, the safekeeping and monitoring of non-cash collaterals in accordance with the principles stipulated in the Central Counterparty Directive on Collateral Management Implementation Principles and ensuring the allocation of risk limits to the members.
- (7) The assistant general manager, managers and service managers of Takasbank treasury operations are in charge of and responsible for, at the higher-level, investing the capital allocated for the CCP risks in liquid assets and delivery operations, and monitoring cash collaterals deposited for investment or other purposes in accordance with the principles stipulated in the Central Counterparty Regulation on Collateral Management Implementation Principles and the market directives.
- (8) Takasbank Legal Affairs Advisor serves as chamber consultant for identifying and eliminating the legal risks related to the CCP services.
- (9) Takasbank Internal Audit Department is in charge of auditing the CCP activities and operational competencies of the members as well as reviewing the validity of central risk management and collateral valuation models and techniques.
- (10) Takasbank Risk Management Department is in charge of performing the legal and internal capital adequacy calculations and assessments for the risks stemming from the CCP activities.
- (11) Takasbank Internal Control Department checks and monitors the compliance of CCP activities and the staff involved in the CCP activities with the legislation. Takasbank compliance officer serves as the officer responsible for senior for controlling the compliance with the legislation.
- (12) Takasbank Financial Analysis and Risk Monitoring Team is in charge of monitoring the limits and risks allocated to the members in CCP activities on stand-alone and consolidated basis, as well as setting the CCP membership types, and carrying out the credit rating and assessment activities that will be taken as the base for limit allocations to be made by the Board of Directors.

ARTICLE 11 - CCP Risk Advisory Committee

- (1) A CCP Risk Advisory Committee shall be established which is in charge of and authorized for giving advices to the Board of Directors on issues related to the management of Takasbank CCP risks. The CCP Risk Advisory Committee shall, under the presidency of one of the independent members of the Board of Directors, be comprised of the representatives of CCP members, representatives of the legal entity customers of the CCP members and the independent members of Takasbank Board of

Directors. Takasbank employees, representatives of the market operators or external experts can participate in the CCP Risk Advisory Committee on condition to have no voting rights.

- (2) The decisions of the Risk Advisory Committee are in advisory nature. None of the representative groups can have majority in the committee.
- (3) In the Risk Advisory Committee, the issues that may affect the risk management of the CCP shall be discussed, such as modification of risk models used in the CCP risk management, the default procedures, membership acceptance criteria, clearing and settlement of new capital market instrument types or insurance in trading or use of external resources.
- (4) The advices of the Risk Committee are not binding upon the Board of Directors. In such a case, however, the reason for non-compliance with the decision must be informed to the Board. The secretariat operations of the CCP Risk Advisory Committee are performed by the Central Counterparty Department. Takasbank pays no remuneration to the members of the CCP Risk Advisory Committee in relation to such duties.
- (5) The establishment and operating principles and procedures of the CCP Risk Advisory Committee shall be stipulated by a separate regulation to be approved by Takasbank Board of Directors and published on Takasbank website.

CHAPTER FOUR

Management of Credit and Concentration Risks

ARTICLE 12 -Criteria for acceptance to the CCP membership

- (1) The member to be accepted to the CCP membership must have adequate moral and financial strength as well as operational competence.
- (2) In the markets to which CCP service is provided, the membership categories and the acceptance criteria for membership shall be defined for each capital market instrument and be published in the relevant market directives and procedures. The said criteria must be transparent, objective and of such nature to ensure the members to have the financial strength and operational competence for fulfilling their obligations against Takasbank.
- (3) In measuring and monitoring the financial capabilities of the CCP members and determining the membership categories, the size of the equity capital and the internal and/or independent credit ratings in accordance with the Regulation on General Principles for Credit Ratings and Assessment Systems shall be used. The general principles of the models and methods used for measuring the creditworthiness in order to determine the member acceptance and membership categories shall be published on Takasbank website.
- (4) To ensure the CCP members to have necessary operational competence, a written promise shall be obtained from the board of directors of the institutions which apply for membership that they would establish and maintain adequate data processing, risk management, internal control and internal audit systems. Before the membership acceptance, an on-site audit for the data processing, risk

management, internal control and internal audit systems may be conducted by Takasbank Internal Audit Department.

ARTICLE 13 - Monitoring the credit and concentration risks posed by the CCP members

- (1) The credit and concentration risks of the members in the markets for which CCP service is provided are monitored on daily basis.
- (2) The credit risk exposed by Takasbank as a result of the CCP service is monitored by comparing the available collateral with the margin requirement level. If the available collateral amount falls below the required amount, then additional position taking by the member may be restrained until the margin call ends.
- (3) In order to monitor the concentration-related risks, the ratio of each member's margin requirement level to the total margin requirement level in the relevant market is monitored. It is essential that this ratio is not higher than 50%. In a market where the ratio of the members' risks apart from the largest three members in any market to the total risk does not reach 30%, the exceed in the limit of 50% by any member including the largest three members and/or by the members who has consumed less than 60% of the allocated limit in the relevant market shall not be considered as breach. In case that the number of members with open position in the relevant market is less than 4, the composition limit under this paragraph shall not apply.
- (4) Due to market-specific conditions, the Board of Directors may set concentration limits over 50%. The concentration limits set above 50% shall be reviewed at least once a year in January and a revision proposal shall be submitted to the Board of Directors, if deemed necessary.
- (5) The level below the 10% of the limit set for the concentration risk is the signal value. In case that other conditions in the third clause exist and the signal and/or limit value(s) is/are exceeded, Central Counterparty Department shall warn the relevant senior managers and the internal system departments by reporting.
- (6) Should the concentration limit be exceeded by any member despite the conditions referred in the third clause, either one or more than one of the following measures may be taken upon and the approval of the General Manager, and the Board of Directors' Resolution, if necessary.
 - a) Restraining the member from taking additional positions.
 - b) Requesting additional cash collateral from the member.
 - c) Reducing the trading limits of the member until the end of designated time period.

ARTICLE 14 - Member risk limits

- (1) To restrict the risks of the members against Takasbank in the markets to which CCP service is provided; limit allocations shall be made, upon the proposal of the General Manager, to the members by the Board of Directors or by the Credit Committee or the Head Office pursuant to the authority delegated by the Board of Directors, by also taking into consideration the equity capital of the counterparty and/or the results of credit ratings and assessments. The risk limits can be determined

based on nominal open position amounts or another indicator which measures the member risks such as the initial margin.

- (2) The maximum risk limits that can be allocated to each member according to the credit rating and assessment results shall be calculated by the Financial Analysis Team in accordance with the Regulation on General Principles for Credit Rating and Assessment and the relevant procedures.
- (3) The member risk limits can be separately determined for each market, but a common limit can also be allocated for one or more than one market.
- (4) The allocated limits are announced to the relevant members.

ARTICLE 15 - Segregating the positions-at-risk

- (1) In the capital market instruments for which CCP service is provided, the positions belong to the members' own portfolios and to their customers are monitored separately. The position accounts shall be opened by the members and/or Takasbank on electronic environment by using Takasbank system. The monitoring of positions is also made on electronic environment at Takasbank system in a book-entry form.
- (2) Two types of accounts can be used at Takasbank in order to segregate the positions of the members and their customers:
 - a) Single position accounts; are the accounts where the positions belong to a single customer of the members or their own portfolios have been monitored.
 - b) Multiple position accounts; are the accounts where the positions belong to multiple customers of the members can be monitored in a collective manner or the positions or sub-accounts of the customers or portfolios can jointly be monitored due to being associated with the same collateral account or for other reasons. However, positions belong to the portfolio and to the customers must be segregated in any way.
- (3) Single or multiple-position accounts are associated with the single or multiple collateral accounts whose principles are stipulated in the Takasbank Central Counterparty Regulation on Collateral Management Implementation Principles. The association can be in the form of establishing a link between the position and collateral accounts, but it is also possible to open position and collateral accounts that are able to individually perform the functions expected from the position and collateral accounts. When necessary, the joint clearing and settlement accounts can be used for the clearing and settlement of the assets and cash which stem from the positions being segregated through single and/or multiple position accounts.
- (4) Business and operations related with opening and use of the position accounts are performed by the departments which carry out operations for the relevant markets.

ARTICLE 16 - Methods to be used for calculating margin requirement and guarantee fund amounts

- (1) In the markets/capital market instruments to which CCP service is provided, the method or methods to be used for calculating margin requirement and guarantee fund shall be explained in the market

directives and procedures in accordance with the principles set forth in this Regulation. The arrangements related to the margin requirement and guarantee fund calculation methods and the role and responsibility for preparing the announcements thereof and informing the members when needed belongs to the Central Counterparty Department.

ARTICLE 17 - Portfolio-based margining

- (1) In cases where portfolio-based margining is applied; in order to define a correlation between different product groups, the correlation computations between the relevant product groups must be made by using a minimum 5-years dataset and the correlation value being computed must economically and econometrically be meaningful.
- (2) For portfolio-based margining, the offset to be made in the required margin amount as a result of the correlation effect between product groups cannot exceed 80% of the difference between the required margin amounts calculated by taking and not taking into consideration the correlation effect, respectively.

ARTICLE 18 - General principles for the initial margin calculation methods and parameters

- (1) The initial margin can be determined in amount or in percentage.
- (2) Calculating the initial margin, potential risks to be incurred during the time period elapsed from generation of trading positions to their liquidation as a result of any possible default shall be taken into account. The holding period to be used for calculating the initial margin is minimum 2 business-days. For the over-the-counter derivative instruments, the holding period cannot be less than 5 business days.
- (3) In determining the confidence level to be used for calculating the initial margin in each market; the complexity and the uncertainties in the pricing of the assets traded in the market, volatility, modified and Macaulay durations, liquidity, non-linear pricing characteristics, risks characteristics such as specific wrong-way risk, to what extent other risk controls in the market restrict the credit risks, the level of difficulty in closing the positions, or the concentration level of the transactions in the market over several members shall be taken into consideration. The confidence levels or the confidence level brackets to be used for each market shall be stipulated in the relevant market directives and procedures.
- (4) It is essential that initial margin should not be changed frequently due to the price movements in the market. To ensure the collateral ratios or amounts to be applied relatively for a longer period, one or several of the below listed methods can be adopted:
 - a) Setting the maximum and minimum confidence levels, provided that they stay within the limits identified in the market directives and procedures, when the initial margin risk parameters are defined in amount.
 - b) Defining the minimum initial level parameters provided that they are not less than those estimated by a lookback period of 10-year dataset.

- c) In the prices used for the calculations, applying at least 25% weight to those having extreme values.
 - ç) Increasing the collateral amounts or ratios, as not to exceed 1.5, with a multiplier coefficient.
- (5) To mitigate the procyclicality of dataset used in the parameter calculations and to compute the initial margin values prudently, it is ensured that the financial volatilities experienced in recent period have been covered. In case of availability of market data to be used in the initial margin calculations, they must cover minimum last one year period. In the event there is inadequate or no historical data for any asset, or if such data is considered as not sound for reasons such as shallow in the market etc., available data for the assets with similar characteristics can be used.
- (6) The parameters, by observing the current and future market conditions, can be defined more prudently than the values calculated with historical data.
- (7) The parameters and/or initial margin level used for calculating the initial margin can be scaled by taking account of the credibility of the member, the required margin concentration levels and the limit utilizations. The scaling criteria shall be included in the market directives and procedures.
- (8) Parameters which constitute the base for initial margin shall be recalculated at least 4 times annually, in March, June, September and December by using the market data and the adequacy of the current parameters shall be tested. To ensure the up-to-dateness of data to be used in the calculations, the dataset must include, at minimum, the last business day of the month before the month in which the calculation has been made.

ARTICLE 19 - Monitoring the adequacy of initial margin risk parameters

- (1) The risk parameters used in initial margin calculations are monitored continuously by observing the market conditions, and are revised when deemed necessary.
- (2) In case that any daily price change occurs at the markets in either one of the following variables at a rate exceeding;
- a) 10% in BIST 30 and/or BIST 100 index(es),
 - b) 300 basis points in Benchmark GDDS interest rate,
 - c) 5% in the free market price of the currency basket comprising of 1 United States Dollar (USD) and 1 European Currency Unit (EUR),
 - ç) 200 basis points in 10-years Eurobond interest rate,
 - d) 10% in TL gold prices per gram,

then the initial margin parameters shall be recalculated without waiting for the revision period and revised, if deemed necessary, in the manner as stipulated in this Regulation.

ARTICLE 20 -Approval and announcement of initial margin risk parameters

- (1) Revisions deemed appropriate on the risk parameters shall be submitted for approval, together with their recommended effective dates, to the General Manager by the Manager of Central Risk and

Collateral Management or through the Assistant General Manager in charge of CCP and Financial Services.

- (2) The parameter revisions approved by the General Manager shall be announced to the members by Takasbank market and operations department and be published on the website.

ARTICLE 21 - General principles regarding the guarantee funds

- (1) Takasbank establishes guarantee fund/funds with the contribution amounts of the members in order to be used for the portion of the losses exceeding the available collateral amounts of the members who have defaulted in the markets to which it provides CCP service.
- (2) The guarantee fund contribution amounts of the CCP members are composed of the guarantee fund contribution amounts that have been already deposited and of the additional guarantee fund contribution amounts to be deposited when requested. In case that the guarantee fund(s) have been used in accordance with the provisions of the CCP Regulation, the number and/or amount of maximum additional contributions that may be requested from the CCP members shall be determined by observing the relevant market conditions and be published in the relevant market directives and procedures. Any additional guarantee fund contribution amount that may be requested at once cannot exceed, for each member, the guarantee fund contribution amount that should have been deposited on the relevant default date.

ARTICLE 22 - Setting the size of guarantee funds

- (1) The size of the guarantee fund(s) shall be set by taking the market conditions into consideration that it shall not be less than the greater of the resource requirement as a result of the default, under extraordinary market conditions, of the member holding the highest exposure and of the joint default of the members holding the second and third highest exposure. The resource requirement is composed of the uncovered portion of the risk exposed under extraordinary market conditions or of the differences in the market values of the member portfolios with the available collateral amounts.
- (2) In defining the extraordinary market conditions;
 - 1) Statistical scenarios designed by adopting at least 5-year historical data and minimum 99.5% confidence level,
 - 2) Specific historical scenarios experienced in the past,
 - 3) Hypothetical scenarios designed under the qualitative and quantitative determinations with respect to the potential volatility and correlation in the marketcan be used.
- (3) The extraordinary market condition assumptions to be used in setting the size of the guarantee fund shall be determined on the basis of each market and published in the relevant market directives and procedures. The said assumptions shall be reviewed at least once a year in January.
- (4) In calculating the size of the guarantee fund, the member-based daily open position data for a look-back period of minimum 1 year shall be used. In case of lack of sufficient data or occurrence of any

development which causes a significant change in the structure of the relevant market in the last 1 year, then datasets shorter than 1 year may also be used. If no look-back data is available at all, the guarantee fund size calculations shall be made by using data belongs to the markets with similar characteristics or those generated theoretically.

- (5) Calculations for the guarantee fund size shall be made at least 4 times each year in March, June, September and December. To ensure the up-to-dateness of data to be used in the calculations, the dataset must include, at minimum, the last business day of the month before the month in which the calculation has been made.
- (6) If it is determined that the resources listed in the relevant clauses become or will become permanently inadequate as of the calculation date of the guarantee fund size as a result of the calculations referred in article 37 of this Regulation relating to the stress tests, an incremental coefficient, as not to exceed 1.5, can be used in setting the size of the guarantee fund upon the proposal of the Manager of Central Risk and Collateral Management, opinion of appropriateness from Assistant General Manager in charge of CCP and Financial Services and approval of the General Manager.

ARTICLE 23-Determining the amount of contribution to be made by the members to the guarantee fund

- (1) In allocating the established guarantee fund among members, one of the following methods shall be used;
 - a) Allocating the guarantee fund size calculated to the members in accordance with the principles stipulated in article 22 to the extent of the risks they bear.
 - b) Determining the contribution amount of each member by multiplying the risk coefficient to be set on the basis of the guarantee fund size with the risks that the members possess.

The risks borne by the members can be determined over the value calculated by using either the average or maximum of the margin requirement amounts that they have to maintain on daily basis within the guarantee fund calculation period.

- (2) The methods to be used in determining the contribution amounts to be made by the members shall be stipulated in the relevant market directives and procedures.
- (3) If processed; the revision proposals for the guarantee fund risk coefficient shall be submitted for approval, together with their recommended effective dates, to the General Manager by the Manager of Central Counterparty or through the Assistant General Manager in charge of CCP and Financial Services. The legislation amendments of risk coefficient approved by the General Manager shall be announced by Takasbank market and operations departments to the members and be published on the website.

CHAPTER FIVE

Management of Market Risk

ARTICLE 24 - Management of market risk

- (1) In order to effectively manage the market risks to be exposed due to the CCP activities, the risks, particularly the market risk that may be exposed in converting collaterals to cash should be taken into account, variation margins should be calculated on daily basis and the settlement prices should be determined fairly.
- (2) In determination of the collateral valuation haircuts, the principles stipulated in the Takasbank Central Counterparty Regulation on Collateral Management Implementation Principles shall be observed.
- (3) The collateral-margin balance shall be monitored on near real-time basis by valuing the positions and collaterals with the intraday and end-of-day market prices. The variation margins shall be calculated on daily basis.

ARTICLE 25 - Setting upper and lower limits for the settlement prices

- (1) In case that prices on the traded options are concluded to be unreliable due to reasons such as liquidity shortage and bid-ask imbalance in the market, the end-of-day settlement prices shall be revised.
- (2) In revising the prices, volatility model constraints and the corresponding outputs are taken into consideration.
- (3) In determining the implied volatility limits, the theoretical contract prices calculated by using historical data, the implied volatility values or the historical price data of the derivative contracts with similar characteristics which are traded in different markets can be taken as the base.
- (4) The adequacy of the defined limit values shall be reviewed 4 times each year in March, June, September and December.

ARTICLE 26 - Hedging-related transactions

- (1) In order to limit or eliminate the market risk losses incurred/to be incurred after the default of the member/members in the markets to which CCP service is provided, hedging-related transactions may be conducted for the positions failed to be immediately ported or closed out.

CHAPTER SIX

Management of Liquidity Risk

ARTICLE 27 - Measuring and monitoring liquidity risk

- (1) Daily monitoring of the potential liquidity requirements that may be needed against the risks arising in the market to which CCP is provided is essential.

- (2) In measuring the liquidity risk, the collaterals are classified into three groups: cash, cash equivalents and other assets. Cash and cash-equivalent collaterals are accepted as highly-liquid assets. Turkish Lira, convertible foreign currency and gold constitute the cash assets. Government domestic and foreign debt securities issued by the Undersecretariat of Treasury which can be used to obtain liquidity from the CBRT , cash equities in the BIST-100 index and mutual fund participation certificates included are considered as cash-equivalent assets.
- (3) For liquidity risk measurement purposes; it is essential that at least 50% of the collateral collected for each market consists of liquid collaterals.
- (4) Due to market-specific conditions, the Board of Directors may set liquidity limits below 50%. The concentration limits set below 50% shall be reviewed at least once a year in January and a revision proposal shall be submitted to the Board of Directors, if deemed necessary. During the transition period to the CCP service, the liquidity risk limits shall not be applied during this period in the markets where the letter of guarantee is accepted as collateral.
- (5) The level below the 10% of the limit set for the liquidity risk is the signal value. In the event of any fall below the signal and/or limit value(s), the Central Counterparty Department shall make reporting thereof to the relevant senior managers and the internal system departments and warn accordingly.

ARTICLE 28 - Measures to be taken in case of falling below the liquidity limits

- (1) In the event of falling below to the market-based determined liquidity limits by 20%, the amount required to reach the limit in the relevant market and whether or not such amount can be paid off by the Bank through borrowing facilities shall be discussed in a meeting to be chaired by the General Manager.
- (2) If it is determined that the liquid resources and the Bank's other borrowing facilities may fail to cover the possible liquidity requirements, either one or several of the following measures shall be put into effect upon the proposal of the Director of Central Counterparty Department , opinion of appropriateness from Assistant General Manager in charge of CCP and Financial Services, approval of the General Manager, and the Board of Directors' Resolution, if necessary;
 - a) Changing the collateral compositions of the initial margin and/or guarantee fund for the relevant market in favor of liquid assets.
 - b) Raising the amounts and ratios of the initial margin.
 - c) Increasing the size of the guarantee fund.

CHAPTER SEVEN

Management of General Business Risk

ARTICLE 29 - Capital allocation as a provision for business risk and restructuring costs

- (1) In case that the Bank is exposed to any general business risk losses, it sets aside provisions against business risk and restructuring costs, in accordance with the international standards, in order to ensure the continuity of the services and activities smoothly. Unless such provision is stipulated as a legal obligation, it shall be established through internal capital allocation. Sufficient amount of net liquid assets shall be maintained for this provisioning. Allocating capital against the business risk and restructuring costs, 75% of the CCP services-related operational expenses of the last one year period, which has been calculated on the basis of the service-based costing model prepared by the Financial Services, Reporting and Strategic Planning Department shall be taken as the base.

CHAPTER EIGHT

Management of Operational Risk

ARTICLE 30 - Identifying and monitoring the operational competencies of CCP members

- (1) To ensure the continuity of CCP service provided, the members are required to have necessary data processing, risk management, internal control and internal audit mechanisms.
- (2) Member audits shall be conducted by Takasbank Internal Audit Department to identify and monitor the operational competencies of the members. The principles and procedures regarding the member audits shall be stipulated in the relevant regulations.

ARTICLE 31 - Information technology systems and business continuity

- (1) The information technology systems of Takasbank relating to its CCP activities must be efficient and reliable. The data processing capacity of these systems must be adequate enough to enable the CCP activities to be continued in an efficient and reliable manner. The information technology systems must be established by taking the internationally accepted technical standards and the best practices into consideration.
- (2) Takasbank's business continuity and emergency action plan for the CCP services aims to recover the entire operations at the moment of disconnection. The plan encompasses the use of a fallback center and is designed in a manner to enable the operations to resume within two hours after the failure of the critical information technology systems.
- (3) Issues related to the business continuity shall be stipulated by a separate regulation and procedure. Issues regulated thereof shall be tested periodically.

ARTICLE 32 - Communication procedures and standards

- (1) To mitigate the risks and enhance the efficiency in the payment and clearing and settlement operations within the scope of the CCP activity, internationally accepted communication procedures and standards shall be used.

ARTICLE 33 - Remuneration policy to be applied to the personnel serving at the CCP risk management activities and in the internal system departments

- (1) No remuneration policy associated with the performance and profitability of the Bank can be applied to the personnel serving at Central Counterparty Department and the internal system departments, which may induce any impairment in the risk management, internal control and audit standards.

CHAPTER NINE

Allocated and Committed Capital to CCP Risks

ARTICLE 34 - Determination of the allocated and committed capital amounts to the covered CCP risks by Takasbank

- (1) The following principles shall be observed in calculating the capital allocated to the covered risks by Takasbank and the commitment amount to be made from the remaining capital of Takasbank, amongst the collateral management resources listed in the items (ç) and (f) of the first sub-paragraph of Article 36 of the CCP Regulation:
- In calculating the allocation and commitment amount, the independently audited financial data belongs to end of December of the previous year shall be used.
 - The value-at-risk amounts subject to the regulatory capital requirement for the credit risk, market risk, operational risk and other risks which may be included by the BRSA in the minimum regulatory capital requirement shall be determined by the Risk Management Department in accordance with the banking legislation. 8% of the total value-at-risk amount shall be calculated as the minimum regulatory capital requirement.
 - Operational expenses, related with Takasbank's CCP services, belong to the last one year period shall be determined by the Financial Services, Reporting and Strategic Planning Department on the basis of the service-based costing model. 75% of such amount shall be calculated as the provision for business risk and restructuring costs.
 - Amounts calculated pursuant to the items (b) and (c) above shall be summed up and 25% of this figure shall be allocated to the covered risks.
- (2) Investing the capital allocated to the covered risks in liquid assets with low market/investment risk is essential. Should the allocated capital thereof be invested in the Government Domestic Debt Securities, the remaining term to maturity of these securities must not be longer than two years.

- (3) During the course of Takasbank Internal Capital Adequacy Assessment process coordinated by the Risk Management Department; the capital allocated to the covered risks may be taken into account as the internal capital allocated to the covered CCP risks or directly as a deductible item from the equity capital.
- (4) The following principles shall be observed in calculating the commitment amount to be made by Takasbank from its remaining capital to the CCP risks:
- Pursuant to the 6th sub-paragraph of Article 36 of the CCP Regulation, the commitment amount to be made from Takasbank's remaining capital in accordance with the item (f) of the 1st sub-paragraph of the same Article shall be up to the difference between the amount to be found by deducting the capital allocated to the covered risks according to the item (ç) of the 1st sub-paragraph of the same Article from the equity capital calculated pursuant to the Regulation on Equity of Banks published in the Official Gazette dated 05.09.2013 and numbered 28756 and the capital requirement calculated in accordance with the BRSA legislation.
 - The capital requirement calculated in accordance with the BRSA legislation shall designate the amount found by adding the internal capital requirement calculated during the course of Takasbank internal capital adequacy assessment process as an addition to the minimum capital requirement to the minimum regulatory capital amount required in order to achieve the capital adequacy standard ratio by the banks pursuant to the legislation pertaining to the Banking Law.
- (5) In distributing the capital amounts allocated and committed from Takasbank's equity to the markets to which CCP service is provided, the sizes of the guarantee funds are taken as the base. In case the stress tests point out inadequacy of the default management resources in any market for which CCP service is provided, test results shall also be taken into account for the distribution of capital.
- (6) The capital amounts to be allocated and committed by Takasbank from its capital and the distribution of such amounts among the markets for which CCP service is provided and/or envisaged to be provided shall be submitted each year in March to the approval of the Board of Directors as to be valid from April in the prevailing year to the end of March of the next year. The capital amounts allocated and committed on market basis shall be published on the website and further informed to the Board.
- (7) The Central Counterparty Department is responsible for the execution and monitoring of the operations relating to the capital to be allocated and committed to the CCP services from Takasbank capital.

CHAPTER TEN

Reviewing Models, Backtesting and Stress Tests

ARTICLE 35 - Validation of models used for risk management

- (1) Conducting periodic review of the models used for initial margin and guarantee fund calculations and of the liquidity risk management framework by the Central Counterparty Department is essential. Accordingly, the convenience and validity of the risk management methods and techniques being used as well as the framework for the liquidity risk management shall be reviewed at least once a year by Takasbank Internal Audit Department.
- (2) Criteria used for the validation is determined by the Internal Audit Department who performs the validation; however, the principles set forth in Articles 3 and 4 of this Article shall be observed during the validation process.
- (3) The validation results include the tests of the methods used in calculating the margin requirement, the guarantee fund and the capital allocated and committed by Takasbank.
- (4) The following issues shall be addressed at minimum during the validation process:
 - a) Evaluating the conceptual robustness of the models and methods being used.
 - b) Evaluating the risk monitoring activities including validation of the processes.
 - c) Analyzing the data, parameters and assumptions used for the development of the models.
 - ç) Evaluating the adequacy and convenience of the models used by taking into account the products included in the risk calculations.
 - d) Evaluating the scenarios used in the stress tests, analyzing the backtests.
- (5) Internal audit findings related to the validation of the models used for risk management shall be submitted to the senior management and the Board of Directors.

ARTICLE 36 - Backtesting

- (1) The adequacy of the models and confidence levels used for initial margin calculations for the markets to which CCP service is provided is analyzed by the Central Counterparty Department through backtesting to be conducted on daily basis. It is essential that the analysis should take into consideration the daily basis.
- (2) In backtesting, whether or not the changes that may occur in the following days in the values of the positions held in the accounts can be covered by the initial margin amounts requested for the relevant accounts or contracts are checked. Any value change that exceeds the initial margin requirement for the account or contract shall be regarded as overrun.
- (3) Principles for backtesting of the models and confidence levels used in calculating the collateral valuation haircuts shall be stipulated in the Takasbank Central Counterparty Regulation on Collateral Management Implementation Principles.

- (4) The results of back testing for the models used in calculating the initial margin and the measures suggested to be taken thereof, if any, shall be submitted at least 4 times each year in March, June, September and December to the Board of Directors through the internal system departments. The back testing results shall also be submitted to the CCP Risk Advisory Committee in June and December at minimum.

ARTICLE 37 - Stress testing

- (1) The adequacy of the available and potential financial resources for the CCP services are tested through the stress tests by taking account of the financial asset price changes to be occurred under extraordinary market conditions. For the stress tests, the extreme market conditions are determined via statistical, historical and/or hypothetical scenarios.
- (2) Stress testing program analyzes, at minimum, whether or not the available collaterals, guarantee funds and other financial resources, particularly the capital amounts allocated and committed by Takasbank from its own capital will be adequate to protect the Bank against any potential loss that may be incurred as a result of the default of the two members who hold the highest exposure. In this analysis, the Bank's access to the borrowing and liquidity facilities is also evaluated.
- (3) In addition, with the stress testing program, whether or not the available collaterals and guarantee funds will be adequate for protection against the greater of the risks to be incurred as a result of the default of the member holding the highest exposure and of the joint default of the members holding the second and third highest exposure is also tested.
- (4) In stress testing, the fact that the correlations between the cleared and settled contracts may change under extraordinary market conditions is taken into account. Hence, in the stress testing scenarios, the correlation effects may be addressed in a prudent manner or may not be included at all.
- (5) In stress testing, the effects of changes to be occurred in the holding periods are taken into account.
- (6) In stress testing, the adequacy of the liquid assets is also measured.
- (7) Stress tests are conducted by the Central Counterparty Department on monthly basis. Results of the stress tests and the measures to be taken, if any, shall be submitted at least 4 times each year in March, June, September and December to the Board of Directors through the internal system departments. The stress testing results submitted to the Board of Directors shall be reported to the Board. The stress testing results shall also be submitted to the CCP Risk Advisory Committee in June and December at minimum.

ARTICLE 38 - Reverse-stress testing

- (1) Reverse-stress tests are conducted;
- a) To identify how many of CCP members' default could be covered by total default management resources under extreme market conditions prescribed in the stress tests.
- b) To analyze the market conditions that equalize the total default resources to the resource requirement that may arise as a result of the default of two members holding the highest exposure.

- (2) In the reverse-stress tests, how many of CCP members' default can be covered by total default resources in case the non-defaulted CCP members do not or cannot fulfill their additional contribution obligations under extreme market conditions prescribed in the stress tests is also analyzed.
- (3) Reverse-stress tests are conducted at least on quarterly periods, and submitted and reported in accordance with the same principles stipulated for the stress tests.

ARTICLE 39 - Sensitivity analysis

- (1) Sensitivity analysis is conducted to observe the effects of unit change in the parameters of the risk measurement model used in the markets to which CCP is provided on the initial margin levels and/or the total default management resources of the capital market instruments traded in these markets.
- (2) In the sensitivity analyses, the changes occurred in the confidence levels subject to the parameter calculations can also be evaluated.
- (3) The sensitivity tests are conducted together with the stress tests on quarterly basis and submitted and reported in accordance with the same principles.

CHAPTER ELEVEN

Transparency in CCP Services and Disclosure of Data to Public

ARTICLE 40 - Transparency and disclosure

- (1) The following information is disclosed to the members and the public to ensure transparency in the CCP services provided by Takasbank,
 - a) For the managerial arrangements;
 - i. Issues related to the organization and corporate management.
 - ii. Audited financial statements of the last period.
 - b) For the business rules;
 - i. Regulations, directives and procedures.
 - ii. Information about the central clearing and settlement services of the Bank.
 - iii. Principles regarding the risk management, membership and default management.
 - iv. Assets accepted as eligible collateral and the collateral valuation haircuts.
 - v. Collateral monitoring and segregation and the characteristics of collateral accounts.
 - vi. Margin requirement and guarantee fund parameters.
 - vii. Summary results of the stress tests and back tests.

- viii. Current CCP members;
- ix. Volume of the daily cleared and settled transactions.
- x. Required average collateral amount in the market.
- xi. Clearing and settlement commissions and fees.
- xii. Technical requirements about system communication protocols.

(2) For data to be publicly disclosed, the protection of commercial secrets is observed. The member names are not included in disclosing the stress test results.

CHAPTER TWELVE

Miscellaneous and Final Provisions

ARTICLE 41 - Uncovered CCP risks and the restructuring plan

(1) The actions to be taken in case of being exposed to any losses and liquidity deficits which cannot be covered by the default management resources associated with the CCP services shall be stipulated by the Istanbul Clearing and Settlement Bank Inc. Restructuring Plan to be approved by the Board of Directors.

ARTICLE 42 - Information submission about CCP activities to the Board of Directors

(1) A periodic information report about the CCP risk, collateral and default management activities shall be prepared two times each year in June and December by Central Counterparty Department to be presented to the Board of Directors by the General Manager.

ARTICLE 43 - Temporary Article

(1) The credit and concentration risk of the CCP members, the measurement and monitoring of the liquidity risk, and the activities related to the retroactive tests, which are regulated in the 13th, 27th and 36th articles of this regulation respectively, come into effect after the completion of the Nasdaq transformation project and after the necessary software has been completed.

ARTICLE 44 - Enforcement

(1) This Regulation shall enter into force on the date of approval by the Board of Directors.

ARTICLE 45 - Execution

(1) The provisions of this Procedure shall be executed by the General Manager.