

January, 2022

ASSESSMENT OF COMPLIANCE WITH THE TAKASBANK’S CENTRAL COUNTERPARTY ACTIVITIES TO THE CPMI-IOSCO CORE PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

The opinions and assessments provided in this disclosure reflect, entirely, the opinions of Takasbank and do not include any opinions belonging to the Capital Markets Board, the Banking Regulation and Supervision Agency, the Central Bank of Republic of Turkey or any other institutions. A copy of this document is published on Takasbank's corporate website (www.takasbank.com.tr).

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ABBREVIATIONS

BCMS	Business Continuity Management System
BoD	Board of Directors
BRSA	Banking Regulation and Supervision Agency
CBRT	Central Bank of the Republic of Turkey
CCP	Central Counterparty
CCSI	Central Clearing and Settlement Institution
CMB	Capital Markets Board
CPMI	Committee on Payment and Market Infrastructures
CRA	Central Registry Agency Inc. (Merkezi Kayıt Kuruluşu A.Ş.;The CSD of Turkey)
DvP	Delivery versus Payment
EFT	Electronic Funds Transfer System
EMIR	European Market Infrastructures Regulation
EMOC	Energy Markets Operation Company
ESTS	Electronic Securities Transfer System
EU	European Union
FCIB	Financial Crimes Investigation Board
FOM	Futures and Options Market
FMI	Financial Market Infrastructure (Financial Market Infrastructure Institution)
ICAAP	Internal Capital Adequacy Assessment Process
IOSCO	International Organization of Securities Commission
IT	Information Technologies
ITIL	Information Technology Infrastructure Library
LPPD	Law on Protection of Personal Data
OTC	Over-the-Counter Derivatives Market
PDC	Primary Data Center
PPFTS	Private Pension Fund Tradeing Platform
PvP	Payment versus Payment
RBISEBS	Regulation of Banks on Information Systems and Electronic Banking Services
SLM	Takasbank Securities Lending Market
TEFTP	Turkey Electronic Fund Trade Platform
TMM	Takasbank Money Market

I. EXECUTIVE SUMMARY

Takasbank was founded in 1992 as a Joint Stock Company subject to the provisions of the Turkish Commercial Code, under the leadership of Borsa İstanbul A.Ş. (Borsa İstanbul) with the title of İMKB Takas ve Saklama A.Ş. to provide clearing and settlement and custody service in the capital markets. After receiving ‘investment banking license’ in 1996 to offer banking services associated with the clearing and settlement and custody services, the Company acquired a ‘bank status’ and changed its title as ‘İMKB Takas ve Saklama Bankası A.Ş. With the entry into force of the Temporary Article 8 of the new Capital Markets Law no. 6362 on 30 December 2012, Takasbank obtained a ‘central clearing and settlement agency’ status and its title was changed in 2013 to ‘İstanbul Takas ve Saklama Bankası A.Ş.’. At the Bank's 22 nd Bank Ordinary General Assembly Meeting held on 9 June 2017, the Bank's business name was changed to “Takasbank” or “Takas İstanbul”.

While 64,1778% of Takasbank’s paid-in capital of 600 million TL belongs to ISE.; 17,0427% of it belongs to 11 banks and 18,7795% of it belongs to 27 brokerage firms. Except for Borsa İstanbul, none of the other shareholders may, directly or indirectly, have a share of more than 5% of the Bank’s capital. 64,9% of the CRA’s paid-in capital of 100 million TL belongs to Takasbank and 30,1% of it belongs to Borsa İstanbul A.Ş..

In Turkey, the lines of trading, clearing & settlement and custody services needed for the capital market instruments to change hands in a secure manner are carried out within a vertically integrated structure by ISE which incorporates the trading platforms under its roof, by Takasbank which offers clearing & settlement and central counterparty service and by the ‘Central Registry Agency Inc.’ (CRA) which provides book-entry custody service.

By using the legal basis provided by the new Capital Markets Law no. 6362 that entered into force on 30 December 2012, Takasbank first began to offer the Central Counterparty Services (CCP) as of 2 September 2013 in the Securities Lending Market (SLM) operated under its roof; as of 3 March 2014 in the Futures and Options Market (FOM) at ISE; as of 14 October 2016 in Borsa İstanbul Money Market (MM); as of 19 June 2017 in Borsa İstanbul Equity Market (Equity Market); as of 02 July 2018 in Borsa İstanbul Debt Securities Market (DS Market), and as of 01 October 2018 in SWAP Market and as of 19 December 2019 in Over-the-Counter Derivatives Markets (OTC).

In addition, the “Equity Market Clearing System” and the “Debt Securities Market Clearing System” operated by Takasbank have been accepted by the Central Bank of the Republic of Turkey as securities settlement systems within the framework of the Law no. 6493 on Payment and Securities Settlement Systems and the Regulation on Operations of Payment and Securities Settlement Systems put into force pursuant to the said Law; and Bank that was found to have the qualifications to operate a system as required by the Law and Regulation was granted the operating license to operate as a Securities Settlement System operator and the related decision was published in the Official Gazette no. 29391 dated 19 June 2015. Takasbank is also defined as a “Critical Bank” due to its strategic importance in the banking and capital markets within the EFT-ESTS system.

Having strategic importance for the banking and capital markets in Turkey, Takasbank has the licenses and authorizations as the “Central Clearing and Settlement Institution”, “Custodian for Pension Funds”, the “Portfolio Custody Service Institution for Investment Funds”, the “National Numbering Agency”, the “Central Counterparty Institution”, the “Payment and Securities Settlement System” and the “Investment Bank”. In this context, Takasbank is the only institution that is constantly supervised and audited by the Capital Markets Board (CMB), the Central Bank of the Republic of Turkey (CBRT), and the Banking Regulation and Supervision Agency (BRSA) in Turkey.

Takasbank’s Central Counterparty legislation and business model has been designed by observing the CPMI-IOSCO’s (Committee on Payment and Market Infrastructures - International Organization of Securities Commission) core principles and the EMIR (European Market Infrastructures Regulation) document no. (EU) 648/2012 of the European Union and the technical standards no. (EU) 152/2013 and (EU) 153/2013 with regard to EMIR.

Takasbank undertakes the completion of settlement of the positions generated in the markets to which central counterparty service is provided; and, accordingly, it runs a multi-layered defense mechanism that would step in should the need arise. This mechanism is comprised of the trade margins received from members, the funded guarantee fund established with the contributions of the members and the unfunded guarantee fund commitments of members, plus Takasbank capital that can be used in default management. Takasbank’s CCP default management resources and their sequence for use are shown in Figure 1.

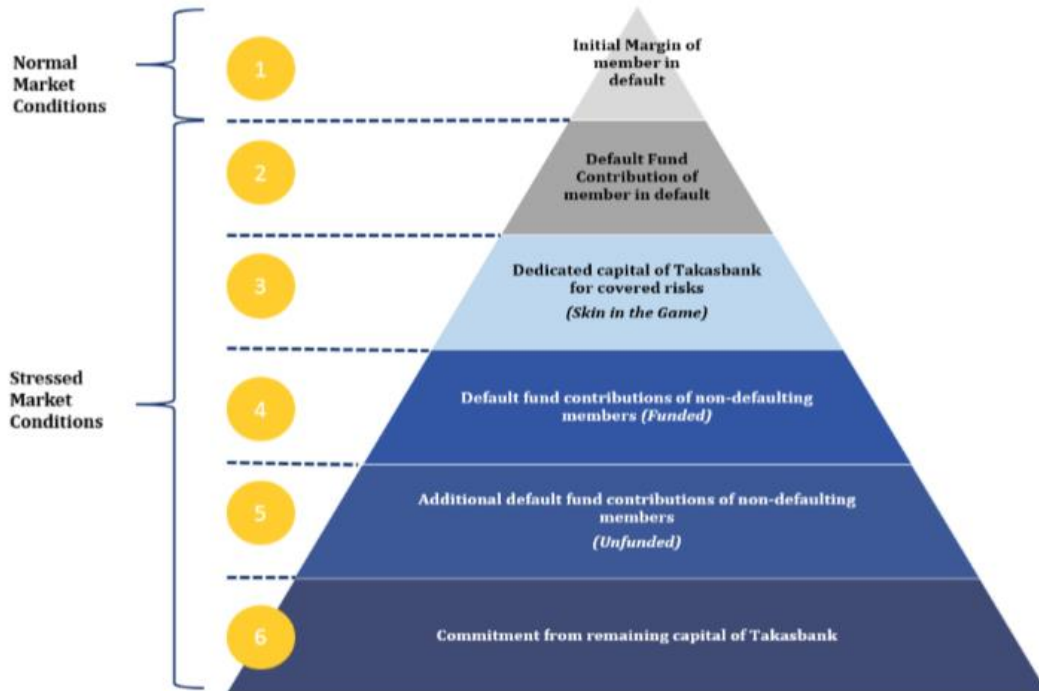


Figure 1- Takasbank CCP Default Management Resources and Order of Use

In Takasbank CCP model, the safety of both the market and Takasbank is addressed at the highest level. In CCP default management, Takasbank’s capital can be used in two separate tranches as allocation and commitment. The use of the portion allocated from Takasbank capital to the CCP default management (SIG

– *skin in the game*) before the guarantee fund contribution amounts of the non-defaulting members is compulsory. On the other hand, the portion committed from Takasbank capital to the CCP default management shall be used after the funded and unfunded guarantee fund obligations of the non-defaulting members. The calculation of the capital allocated and committed from Takasbank capital to the CCP Default management is made in accordance with Basel 2 capital adequacy arrangements and EMIR master document no. (EU) 648/2012 of the European Union and EMIR technical arrangements no. (EU) 152/2013 and (EU) 153/2013 on the capital adequacy and default waterfall of the central counterparty institutions.

A	<input type="checkbox"/> Minimum capital requirement for credit, market and operational risks under banking legislation (calculated under Basel II, Pillar One)
B	<input type="checkbox"/> Internal capital allocation related to CCP services as the provisions for business risks and the costs of recovery and orderly wind-down of activities (Calculated under Basel II, Pillar 2) B= 75% of the previous year's operational expenses related to CCP services
C	<input type="checkbox"/> Dedicated capital of Takas Istanbul for CCP services (<i>Skin-in-the-game for covered risks</i>) C= (A+B) * 25%
D	<input type="checkbox"/> Commitment made from the remaining capital of Takas Istanbul for CCP default management D= Regulatory Capital – A – B – C – other internal capital allocations under Basel II, Pillar Two

Figure 2- Capital 'Allocated' and 'Committed' by Takasbank to the CCP Default Management

The use of Takasbank capital in CCP default management has been designed in a manner that would enable Takasbank to survive under all circumstances, but also to use its entire capital remaining above its regulatory and internal capital obligations and even the payments to be made in advance by stakeholders or other people and institutions as to be used for Takasbank's potential capital increase as well as the equity and quasi-equity resource commitments of irrevocable nature in default management, where necessary. And not content with these, Takasbank is also equipped with profoundly effective recovery tools like variation margin haircutting, forced transfer or termination of positions in extreme market conditions. Hence, a structure has already been designed in which Takasbank can continue its CCP activities and the order and stability can be ensured in the markets even during severe crisis situations.

In Takasbank, an organization was established which would enable the corporate-scale risks as well as the CCP risks to be effectively managed under the supervision and oversight of the Board of Directors; and the duties of the senior management and business units with respect to the CCP services were stipulated in an exclusive manner.

The international standards have been achieved for business continuity and information security; and ISO 27001 (Information Security Management Systems) and ISO 22301 (Business Continuity Management System) certificates have been obtained. In addition, Takasbank has been fully completed in accordance with ISO 20000-1 IT Management System standards, and the first external audit was completed in 2021.

In assessing the observance of the core principles published in April 2012 by CPMI-IOSCO in Takasbank's CCP activities; except for the core principle 11 related to the Central Securities Depositories (CSDs), and the core principle 24 related to the Trade Repositories (TRs), 22 core principles concerning the Central Counterparties (CCPs) were examined thoroughly by addressing them individually on the basis of 99 key considerations set forth for these principles.

At the end of each core principle, the outcome of Takasbank's self-assessment is explained by ticking one of the five rating scales given below, together with a brief justification thereof, in a manner compatible with the disclosure framework and assessment methodology published by CPMI-IOSCO in December 2012¹.

Observed <input type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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In the assessment methodology published by CPMI-IOSCO in December 2012, separate question sets recommended for use in assessing each key consideration have also been published. These questions are collectively presented as an attachment to this report. Hence, it should be kept in mind that explanations made in the subsequent pages with respect to each core principle on the basis of the key considerations are formed within the framework of the questions attached hereto.

In the assessment we made as Takasbank to determine the Central Counterparty activities' level of observance against CPMI-IOSCO Core Principles for Financial Market Infrastructures, we have concluded that Bank status is 'observed' with all 22 basic principles concerning CCPs, and that the other two principles are not applicable in the Bank. The level of compliance on the basis of principle is shown in the table below.

PRINCIPLE	OBSERVED	BROADLY OBSERVED	PARTLY OBSERVED	NOT OBSERVED	NOT APPLICABLE
1- Legal Basis	√				
2- Governance	√				
3- Framework For The Comprehensive Management Of Risks	√				

¹ The assessment methodology used herein corresponds to the methodology of "fully compliant", "substantially compliant", "partly compliant", "noncompliant", and "not applicable" as used in the CBRT's assessment surveys prepared for payment and securities settlement systems.

4- Credit Risk	√				
5- Collateral	√				
6- Margin	√				
7- Liquidity Risk	√				
8- Settlement Finality	√				
9- Money Settlements	√				
10- Physical Deliveries	√				
11- Central Securities Depositories					√
12- Exchange-Of-Value Settlement Systems	√				
13- Participant-Default Rules And Procedures	√				
14- Segregation And Portability	√				
15- General Business Risk	√				
16- Custody And Investment Risks	√				
17- Operational Risk	√				
18- Access And Participation Requirements	√				
19- Tiered Participation Arrangements	√				

20- FMI Links	√				
21- Efficiency And Effectiveness	√				
22- Communication Procedures And Standards	√				
23- Disclosure Of Rules, Key Procedures And Market Data	√				
24- Disclosure Of Market Data By Trade Repositories					√

Yours sincerely,

January, 2022

II. SUMMARY OF THE MAJOR CHANGES OCCURRED SINCE THE LAST UPDATE OF THE DISCLOSURE

This disclosure is the version revised in February 2020 and January 2022 of the assessment that Takasbank made in December 2017 in order to assess the level of observance of CPMI-IOSCO Core Principles for Financial Market Infrastructures for central counterparty activities that Takasbank conducts. Major changes since the last update are highlighted with respect to below:

Principle-2 Governance; The decision of the board of directors should establish a risk identification and determination framework that includes policy covering risks related to risk, targets selection and calculations for risk, and evaluates crisis and emergency decision-making decision. Information systems regulations subject to Bank's Business Continuity Plans are planned. In addition, the Epidemic Bank plan before the Action after the pandemic process that emerged in 2020.

Takasbank Over-the-Counter Derivatives Default Management Group Implementation Principles directive has been established in order to monitor the process in the over-the-counter (OTC) markets more closely, to take effective decisions, and to provide consultancy to the current Bank's default management committee.

An “Information Security Committee” was established under the chairmanship of a member of the Board of Directors or the General Manager and under the coordination of the information security officer, in order to carry out the activities of establishing and implementing the information security policy on behalf of the Board of Directors.

By considering the management of information systems as a part of corporate governance practices, allocating the necessary financial and human resources for the correct management of information systems, ensuring the establishment of effective controls on information systems in order to ensure the confidentiality, integrity and accessibility of information assets, and taking into account the developing new technologies be responsible for carrying out effective oversight to manage the risks arising from the use of information systems; In line with the IS Strategy Plan, an “IS Strategy and Steering Committee” was established under the chairmanship of the General Manager and approved by the Board of Directors, in order to oversee whether the IS investments are used appropriately and the bank's business objectives and IS objectives are compatible with each other.

Regarding IT and operational risk management, in addition to ISO 27001 (Information Security Management Systems) and ISO 22301 (Business Continuity Management System) certificates, it has been designed in accordance with the ISO 20000-1 IT Service Management System standard and provides internal audits and audits for the relevant standard. External audits were completed in 2021.

Coordinating the sharing of customer and bank secret information, taking into account the principle of proportionality, including the cases exempted from the banks' confidentiality obligation with the Regulation on the Sharing of Secret Information with the Official Gazette No. 31501 dated 04.06.2021 An obligation to establish an Information Sharing Committee, whose job descriptions and working principles are approved by the bank's board of directors, has been introduced. In order to fulfill this obligation, Takasbank Information Sharing Committee Directive was prepared and an Information Sharing Committee was established at the Bank.

Principle-5 Collateral; An FMI that needs collateral to manage its or its participants' credit risk should accept collateral with low credit, liquidity and market risks, and set and enforce adequate conservative haircuts and concentration limits. An FMI should limit the assets it accepts (regularly) as collateral, in general, to collateral with low credit, liquidity and market risks. In this context, Letters of Guarantee have been issued among the assets that Takasbank can accept as collateral in the market and capital market instruments to which it provides CCP service.

Principle-10 Physical Deliveries; An FMI should identify, monitor and manage the risks and costs associated with the storage and delivery of physical instruments or commodities. Borsa İstanbul A.Ş. Contracts based on foreign currency and subject to physical delivery were opened in the Futures and Options Market. In line with the contracts, the Member, who has net foreign currency debt due to foreign currency physical delivery obligations, pays off his debt through accounts at Takasbank's correspondent banks, and net foreign currency receivables are transferred to the Members' free foreign currency accounts at Takasbank. The Borrowing Member is obliged to send the amount owed on the value date to Takasbank's correspondent account. The Turkish Lira receivable of the Member paying the foreign currency debt is transferred to his free account at Takasbank. The Member who owes Turkish Lira pays off the related debt through his free account at Takasbank.

Restructuring Plan approved by the Board of Directors, which is reviewed minimum annually basis regarding financial risks, was prepared and approved by the Board of Directors on 26.11.2021.

In the Takasbank Equity Lending Market, Bank provides CCP service, the transactions, which were carried out in two sessions, 09.30-12.00 and 13.30-16.45, in order to comply with the Borsa Istanbul Equity Market, started to be carried out in a single session as of 10/05/2021, between 09.30-16.45.

Swap transactions on Precious Metals within the Swap Market established at the Bank began to be performed and to serve as the central counterparty in these transactions.

Principle-23 Disclosure of Rules, Key Procedures and Market Data; Market directives and procedures are publicly available on Takasbank's website. In addition, the user manuals, the changes and modifications related to the rules and the information forms are announced to the members via General Letters and announcements; and these documents are also available on Takasbank website. Furthermore, the fees and commissions applicable for the services provided by Takasbank are also available on the website.

III. ASSESSMENT AGAINST THE CORE PRINCIPLES AND KEY CONSIDERATIONS

Principle 1: Legal basis

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Key considerations

- 1. The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.*
- 2. An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.*
- 3. An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.*
- 4. An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.*
- 5. An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.*

Principle 1: Legal basis

A financial market infrastructure (FMI) should have a well-founded, clear, transparent and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Key considerations

1.1. The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

With its 'central clearing and settlement', 'banking' and 'payment and settlement system operator' licenses granted to it, Takasbank offers central clearing and settlement, settlement, custody, central counterparty and banking services to its members in Turkish capital markets.

The legal basis of such services offered is comprised of the following:

- For the issues regarding the central clearing and settlement institution and central counterparty activities; the Capital Markets Law no. 6362;
- For the issues regarding payment and securities settlement system operator activities; the Law on Payment and Securities Settlement Systems, Payment Service and Electronic Money Institutions;
- For the issues regarding banking services; the Banking Law no. 5411

and the secondary legislation issued based upon these laws as well as the other miscellaneous arrangements issued by Takasbank.

The general principles for the establishment, commencement of operations, activities of the central clearing and settlement institutions, the guarantee funds to be established by them with the participation of the members in case they assume the role as central counterparty and their supervision and oversight by the Capital Markets Board are stipulated in article 77 entitled “Central clearing and settlement institutions” of the Capital Markets Law no. 6362. In article 78 entitled “Central counterparty” of the Law no. 6362, the central counterparty activity is defined at the level of law, i.e. the primary arrangement level, as “the activity whereby the central counterparty institutions undertake the finalization of settlement by assuming the role and responsibility of the seller against the buyer and the buyer against the seller”; and the general principles regarding the capital of the central clearing and settlement institutions that are to provide central counterparty service, their information technologies infrastructure, risk management, and internal control and internal audit systems are also stipulated.

In the secondary arrangements that have been issued based upon the Capital Markets Law no. 6362, the issues related generally to the central clearing and settlement institutions and specifically to the activities of Takasbank are stipulated. The secondary arrangements at the level of regulation that have been issued based on the Law no. 6362 and their contents are summarized below.

General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions (General Regulation): In the first paragraph of article 77 entitled “Central clearing and settlement institutions” of the Capital Markets Law no. 6362, it is stipulated that the principles and procedures regarding the capital of the central clearing and settlement institutions, their activities within the scope of the law and the temporary and permanent suspension of their activities, their supervision, oversight, financial reporting standards, independent audit of their financial statements, and their cooperation with other entities and institutions shall be determined by the Board. The General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions prepared by the Capital Markets Board pursuant to this provision entered into force upon its publication in the Official Gazette no. 28662 dated 30 May 2013. With the Regulation, it is intended to stipulate the general framework for the clearing and settlement institutions and the clearing and settlement transactions; and the establishment and operating principles of the clearing and settlement institutions, principles regarding their bodies, committees and specialized personnel, general procedures for membership, clearing and settlement procedures, and general principles regarding the central counterparty service are determined.

İstanbul Takas ve Saklama Bankası A.Ş. Central Clearing and Settlement Regulation (Clearing and Settlement Regulation): In the second paragraph of article 77 of the Law, it is stipulated that the arrangements regarding the membership, collateral, clearing and settlement procedures, discipline, capital, income and other issues for the central clearing and settlement institutions shall be determined by the regulations prepared by the Board or, if the Board deems appropriate, by the relevant central clearing and settlement institutions and approved by the Board. İstanbul Takas ve Saklama Bankası A.Ş.. Central Clearing and Settlement Regulation prepared pursuant to this provision entered into force upon its publication in the Official Gazette no. 28711 dated 18 July 2013. With the Regulation, it is intended to make common arrangements that would cover each market at the technical level by taking account of the characteristics of different markets to which Takasbank offers service; and the legal infrastructure for the main clearing and settlement principles and practices such as netting, delivery versus payment, offsetting, etc. which are applicable for all markets to which clearing and settlement service is provided and also have

their equivalents in the international arrangements has been established. In addition to these, the general membership conditions for all markets to which clearing and settlement service is provided, the restriction and termination of the activities of members, the default of the members, the requirements for trade margins received by Takasbank to ensure effective and uninterrupted maintenance of the system, the collateral agreements, and the principles and procedures regarding the guarantee fund that may be established in the markets to which central counterparty service is not provided have been determined.

Istanbul Takas ve Saklama Bankası A.Ş.. Central Counterparty Regulation (CCP Regulation): The central counterparty practice has been included at the law level in the Turkish capital market legislation with article 78 of the Capital Markets Law by taking account of the developments faced in the international arena after the global crisis as well as the decisions taken in G-20 summits. The fourth paragraph of the said article has stipulated that the conditions regarding the clearing and settlement membership and the types of membership in the markets and capital market instruments subject to central counterparty practice, the obligations of the members and the minimum criteria related to the capital, and the internal audit and risk management systems shall be regulated by the relevant clearing and settlement institution by obtaining the approval of the Capital Markets Board. İstanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation prepared with reference to this provision entered into force upon its publication in the Official Gazette no. 28735 dated 14 August 2013. While preparing the Regulation, the relevant international legislation was examined; and CPMI-IOSCO (Committee on Payment and Market Infrastructures-International Organization of Securities Commission) principles and the principles set forth in EMIR (European Market Infrastructures Regulation) were imported to the Regulation in a manner that would not create any conflict with the local legislation.

The issues related with Takasbank's activities as the payment and securities settlement system operator have been stipulated with the "Law no. 6493 on Payment and Securities Settlement Systems, Payment Services and Systems and Electronic Money Institutions" and the "Regulation on Operations of Payment and Securities Settlement Systems" issued pursuant to this Law, the "Communiqué on Information Systems used in Payment and Securities Settlement Systems", and the "Regulation on Oversight of Payment and Securities Settlement Systems".

Hence, the CCP service offered by Takasbank relies fundamentally on:

- as a primary legal arrangement; article 77 regulating the central clearing and settlement institutions, article 78 regulating the central counterparty service, article 79 stipulating the settlement finality and the pledge right, article 73/2 regulating the preservation of collaterals and the temporary article 8 giving the central clearing and settlement institution status to Takasbank, of the Capital Markets Law no. 6362 (the Law);
- as a secondary legal arrangement, the "General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions (General Regulation)" prepared on the basis of articles 77 and 78 of the Law and approved by the Capital Markets Board (the Board) and the "İstanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation (CCP Regulation)";
- and as a third legal arrangement, article 10 entitled "Transfer order, netting and collaterals" governing the settlement finality, netting, the pledge right and the preservation of collaterals as specified in the Law on Payment and Securities Settlement Systems, Payment Services and

Systems and Electronic Money Institutions within the scope of Borsa İstanbul. Equity and Debt Securities Markets to which CCP service is provided and operated as the payment and securities settlement system operator as authorized by the CBRT.

By taking the primary and secondary arrangements into account, Takasbank also publishes Directives and Procedures explaining the processes specific to each market to which CCP service is to be provided.

In Turkey, except for Takasbank Money Markets (TMM), Securities Lending Market (SLM), Private Pension Fund Trading Platform (PPFTP) and Turkey Electronic Fund Trading Platform (TEFTP) operated by Takasbank, all organized markets in which capital market instruments are traded operate under the roof of Borsa İstanbul that is the founder and major shareholder of Takasbank. To be able to offer CCP service in any of the markets at Borsa İstanbul, a service agreement is signed at first between Borsa İstanbul and Takasbank and then, both this service agreement and the Market Directive prepared by Takasbank for the relevant market are submitted for approval of the Capital Markets Board. The approval of the Market Directive by the Capital Markets Board means that Takasbank is officially permitted to provide CCP service in that market.

Thereafter, in the markets where Takasbank's offering of CCP service is approved by the Capital Markets Board, the process of admission to the CCP membership begins and the "Central Counterparty Membership Agreements" are signed between Takasbank and the institutions satisfying the criteria for admission to the CCP membership. The membership agreements cover all critical issues related to the CCP service. In the Central Counterparty Agreements, the following issues are stipulated:

- the method through which the CCP service will be offered;
- the sequence for use of default management resources (collateral and guarantee fund contribution amounts of the defaulting member, funded and unfunded guarantee fund contribution amounts of the non-defaulting members, and the amounts allocated and committed from Takasbank capital);
- that in CCP service, Takasbank deals only with the members and Takasbank shall not be liable for the obligations of the members towards their customers or the trading institutions, and of the customers or the trading institutions towards the members (in other words, the "principle" model shall be applied in the CCP service);
- that Takasbank may refrain from acting as a central counterparty in accordance with the principles set forth in the relevant legislation;
- the clearing and settlement, collateral and guarantee fund contribution amount payment obligations for the transactions executed by the members in the market;
- the use of the risk limits to be allocated by Takasbank in favour of the member;
- the legal regime applicable to the collaterals to be delivered to Takasbank, the valuation of collaterals and the margin calls, the accrual of interest on collaterals and their return;
- the guarantee fund procedures;
- the conditions under which the members shall be deemed to have defaulted, the powers of Takasbank in case of default (including the rights of lien, retention, settlement and setoff), and that the defaulting member shall have no right to object to the powers and dispositions of Takasbank;
- the segregation of the collateral and positions of the members and the customers;

- the termination, tendering and forced transfer of the positions in case of default of members or under extraordinary circumstances and the deductions that can be made in the variation margins;
- the porting of collateral and positions to another member in the pre-default or post-default situations;
- the fees, charges, and commissions;
- Takasbank records, confirmation messages, computer records and other records kept by Takasbank are conclusive evidence.
- the resolution of disputes.

and the critically important central counterparty practices the principles of which have been prescribed in the Capital Markets Law no. 6362 and the secondary arrangements issued based on this law are incorporated as a right and/or obligation into the agreements executed separately with each member; and the central counterparty practices included in the legal capital market legislation are turned into a component of a legally enforceable and pursuable contractual relationship. The general arrangements related to the issuance, enforcement and pursuance of the agreements executed between the private-law entities are included in the laws of the Republic of Turkey, particularly in the Turkish Civil Code no. 4721, Turkish Code of Obligations no. 6098, Turkish Commercial Code no. 6102, and the Execution and Bankruptcy Law no. 2004.

In addition, before execution of the “Membership Agreement” with the members, the “Pre-Agreement Information Form” and “Membership Agreement” highlighting the issues detailing Takasbank’s general transaction conditions of indispensable nature with regard to the parts of the system rules that directly concern the participants is sent to the members and in the said form, it is stated that participants can conduct their legal and financial assessments and express their opinions before the signing of the agreement.

The agreements signed with the participants of Borsa İstanbul Equity and Debt Securities Markets in which Takasbank operates as the securities settlement system operator are finalized by submitting them for approval of the CBRT under its capacity as the regulatory authority.

The membership agreements are published on Takasbank website, and it is considered that the content of the agreement substantially mitigates the legal risks that may arise from the central counterparty services.

On the other hand, the internal implementation principles relating to the activities to be carried out by the business units at Takasbank for the CCP services to be provided have also been stipulated by Takasbank Board of Directors with three separate Regulations (Takasbank Central Counterparty Directive on Risk Management Implementation Principles, Takasbank Central Counterparty Directive on Collateral Management Implementation Principles and Takasbank Central Counterparty Directive on Default Management Implementation Principles).

In addition, as prepared by Takasbank based on the fourth paragraph of article 78 of the Capital Markets Law no. 6362, the subparagraph (ç) of the first paragraph of article 7 and the second paragraph of article 8 of the Central Counterparty Regulation, the “Directive on Information, Risk Management, Internal Audit and Internal Control Systems of Takasbank Central Counterparty Members” has been approved by the Capital Markets Board. The aim of the Directive is to set forth the principles and procedures regarding the information systems, risk management, internal audit and internal control activities to be established by the

members deemed appropriate to receive the central counterparty service so as to manage and control the risks undertaken for their responsibilities towards Takasbank and the oversight of the adequacy of such activities in terms of the provisions of the Directive.

The safekeeping of the foreign assets delivered to Takasbank as CCP collateral or guarantee fund contributions is performed at the central securities depositories that are subject to the European Union legislation and are defined by CPMI IOSCO as international central securities depositories (ICSD). These institutions are subject to the European Union Central Securities Depository Regulation (2017), the Settlement Finality Directive (98/26/EC) and CPMI-IOSCO principles.

Thus, a legal regulatory framework that can minimise the uncertainty and the legal risk in the CCP services with respect to both market participants and Takasbank business units has been established.

Moreover, Takasbank's major global custodian is Euroclear Bank Brussels operating under European Union regulations. Foreign securities accepted by Takasbank as collateral in the markets where it operates and act as CCP (Central Counter Party) and Central clearing and settlement institution are held in custodian account of Euroclear Bank Brussels. Euroclear accounts are also used for the clearing transactions that take place on the Stock Exchange. Custody is also carried out at Clearstream Banking Luxembourg on behalf of Takasbank customers besides that within the scope of custody services offered to funds. All foreign collaterals collected by Takasbank are safekept at Euroclear. Clearstream Banking Luxembourg is also used as global custodian for some client assets. Since Bank's current global custodians are ICSDs established in the European Union, they have to operate in line with the European Union Central Securities Depository Regulation (2017) and CPMI- IOSCO principles.

1.2. An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

In the secondary arrangements issued based upon the Capital Markets Law no. 6362, the issues relating generally to the central clearing and settlement institutions and specifically to Takasbank's activities are stipulated in a clear and understandable manner. Takasbank also prepares clear and understandable Market Directives and Procedures for each market to which CCP service is to be provided.

- A "Market Directive" setting forth the rules and principles to be applied in the Market is approved at first by the Bank Board of Directors, and discussed with the Capital Markets Board, and then enters into force upon the approval of the Capital Markets Board. (In the equity and debt securities markets, it is also negotiated with the CBRT and the approval of the CBRT is obtained. Hence, it is controlled in terms of its compliance and consistency with the primary and secondary arrangements are by the related authority. The Directives are announced to the system-wide and public after the Internal Control and Compliance Unit's audit, in the information of the Headquarters, after the training to be submitted to the Board of Directors to be submitted for approval, and on Bank's website (in Turkish and English).
- The "Market Procedure" containing the principles and procedures the functioning and practices within the framework of the rules and principles specified in the İstanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation and the relevant Market Directive is firstly controlled by the

Internal Control and Compliance Unit and then enters into force after it is submitted to and approved by the Bank General Manager; it is submitted to the Board of Directors for information and announced to system participants and the public on our Bank's website (in Turkish and English).

- Before the "Membership Agreement" is signed with the members, the "Pre-Agreement Information Form" highlighting the issues detailing Bank's general transaction conditions of indispensable nature with regard to the parts of the system rules that directly concern the participants is sent to the members. In the form, it is stated that the member can express an opinion on the contract before the signing and in the final evaluation evaluation. (In the equity and debt securities markets, it is also negotiated with the CBRT and the approval of the CBRT is obtained.) Where necessary, detailed explanations are offered to members via General Letters and Announcements with regard to how the regulations and arrangements specified in the Market Directive and Procedure are to be applied down to the lowest level.
- The agreements to be signed with the Stock Exchanges to which services are to be provided are subject to the approval of the Capital Markets Board pursuant to article 23 of the General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions and article 5 of Istanbul Takas ve Saklama Bankası A.Ş.. Central Clearing and Settlement Regulation.
- Customer satisfaction surveys are held every year and, in such surveys, members are asked to assess whether the rules, procedures and agreements were clear and understandable or not.

While preparing the rules, procedures and contracts to be applied in the Market, firstly, the compliance with the following laws and regulations is taken into account.

- the Capital Markets Law no. 6362;
- the Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions;
- the General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions;
- Istanbul Takas ve Saklama Bankası A.Ş. Central Clearing and Settlement Regulation;
- Istanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation;
- the Regulation on Operations of Payment and Securities Settlement Systems;
- the Communiqué on Information Systems used in Payment and Securities Settlement Systems;
- CMB's Information Systems Management Communiqué,
- About BRSA's Information Systems and Electronic Banking Services of Banks,
- the Regulation on Measures regarding Prevention of Laundering of Proceeds of Crime and Financing of Terrorism;
- the Regulation on the Procedures and Principles regarding the Implementation of the Law on the Prevention of the Financing of Terrorism.
- Regulation on the Procedures and Principles Regarding the Implementation of the Law on the Prevention of Financing the Proliferation of Weapons of Mass Destruction.

Legal opinions have been collected via meetings, information briefings and e-mails in order to ensure that the rules, procedures and agreements are in compliance with the relevant laws and arrangements; and no issue of compliance has been detected. However, if requested by the relevant team, the Internal Control and Compliance Unit and the Legal Consultancy may also carry out a separate assessment of compliance with the legislation. In addition, the international regulatory changes related to Bank's activities are also followed by the Internal Control and Compliance Unit and are daily announced to the relevant Bank personnel in

terms of both the possible effects expected and the provision of information. If it is needed to take an action in addition to such announcements, the department/unit that is affected by such legislation is directly contacted and the issue is assessed in detail. In addition; each change of procedure is submitted to the Internal Control and Compliance Unit for acceptance before the approval of such change; and then, the necessary approvals are obtained; and finally, the Board of Directors is also informed of the changes that have been made. The Internal Control and Compliance Unit also sends an e-mail to all Bank personnel to inform them of the regulatory changes submitted to the Board of Directors for information/approval purposes on a monthly basis; and updates the legislation and regulation lists accordingly. In addition, each Directive is sent to the Internal Control and Compliance Unit for review before its submission for the approval of the BoD.

The arrangements related to the internal system units of Takasbank are firstly submitted by the Audit Committee to the BoD, and then sent to the Banking Regulation and Supervision Agency, the CBRT and/or the Capital Markets Board.

1.3. An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

The secondary arrangements at the level of Law, Regulation, and Communiqué are published in the Official Gazette. The directives and procedures issued on the basis of such arrangements and entering into force with the Capital Markets Board's approval and Takasbank Board of Directors' Resolution are sent separately to the members with a general letter and they are always accessible through Takasbank's website. Besides, general letters or explanatory documents explaining the CCP service are also published and the questions received from the members or other concerned parties are answered. In addition, in the external customer satisfaction surveys held every year, the participants are asked to assess whether the rules, procedures and agreements were clear and understandable or not.

1.4. An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

The Directives setting forth the applicable rules and principles are approved by the Bank's Board of Directors; reviewed in detail by the CMB and CBRT; the necessary amendments may be requested to be made in non-enforceable articles, business and transaction rules and when they are finalized, the Guidelines for all CCP markets are approved by the CMB, while the Guidelines for Shares and Borrowing are approved by the CBRT..

In addition, the opinion and approval of Bank's Internal Control and Compliance Unit and Legal Consultancy are obtained for the Directives, Procedures and Participant Agreements.

Contract within the scope of payment and securities settlement systems contracts, rules, and procedures are shared with the authorized officers of the Central Bank of the Republic of Turkey Payment Systems and Financial Technologies Department and they are revised within the framework of mutual opinions before they enter into force. Guidelines, training and rules for all CCP markets are shared with CMB guidance, opinions are approved before participation or revised for information.

In addition, Takasbank's major global custodian is Euroclear Bank Brussels, all collaterals collected by Takasbank are safekept at Euroclear. Foreign securities accepted by Takasbank as collateral in the markets where it operates and act as CCP(Central Counter Party) and Central clearing and settlement institution are held in custodian account of Euroclear Bank Brussels. Euroclear accounts are also used for the clearing transactions that take place on the Stock Exchange. Custody is also carried out at Clearstream Banking Luxembourg on behalf of Takasbank customers besides that within the scope of custody services offered to funds. Some client assets are safekept at Clearstream Banking Luxembourg under the global custody that Takasbank provides to its clients. Since Bank's current global custodians are ICSDs established in the European Union, they have to operate in line with the European Union Central Securities Depository Regulation (2017) and CPMI- IOSCO principles.

As explained in (1.1) above, the critically important central counterparty practices, the principles of which have been prescribed in the Capital Markets Law no. 6362 and the secondary arrangements issued based on this Law have been incorporated as a right and/or obligation into the agreements signed separately with each member; and the central counterparty practices included in the legal capital market legislation have been turned into a component of a legally enforceable and pursuable contractual relationship.

- The finality and irrevocable nature of settlement is a fact that has been made certain at the level of law. Pursuant to article 79/1 of the Law no. 6362, the clearing and settlement instructions and operations of the capital market instruments and the payment transactions related thereof cannot be reversed and revoked, including the situations where the activities of the members of central clearing and settlement institutions are temporarily or permanently suspended or the liquidation processes are initiated before the administrative and judicial authorities.
- It has been also made certain in article 10 of the Law no. 6493 on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions. Pursuant to article 10 of the said Law, the transfer order, clearing and settlement operations and payment transactions cannot be reversed and revoked, including the situations where the activities of the participants are temporarily or permanently suspended or the liquidation processes are initiated before the administrative and judicial authorities. (in respect of the Equity and Debt Securities Markets)

In addition;

- Pursuant to article 77 entitled "Central Clearing and Settlement Institutions" of the Capital Markets Law no. 6362; the Capital Markets Board is responsible for the regulation, oversight and audit of the central clearing and settlement institutions, and is authorized to take any and all measures if and when deemed necessary.
- The fifth paragraph of article 9 entitled "Operating Requirements" of the General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions contains the provision which reads as follows: "CCSIs shall notify the Board of their intention to conduct activities outside the scope of capital markets legislation". The Capital Markets Board may require Takasbank to not conduct such activities.
- Within the framework of the Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions; the Central Bank of the Republic of Turkey Payment Systems Department and Financial Technologies is authorized to revoke the license/s in case of identification

of any situation that is contrary to the legislation or the functioning of the system in the Bank's practices.

Currently, there is no court decision known to Takasbank, ruling that the activities and arrangements falling within the scope of the clearing and settlement system rules and procedures are unenforceable.

1.5. An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

The disputes arising due to Takasbank's CCP services are subject to the laws and courts of the Republic of Turkey.

Takasbank offers the clearing and settlement and CCP services only in the Turkish capital markets. We do not have any CCP member domiciled abroad or any clearing and settlement or CCP service we provide to the platforms located abroad. We work with the ICSDs resident abroad in accordance with the custody limits allocated by our Board of Directors. We work with such institutions on pre-funded basis and there are no intraday or overnight credit transactions executed with them. As Bank's global custodians operate in EU, no conflicts of regulation is expected.

In Article 5 entitled 'Legal Risk' of Takasbank Central Counterparty Directive on Risk Management Implementation Principles, it is also stipulated that Takasbank shall take necessary actions for the identification and elimination of the legal risks relating to the CCP activities, including, in particular, the issues such as protection, usage, segregation and porting of the members' and customers' collaterals.

Foreign securities accepted as collateral within the scope of CCP and Central Clearing and Settlement Institution services are held in Euroclear Bank Brussels. Euroclear accounts are also used for the clearing transactions that take place on the Stock Exchange. Since Euroclear Bank was established in the European Union, it operates in compliance with the European Union Central Securities Deposit Regulation (2017) and CPMI-IOSCO principles.

Takasbank Assessment Result for CPMI-IOSCO Principle 1

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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We are of the opinion that the central counterparty (CCP) service offered by Takasbank has a solid legal basis and the requirements for principle 1 have been met.

Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key considerations

- 1. An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.*
- 2. An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.*
- 3. The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.*
- 4. The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).*
- 5. The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.*
- 6. The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.*
- 7. The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.*

Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key considerations

- 2.1. An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.***

Takasbank's vision, mission and values are defined with the strategic plan approved by the Board of Directors, and the CPMI-IOSCO principle 2 is support in all its aspects. In the Strategic Plan approved by

the Board of Directors, the vision, mission and the main goals and initiatives of Takasbank have been defined as follows:

Takasbank Vision: To become an internationally preferred, reliable, effective and innovative organization, offering clearing, settlement, collateral and risk management and banking services at international quality standards

Takasbank Mission:

To contribute to market development by offering reliable and effective post-trade services

The main issues included in the Strategic Plan document can be sorted as; trends in clearing and custody services in the world, an economic evaluation of Turkey and the world, activity profile of Takasbank, information on the financial performance of Takasbank, SWOT analysis, basic targets and initiatives. With the aforementioned main objectives and initiatives in Takasbank's Strategic Plan, basically; it is aimed to protect the interests of the partners, to contribute to the country's economy and the development of the sector, to ensure that the members/customers continue to receive high-quality and uninterrupted service, and to increase the satisfaction and competencies of the employees together with the synergy within Borsa Istanbul Group.

Projects and other works related to the initiatives included in the Takasbank Strategic Plan are regularly monitored, the progress of the initiatives is measured and reported to the Senior Management and the Board of Directors. In this context, a Strategic Plan Evaluation Report is prepared as of year-ends and presented to the Bank's Board of Directors.

The key corporate performance indicators have been determined based on the goals specified in Bank's strategic plan and the related initiatives; and the values obtained as a result of measurements allow Bank to measure its ability to reach its strategic goals. Key corporate performance indicators are measured annually and the results thereof are shared with the Senior Management.

The information security, systematic efficiency and business continuity are considered by Takasbank as the top-priority issues; and Takasbank's processes within the certifications we have compliant with ISO27001 information security and ISO22301 Business Continuity Management System Standards. These management systems are closely monitored by the Bank's Senior Management. In addition, Takasbank has established a IS Demand Management Procedure in order to improve and further develop the Bank services and processes; and all improvement and development requests for all of the Bank's services are submitted to the demand management committee comprising IT Managers, together with a feasibility report where necessary. Improvement and development requests are sorted in order of priority and importance and necessary enhancements are made in Takasbank IT infrastructure.

2.2. An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

The Turkish Commercial Code no. 6102 is the most general legal arrangement that must be taken into account in the corporate governance of Takasbank incorporated as a Joint Stock Company. In addition to the general provisions of the Turkish Commercial Code related to the governance of joint stock companies, Takasbank is also subject to the Capital Markets Law no. 6362 and the supervision of the Capital Markets Board by virtue of holding a central clearing and settlement institution license; to the Banking Law no. 5411 and the supervision of the Banking Regulation and Supervision Agency (BRSA) by virtue of holding an investment banking license; and to the Law no. 6493 on Payment and Securities Settlement Systems and the supervision of the Central Bank of the Republic of Turkey by virtue of operating a securities settlement system.

In this context, Takasbank is, in its capacity as a bank, subject to the Regulation on the Corporate Governance Principles dated 1 November 2006 published by the BRSA, and in its capacity as a central clearing and settlement institution, to the provisions specified in Section Three entitled “Operating License and the Persons Responsible for Administration of the System Operator” of the Regulation on Operations of Payment and Securities Settlement Systems. In addition, pursuant to article 36 of the Capital Markets Law no. 6362, Takasbank is, in its capacity as a central clearing and settlement institution, also subject, *mutatis mutandis*, to the corporate governance principles determined by the Capital Markets Board on the basis of article 17 of the relevant law. Furthermore, Takasbank Corporate Governance Principles Directive that entered into force after its approval by the Board of Directors encompasses the content of the corporate governance policy that will provide guidance for the management of the Bank in a transparent, accountable, responsible and equitable manner; the roles and responsibilities of the Corporate Governance Committee established within the structure of the board of directors; the arrangement of the Bank’s relationships with its shareholders, stakeholders, regulatory and supervisory authorities, managers and employees in accordance with the principles of integrity, reliability, impartiality, confidentiality and equality; and the Bank’s responsibilities regarding the environment and social life. Thus, Takasbank has a documented, and extremely comprehensive set of principles compliant with the international standards that it must observe in its corporate governance and its relationships with its stakeholders.

On the other hand, besides the general provisions of the Turkish Commercial Code, the issues that must be adhered in the operation, organization and management of both the banks and central clearing and settlement institutions are already regulated in detail by the primary and secondary arrangements (Laws and Regulations).

As per the operating principles of Bank, system owners, participants and relevant stakeholders may file legal complaints against Bank on the basis of the provisions of the Banking Law, the Capital Markets Law, Turkish Commercial Code, and the Law on Payment and Securities Settlement Systems, in case of any breach of their rights.

Apart from the laws and regulations, the most important written document outlining the decision-making and management bodies of Bank and their duties, powers and functioning is Takasbank Articles of Association prepared in accordance with the Turkish Commercial Code and other relevant legislation; and it is published on Takasbank website together with the Corporate Governance Principles Compliance contained in Bank’s Annual Report. The duties, powers and working principles of the Audit Committee established within the structure of the Board of Directors in accordance with the Banking Law no. 5411 are

defined with “Takasbank Audit Committee Directive” approved by the Board of Directors. The duties and responsibilities of Takasbank business units and the hierarchical structure are already specified in Takasbank Organization and Duties Directive approved by the Board of Directors. Our organizational chart delineated with this Direction, information about Bank senior executive managers, our annual reports and results and independent audit reports are made and kept available on Takasbank website for public access.

The activities carried out by the Board of Directors during the year are evaluated by the General Assembly, i.e. the Bank’s highest decision-making body, and the Board of Directors is discharged at the General Assembly. The operating principles and procedures of Bank’s General Assembly have been specified in the Internal Directive on Operating Principles and Procedures of the General Assembly of İstanbul Takas ve Saklama Bankası A.Ş.; and this directive is published on Bank’s website. In addition, disclosures are made as a result of the General Assembly meeting and the minutes of general assembly meetings are published on Takasbank website.

In addition, the disclosures to be made to public with respect to risk management as included in Bank’s annual report and solo independent audit report are also published on Takasbank website.

2.3. The roles and responsibilities of an FMI’s board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

Article 374 of the Turkish Commercial Code no. 6102 contains the provision which reads as follows; “The board of directors and the management, to the extent delegated to them, shall be authorized to take decisions with regard to any and all business and transactions required to perform the company’s scope of activity, excluding those reserved to the general assembly under the law and articles of association”. Article 375 also defines the non-delegable duties and powers of the Board of Directors. In addition, the duties and powers of the board of directors in central clearing and settlement institutions are exclusively stipulated in article 13 of the General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions.

The roles and responsibilities of the Board of Directors specific to Takasbank are documented in article 12 of Takasbank Articles of Association. In such articles of association, it is stated that the Board of Directors must manage Takasbank in accordance with the Turkish Commercial Code, the Banking Law, Capital Market Law No. 6362 and its sub-regulations and other relevant laws and regulations. The duties of the “Audit Committee”, “Corporate Governance Committee”, “Credit Committee”, “Remuneration Committee” and “CCPRisk Committee” established within the structure of the Board of Directors are already laid down with the regulations. The members of the board of directors are subject to articles 393, 395 and 396 of the Turkish Commercial Code no. 6102, respectively governing the prohibition of participation in discussions regarding conflicts of interest, the prohibition of conducting business with the company and of borrowing from the company and the prohibition of competition, as well as the prohibitions specified in article 18 of the General Regulation.

It is the responsibility of the Board of Directors to ensure the establishment, proper functioning, suitability and adequacy of internal control, risk management and internal audit systems in the Bank in accordance

with the relevant legislation, to secure the financial reporting systems, and to determine the powers and responsibilities within the Bank.

All roles and responsibilities of the Board of Directors are also specified in detail in the Banking Law no. 5411, the Capital Markets Law no. 6362 and the related secondary regulations and the Law no. 6493 on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions and the related secondary regulations.

Takasbank Board of Directors is obliged to evaluate the performance of the bank and its management; to assess the degree of achievement of the Bank's targets, and its activities and performance; and to monitor and control the compliance of its activities with the relevant legislation, the articles of association, internal regulations and established policies. The key corporate performance indicators have been determined based on the goals specified in Bank's strategic plan and the related initiatives; and the values obtained as a result of measurements made on an annual basis allow Bank to measure its ability to reach its strategic goals. Realizations with respect to the strategic plan and the related indicators are evaluated by the members of the Board of Directors on an annual basis.

There is no payment made to the members of the board of directors based on individual performance. Evaluating the performance of the Board of Directors and electing or dismissing the members are the issues under the authority of the General Assembly in accordance with the Turkish Commercial Code (setting aside the regulatory powers given to public authorities). The Annual Report depicting the financial position of the Bank is prepared by independent auditors and delivered to the shareholders for review before the annual General Assembly meeting. The performance of the Board Members is put to the vote in the General Assembly meeting; and if the Board of Directors is not discharged by the vast majority of the shareholders, the Board of Directors is held responsible for that situation.

The principal components of the Bank's corporate governance policy are equality, transparency, accountability, and responsibility. Within the scope of the Bank's Corporate Governance Policy;

- Necessary measures are taken to ensure that the Bank's Senior Management and all levels of management fulfil their duties in a manner that is effective, fair, transparent, accountable and free of conflicts of interest. All levels of management are allowed to take the decisions required by their responsibilities that they have undertaken in the Bank's management. In the election or appointment of the members of the Board of Directors that will take office pursuant to the relevant legislation and the Bank's Articles of Association and bear the qualifications to make objective and independent assessments about the Bank's operations, it is required as a condition precedent that they should have the qualifications and meet the requirements stipulated in the relevant legislation; in addition, such members are evaluated in detail for any issues that may create any conflicts of interest within the scope of corporate governance practices.
- The Bank does not discriminate between its shareholders and its members that are not the shareholders of the Bank when it comes to determining the fee and commission tariffs in Banking operations. Relationships with shareholders and clients are conducted in a fair, transparent and accountable manner.

The Bank has established a Corporate Governance Committee comprising at least 2 members selected by the Board of Directors from and among the Board Members, in order to monitor the Bank's compliance with corporate governance principles, to make improvements and to submit recommendations to the Board

of Directors in relation thereof. The committee identifies the conflicts of interest resulting from the failure in full compliance with the corporate governance principles, and ensures that necessary policies are established to manage such conflicts. In addition, the committee reviews important complaints and claims constituting the subject matter of corporate governance practices and presents to the Board of Directors its opinions and recommendations related thereof.

These processes are already documented in the Corporate Governance Principles Directive; and the relevant legislation has been announced to all Bank employees. Furthermore, the Corporate Governance Principles Compliance Report contained in the annual report is also disclosed to the public.

The Bank has prepared Takasbank Conflicts of Interest Policy Directive approved by the Board of Directors, which regulates the relationships of all Bank employees including the Board Members with clients, among themselves, and with the shareholders. In addition, the Bank has also issued Takasbank Ethical Principles Directive approved by the Board of Directors and Takasbank Gifting Procedure within the knowledge of the Board of Directors in order to address the issue in detail from all aspects. These procedures and directives are announced to all Bank employees; and in case of amendments, the most recent version is first sent to the BoD for approval or information and then announced to all Bank employees, thus raising awareness within the Bank.

2.4. The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

The minimum qualifications that Takasbank Board Members must possess are stipulated by the legislation; and it is a legal requirement that the members should meet the necessary education and work experience conditions. The activities carried out by the members of the Board of Directors during the year are evaluated by the General Assembly, i.e. the Bank's highest decision-making body, and the Board of Directors is discharged at the General Assembly.

According to article 23 of the Turkish Banking Law no. 5411, it is stated that the conditions listed in article 25 and stipulated for the General Manager in the said law shall also be sought for one more than half of the Board Members. In its article 12, the General Regulation has also laid down the conditions that the Board Members and the General Manager must possess. In addition, Article 12 of the General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions contains the provisions regarding the qualifications required for Board Members and the necessary number of members and Article 15 contains the provisions regarding General Manager and Deputy General Managers. According to Takasbank Corporate Governance Principles Directive approved by the Board of Directors, Takasbank Board of Directors is comprised of both executive and non-executive members. Except for the 'General Manager', there is no board member having an executive position in Takasbank and holding a seat in Takasbank Board of Directors. Pursuant to the articles of association and the corporate governance principles, there are also independent board members serving at the board of directors. Currently, three out of a total of eight board members except for the General Manager serving as the natural member of the board have been elected as independent members at the general assembly.

The incentives and services specified within the Bank's Articles of Association are provided for the Bank's Board Members. The financial benefits such as attendance fees, wages, premiums, bonuses, etc. as well as other benefits in kind and in cash, dividends from the yearly profit and other rights and benefits that will be given to the Chairman and Members of the Board of Directors and their forms and amounts are determined

by the General Assembly every year; and the travel, accommodation and representation expenses as well as insurance and similar guarantees that will be covered by the Bank are determined by the Board of Directors. The Chairman and Members of the Board of Directors as well as their spouses, children and dependent are allowed to benefit from the same healthcare benefits as the personnel.

2.5. The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

The roles and responsibilities of the management are clearly specified with reference to the roles and responsibilities set forth by the BRSA, CMB, and the CRBT legislation relating to the Payment and Securities Settlement Systems and the Bank's internal regulations. Managers have the experience, skills and integrity specified in the legislation. The criteria to be sought in the recruitment of personnel for Takasbank are separately specified on for each title in the Bank's Human Resources Directive and the respective Regulations of Internal System Units. Performance assessments and appointments are made within the framework of Role and Job descriptions.

The process of dismissal of managers is executed as per the Board of Directors' resolutions and the Audit Committee's decisions and in accordance with the articles of Takasbank Human Resources Directive that are related to voluntary resignation, retirement, disability and death, cancellation of the position, dismissal as a result of disciplinary action, absence of the conditions for employment, termination of employment contract and re-employment. The process of dismissal of Internal System Unit Managers is executed as per the resolutions of the Board of Directors and the Audit Committee.

In addition, regulatory and supervisory institutions are informed and their approvals are obtained when members of the Senior Management (Board of Directors, General Manager, Deputy General Managers and Internal System Unit Managers) start to take office and are dismissed. A written document entitled Takasbank Senior Management Appointment and Dismissal Guide has been prepared to indicate how the related process will be run; and the related legal processes have been established on a step-by-step basis.

The roles and responsibilities are clearly defined in the job descriptions prepared on a Team/Department and title basis. The duties and responsibilities of the teams are specified in the Takasbank Organization and Duties Directive approved by the Board of Directors; and the job descriptions by titles approved by the General Manager (or approved by the Audit Committee for the internal system unit personnel) are included in Bank's Document Management System. Apart from the legal requirements, the duties and responsibilities of the management are structured in the same line with the targets and objectives of the bank. The management has to ensure that the bank's activities and operations are in line with the legal requirements as well as the goals, strategies and risk tolerance appetite levels set by the board of directors. The management is also responsible to ensure that the activities and operations of the bank are carried out in an environment where the necessary internal controls are in place and applied as required, with the aim of achieving the targets of the bank.

In addition, the special roles and responsibilities exclusively assigned to Takasbank senior management and business units in relation to central counterparty activities are particularly stipulated with article 10 of the Directive on Central Counterparty Risk Management Implementation Principles approved by the Board of Directors. Accordingly, the General Manager, Deputy General Managers and other senior managers have the following roles and responsibilities;

- Carrying out the CCP activities in line with the goals and strategies specified by the Board of Directors;
- Establishing the compliance and internal control procedures that would enable the achievement of the targeted objectives;
- Taking measures that would ensure that the other activities of Takasbank do not pose a significant risk for its CCP activities;
- Allocating sufficient resources for the risk management, internal audit, internal control and compliance functions.

That the management must have the appropriate knowledge, experience and integrity is a must that is rigorously emphasized in both the primary and secondary legislation and the internal arrangements. The Board of Directors and the General Manager are authorized to assess the performance of the senior managers and to appoint and dismiss them. Takasbank management directly reports to the Board of Directors in the monthly-held meetings where Takasbank's operations, activities, ongoing projects and financial position are evaluated based on the bank's targets and strategies.

In addition, goals are set on an annual basis within the framework of the Strategic Plan and Corporate Performance Management process; and they are measured periodically and the findings are presented to the Senior Management in the form of a strategic plan evaluation report.

2.6. The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

Takasbank's corporate risk management framework has been established, considering risk management needs required by banking legislation that Takasbank is subject to and by the capital markets legislation including central counterparty activities in particular. The central counterparty activities and the validity of risk management models used in such activities are controlled and audited by the Board of Directors through the Internal Audit Unit, Internal Control and Compliance Unit and Risk Management Unit (internal system units) directly reporting to the Audit Committee within the structure of the Board of Directors under the banking legislation and engaged in internal audit, internal control, capital adequacy, and risk control and reporting at the corporate scale. In addition, for the management by the Board of Directors of the financial risks assumed by Takasbank as the central counterparty, there is a "Central Counterparty Department" independent from the clearing and settlement operations and the market operator units and reporting to an Assistant General Manager. The risk limits to be allocated and the membership types to be assigned to the CCP members are determined with the "Internal Credit Rating and Assessment System" operated by the "Financial Analysis and Rating Team" included in the Central Counterparty Department; whereas all types of risk parameters related to the positions and collaterals are determined and monitored by the Central Risk Management Team and the Collateral and Default Management Team within the framework of the relevant terms of reference.

The following documents prepared within the framework of the banking risk management and capital adequacy regulations issued by the BRSA by observing Basel standards as well as the standardized international legislation including the CPMI-IOSCO and EMIR and the best practices relating to capital market legislation and the legislation on payment and securities settlement systems;

- Takasbank Risk Management Regulation;
- Takasbank Operational Risk Management Procedure;
- Takasbank Directive on Internal Capital Adequacy Assessment Process;
- Takasbank Procedure on Stress Testing Program Policy and Practice Principles;
- Information Systems Risk Management Procedure,
- Takasbank Business Continuity Directive, Takasbank Business Continuity Procedure, Takasbank Business Continuity Plan, Takasbank Emergency Action Plan, Takasbank Information Systems Continuity Service Recovery Plan, Takasbank Business Continuity Communication Plan, Takasbank Epidemic Action Plan,;
- Takasbank Recovery Plan and Takasbank Orderly Wind-Down Plan;
- Takasbank Credits Directive;
- Directive on Credit Rating and Assessment Systems General Principles and the Procedures on Credit Ratings and Assessment Principles prepared separately for the Banks, Brokerage Firms and Other Financial Institutions in accordance with this Directive;
- Directives prepared for the markets to which the CCP service is provided and the Market Procedures issued with reference to such Directives;
- Takasbank Central Counterparty Risk Management Implementation Principles Directive,
- Takasbank Central Counterparty Collateral Management Implementation Principles Directive,
- Takasbank Central Counterparty Default Management Implementation Principles Directive,
- Takasbank CCP Risk Committee Establishment and Working Principles Directive,
- Takasbank Over-the-Counter Derivatives Default Management Group Practice Principles

are the basic documents establishing the framework of both corporate and central counterparty risk management. All financial and non-financial risks that Takasbank is exposed to are identified, measured and restricted with credit, risk, trade, collateral, custody or concentration limits; the signal values which would trigger the warning mechanism upon approaching to the risk limits are determined; the regulatory and/or internal capital is allocated for the risks; and the decision-making and management mechanism and the measures to be taken in case of physical or financial emergency situations are already specified.

Capital allocation for the risks arising from the central counterparty activities are addressed among the Pillar I risks (credit risk, market risk, counterparty credit risk and operational risk) and Pillar II risks (liquidity risk, interest rate risk in banking book, CCP general business risk) in accordance with the banking capital adequacy arrangements of Basel Committee, together with the risks arising from Takasbank's other activities, by observing EMIR supplementing regulation No. (EU) 152/2013 of the European Union relating to the capital adequacy of the Central Counterparty Institutions.

Regarding IT and operational risk management, Takasbank has ISO 27001 (Information Security Management Systems) and ISO 22301 (Business Continuity Management System) certificates. In addition,

it has been designed in accordance with the ISO 20000-1 IT Service Management System standard, and the internal and external audits of the relevant standard were completed in 2021.

In summary, the critical issues such as Takasbank's risk-tolerance policy, responsibilities for risk management and those carrying such responsibilities, functioning of the decision-making mechanism in case of extraordinary circumstances like emergencies, crises, or default management, etc. have been covered by the risk management framework at the best level. In Takasbank, both corporate and central counterparty risk management activities are carried out by the Central Counterparty Department and Risk Management Unit that are non-executive units (not dealing with any income-generating activities) whose remuneration is not associated with the Bank's performance and to whom the senior management is obliged to allocate the necessary resources; and the risks arising from the central counterparty activities are analysed with a holistic approach both through special reports evaluated by the senior management, internal system units, Audit Committee and the Board of Directors and during the minimum capital adequacy calculations and internal capital adequacy assessment process, together with the risks arising from other activities; and they are discussed in the Audit Committee and the Board of Directors.

The Risk Management Unit is responsible for designing and implementing the risk management system, and contributing to the processes of design, selection, implementation and pre-approval of the risk measurement models used within the scope of the Unit's operations, reviewing these models regularly and making the necessary changes.

The Board of Directors and Senior Management assess the underlying assumptions and limitations regarding the model in use, the fundamental assumptions used to measure risks, and the adequacy and appropriateness of data sources and implementation procedures.

The Audit Committee surveils whether the internal policies and implementation procedures approved by the Board of Directors with regard to risk management are observed, and makes recommendations to the Board of Directors with respect to the measures required to be taken where necessary.

The Board of Directors determines the general and risk type-based risk appetites as well as risk limits and signal values; approves the policies and implementing procedures with respect to risk management activities, and ensures that they are effectively implemented and maintained.

Pursuant to Takasbank Risk Management Directive approved by the Board of Directors, the duties and responsibilities of the Risk Management Unit have been determined, at minimum, as follows:

- Designing and implementing the risk management system.
- Contributing to the processes of design, selection, implementation and pre-approval of the risk measurement models used within the scope of the operations of the Risk Management Unit, reviewing the models regularly and making the necessary changes.
- Generating regular reports using the risk measurement models used by the Risk Management Unit and analysing them.
- Monitoring the development of the Bank's risk appetites and risk limits and signal values determined by the Risk Management Unit and approved by the Board of Directors.

- Ensuring that the results of the risk measurement and risk monitoring activities carried out by the Risk Management Unit are regularly and timely reported to the Senior Management.
- Coordinating the implementation of the internal capital adequacy assessment process (ICAAP) within the Bank and the preparation of the related ICAAP Report.

The reports prepared by the Risk Management Unit are periodically reported to the Board of Directors, and – via the Senior Management – to the units responsible for the occurrence and monitoring of risks.

Bank's Internal Control and Compliance Unit has been structured to act independently in accordance with the provisions of the Regulation on Banks' Internal Systems and Internal Capital Adequacy Assessment Process and to report to our Board of Directors via our Audit Committee. The legal framework for the controls and legislation and compliance monitoring activities is established with the regulations published by the Capital Markets Board (CMB), the Central Bank of the Republic of Turkey (CBRT), and the Banking Regulation and Supervision Agency (BRSA), as well as Bank's internal legislation.

The duties and responsibilities of the Internal Control and Compliance Unit include, at minimum, the following:

- The unit constantly monitors and controls the compliance of Bank operations with the principles and standards set by regulatory authorities and institutions, the regulations on banking, capital market and payment systems, and the internal regulations and general policies approved by the Bank's Board of Directors; and drafts reports representing the results of its monitoring and control activities.
- It establishes the policies and implementation procedures with respect to the Bank's internal control and compliance, and designs and review the Bank's internal control system.
- It prepares internal control lists for Business and Information Technologies processes; and revises them on a yearly basis. It carries out internal control activities according to such lists, and monitors the findings identified as a result and the related recommendations for improvement.
- It conducts the internal validation of the risk measurement methodology based on the model used by Bank as part of the internal capital adequacy assessment process.
- It follows the national and international legislation on anti-money laundering and counter-financing of terrorism and conducts the correspondence and takes necessary measures related to asset freeze decisions, demands for postponement of transactions, doubtful transactions and any requests by legal authorities for information and documents.
- It reviews the sanctions lists of OFAC, the UN, the UK, the European Union and FATF; and conducts the Bank inquiries and ensures that necessary precautions are taken.
- It completes and sends the surveys requested from Bank within the scope of Anti-Money Laundering (AML) activities in accordance with regulations and working principles.
- It announces to the Bank personnel the changes that have been made in the legislation that the Bank is subject to; and ensures the monitoring of any actions that must be taken in cases of important changes that may have a possible impact on Bank.
- It ensures that the Bank employees receive trainings on FCIB and on LPPD– the Law on Protection of Personal Data (together with the Legal Consultancy).
- It prepares and annually updates the document of legal requirements related to business continuity and IT, and makes announcements to relevant units in order to allow them to take appropriate action.
- It gives the units advices and opinions on the regulatory aspects of their area of operations; informs them of the deficiencies in the internal regulations of such units, and makes observations and recommendations with regard to improvement of their current processes and regulations.
- It prepares the legally required regulations such as Ethical Principles Policy and Conflicts of Interest Policy; and ensures that the Bank employees are informed about them.
- It validates the TFRS 9 expected credit loss provisioning model.

- It conducts the efforts related with corporate governance declaration in cooperation with the Internal Audit Unit on an annual basis.
- It evaluates the Bank's compliance with relevant legislation with regard to new products and transactions and planned activities.
- It carries out the efforts for determination of the control environment as part of the activities to conduct a yearly review of the Operational Risk Database.
- It monitors the actions for the risks with a net risk level equal to or above the operational risk appetite.
- It provides its opinions on whether a service may be considered as a support service or not.
- It checks changes in procedures against the provisions of the relevant directives/laws/regulations that the procedure is related to; and provides feedback as to their compliance. As for the Directives, it reviews them before they are submitted to the BoD and ensures that they are duly presented for approval of the BoD.
- It makes monthly announcements to the Bank employees to raise awareness on the regulations submitted to the Board of Directors for information/approval, as well as the Bank's regulation lists.

Bank's Internal Audit Unit consists of the Central and On-site Audit Team and the Information Technologies Process Audit Team, and there are sufficient number of chief auditors, senior auditors, auditors and assistant auditors under the management of the Internal Audit Unit Director. Information systems (IS) management activities at the Bank and its external service providers, the processes supporting these activities and the IS controls established are in compliance with the legislation and in-house policies, procedures and standards, and the effectiveness and adequacy of internal control and risk management activities regarding information systems. In order to provide assurance to the Board of Directors, the IS internal audit function was established within the Information Technologies Process Audit Team and the IT Senior Auditor was appointed as responsible for the IS internal audit. The Department operates under the Board of Directors through the Audit Committee, which the Board of Directors assigns from among its members within the scope of internal systems. Auditors carry out inspections and audits on behalf of the Board of Directors according to the instructions they receive from the Internal Audit Unit Manager. The Internal Audit Unit examines and audits all activities on a periodic and risk-based basis, detecting deficiencies, errors and abuses, preventing their reoccurrence, evaluating the accuracy and reliability of information and reporting submitted to regulatory and supervisory authorities and senior management, carry on works to develop and improve effectiveness and efficiency of the Bank's processes. An Internal Audit Plan is created on the basis of the annual "Risk Evaluation Report" during the performance of the relevant activities. Within the framework of the risk matrix in the annex of the Risk Assessment Report, it is determined which of the works and transactions carried out in the Bank's business and IT Departments should be focused on. In addition, matters deemed risky by the Senior Management are also taken into account in the internal audit plan.

An Internal Audit Plan is prepared in accordance with the principles set forth in Articles 26 and 27 of the Regulation on the Internal Systems and the Internal Capital Adequacy Assessment Process of Banks, and the first paragraph of Article 16/C of the General Regulation on the Establishment and Operating Principles of Central Clearing Institutions. In addition, in accordance with the third and fourth paragraphs of Article 31 of The Regulation on the Information Systems of the Banks and Electronic Banking Services, the scope of IS internal audits should be deep and detailed to include and provide assurance regarding critical IS services, processes and critical assets, establishing an IS audit plan consisting of auditable IS domains annually and getting it approved by the Bank's audit committee, the frequency of the bank's IS internal audits and audit cycles; It is ensured that the audit cycle is determined not to exceed two years for IS internal audits to ensure that IS services, processes and assets are proportional to the criticality and risk, and to

provide assurance that all the provisions in the aforementioned Regulation are fulfilled by the bank. In this framework, the Internal Audit Plan is created to include the IS audit plan, and after the Internal Audit Plan is approved by the Board of Directors, audit guides and checklists created for IS audits are also reviewed. In addition, IS internal control and IS internal audit activities are carried out in a coordinated manner based on mutual cooperation and information, and internal control and internal audit activities are planned in a way to ensure that important systems, processes and areas are evaluated on time and with priority and necessary resources are provided for these activities.

While creating the Internal Audit Plan; apart from risk assessments, the Bank's organizational chart, bank information asset inventories, service catalogue, business impact analysis results, Operational Risk Database and Operational Risk Loss Database, past findings and improvement suggestions, Departments audited in the past, results of examination, investigation, research and consultancy activities The applicable legislation, time and resources are also taken into account.

The main activities of the Internal Audit Unit are; Audit of services related to banking, payment and securities settlement systems and capital market activities and related Bank Departments, information systems process audits, central counterparty membership audits carried out before member organizations, support and foreign service company audits carried out before supplier companies, management declaration studies, investigation and investigation activities, finding and improvement proposal follow-up studies, research and consultancy activities, and reporting activities. In this framework, within the scope of the activities carried out by the Internal Audit Unit, the following documents are prepared and submitted to the Senior Management and/or the Board of Directors via the Audit Committee, as appropriate: Timely submission of the reports listed below to the relevant parties and compliance with the plan are monitored by the Audit Committee.

- Annual risk assessment report
- Annual internal audit plan
- Central Counterparty Department audit reports prepared semi-annually in accordance with the applicable legislation
- Internal audit reports on other Department/process audits determined in the plan
- Internal Audit Unit activity reports prepared quarterly
- Information technology internal audit reports prepared semi-annually (the said reports also include the audit results of the support and external services firm and also form the basis for the Management Declaration studies.)
- Management declaration plan and reports that form the basis of the plan
- Central counterparty membership audit reports
- Investigation and investigation reports

Audit of processes related to bank information systems, BRSA's Regulation on Banks' Information Systems and Electronic Banking Services and BRSA's Regulation on Procurement of Support Services By Banks, CMB's Information Systems Management Communiqué and CBRT's Communiqué on Information Systems Used in Payment and Securities Settlement Systems carried out on the basis of its provisions. The fifth paragraph of Article 78 of the Capital Markets Law governs the obligation of central clearing houses to check the reliability and adequacy of their data processing infrastructure at least semi-annually and to send the results to the Board.

Periodic follow-up of the findings is carried out as of the estimated action completion dates determined by the relevant business and IT service owner within the framework of the "Internal Audit Plan", and in any case quarterly, the follow-up of the findings is also repeated in the next planned audit studies. The latest

status of the findings determined as a result of the active audit activities carried out by the Internal Audit Unit, the completed, ongoing, postponed and canceled audit activities and the level of compliance with the annual audit plan, the trainings received by the auditors during the reporting period, the significant accounting problems and the reports made to the regulatory and supervisory authorities and It is appropriate for the Audit Committee and the Internal Audit Unit to include the hesitant issues regarding the audit findings, the summary of the audits performed on the information systems, the risk assessments and their summary, the error reports on the audit and internal controls, the opinions on the elimination of the significant weaknesses conveyed to the managers authorized to take corrective measures. Other information in the internal audit reports prepared on other matters seen in the past are included in the quarterly activity reports submitted to the Board of Directors by the Audit Committee. In addition, improvement suggestions are made for the findings determined as a result of the audits.

Procedures and principles regarding the preparation of management declarations, process audits, control tests and reporting of findings that form the basis of the declarations are determined in Takasbank Process Audit Methodology and Management Declaration Preparation Directive, and management declaration studies are carried out jointly by the Internal Audit Unit and the Internal Control and Compliance Unit. The Banking Processes Audit Report and Information Technologies Management Processes internal audit reports prepared by the Internal Audit Unit and the Banking Processes and Information Technologies Controls Report prepared by the Internal Control and Compliance Unit were presented to the Board of Directors regarding the aforementioned studies and forwarded to the independent audit firm. The prepared report is also submitted to the CMB. Within the scope of the management declaration, as a result of the studies carried out by the business and IS internal control and internal audit functions, an evaluation is made to examine the business and IS controls of the bank and to reveal all the important control deficiencies about these controls regardless of the studies performed by the independent audit firms. In the business and IS controls of the bank, there is no significant lack of control that may prevent effectiveness, adequacy or compliance, the integrity, consistency, reliability, confidentiality when necessary, of the data that cause material misstatement in the financial statements or that are sensitive for the bank, especially the financial data. Assurance is provided that there is no situation that significantly affects the continuity of operations, or that there is no abuse or corruption involving managers and other officials with critical duties in the internal control system, and that if there are issues within the scope of the findings, all of them are reported to the Bank's Audit Committee and the Board of Directors.

Communication channels have been established within the Bank to ensure that the problems faced by the personnel are reported to the relevant management levels and the Internal Control and Compliance Unit, the issues they consider suspicious or hesitant to be reported to the relevant management levels, the Internal Control and Compliance Unit and the Internal Audit Unit, and the internal irregularities within the Bank to the Internal Audit Unit. The process is operated in accordance with the Takasbank Internal Irregularity-Problems and Suspicious Matters Notification Procedure.

The adequacy of the models and confidence levels used in the calculation of initial margins and collateral valuation haircuts in the markets to which CCP service is provided is analysed through backtesting performed by the Central Counterparty Department. The backtesting results of the models used in initial margin calculations, and the recommended measures, if any, are submitted to the Board of Directors through the internal system units four times a year. The backtesting results are also submitted to the CCP Risk Committee by June and December periods at minimum.

2.7. The board should ensure that the FMI's design, rules, overall strategy and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant

stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a road market impact, the public.

The operating principles and procedures specified in article 10 of the General Regulation on the Establishment and Operating Principles of Clearing and Settlement Institutions published by the Capital Markets Board contain all issues that would allow for the pursuance of the interests of market participants.

Market Directives regarding the rules, principles and procedures with respect to the design of the system and the market functioning and practices are approved by Bank's Board of Directors. Market Directives are also approved by the Capital Markets Board/ CBRT; and in this context, the interests of stakeholders are also taken into account by the supervisory authority.

The arrangements regarding the relevant markets and the risk management practices implemented in relation with the central counterparty service and the information on current fees are published in detail on Takasbank website. The said arrangements/fee revisions undergo the processes of approval by the Board of Directors and the CMB as required and shared with Bank's members via announcements or general letters.

The Bank has prepared Takasbank Conflicts of Interest Policy Directive approved by the Board of Directors, which regulates the relationships of all Bank employees including the Board Members with clients, among themselves, and with the shareholders. In addition, the Bank has also issued Takasbank Ethical Principles Directive approved by the Board of Directors and Takasbank Gifting Procedure within the knowledge of the Board of Directors in order to address the issue in detail from all aspects. These procedures and directives are announced to all Bank employees; and in case of amendments, the most recent version is first sent to the BoD for approval or information and then announced to all Bank employees, thus raising awareness within the Bank. The said directives are also published on Bank's website.

In addition, customer satisfaction surveys held every year cement the Bank's continuous improvement-focused service approach by ensuring that the impact that the services have on the counterparty are measured and necessary improvements, if any, are made.

Takasbank Corporate Governance Principles Directive has been issued, encompassing the content of the corporate governance policy that will provide guidance for the management of the Bank in a transparent, accountable, responsible and equitable manner; the roles and responsibilities of the Corporate Governance Committee to be established pursuant to the policy; the arrangement of the Bank's relationships with its shareholders, stakeholders, regulatory and supervisory authorities, managers and employees in accordance with the principles of integrity, reliability, impartiality, confidentiality and equality; and the Bank's responsibilities regarding the environment and social life.

According to the Corporate Governance Policy established under such Directive;

- Necessary measures are taken to ensure that the Bank's Senior Management and all levels of management fulfil their duties in a manner that is effective, fair, transparent, accountable and free of conflicts of interest. All levels of management are allowed to take the decisions required by their responsibilities that they have undertaken in the Bank's management. In the election or appointment of the members of the Board of Directors that will take office pursuant to the relevant legislation

and the Bank's Articles of Association and bear the qualifications to make objective and independent assessments about the Bank's operations, it is required as a condition precedent that they should have the qualifications and meet the requirements stipulated in the relevant legislation; in addition, such members are evaluated in detail for any issues that may create any conflicts of interest within the scope of corporate governance practices.

- The Bank does not discriminate between its shareholders and its members that are not the shareholders of the Bank when it comes to determining the fee and commission tariffs in Banking operations. Relationships with shareholders and clients are conducted in a fair, transparent and accountable manner.

The Bank has established a Corporate Governance Committee comprising at least 2 members to be selected by the Board of Directors from and among the Board Members, in order to monitor the Bank's compliance with corporate governance principles, to make improvements and to submit recommendations to the Board of Directors in relation thereof. It is essential that the Committee Chairman is an independent Board member; and the other member(s) is selected from among the Board Members that have no executive duties. The committee identifies the conflicts of interest resulting from the failure in full compliance with the corporate governance principles, and ensures that necessary policies are established to manage such conflicts. It follows the processes of development and updating of the standards, policies, instructions and implementation procedures with respect to the Bank's operations and transactions. It reviews important complaints and claims constituting the subject matter of corporate governance practices and presents to the Board of Directors its opinions and recommendations related thereof. These processes are already documented in the Corporate Governance Principles Directive; and the relevant legislation has been announced to all Bank employees. Furthermore, the Corporate Governance Principles Compliance Report contained in our annual report is also disclosed to the public.

The CCP members also exist among the shareholders of Takasbank and they are represented at the Board of Directors. In addition, the Board of Directors has approved Takasbank Directive on the Establishment, Duties and Working Principles of the CCP Risk Committee prepared in order to ensure the establishment of a CCP Risk Committee that will make recommendations to the Board of Directors, and in which members and their clients will also be represented. This committee allows members and their clients to contribute to the risk management activities conducted on the markets where CCP service is provided and the committee ordinarily convenes in March and April. Within the framework of Takasbank Directive on the Establishment, Duties and Working Principles of the CCP Risk Committee, article 5 regulates the composition and structure of the Committee; article 6 sets forth the operating principles and procedures; and article 7 stipulates the duties and authorities in detail.

The disclosures to be made to the stakeholders and the public are concretely stipulated in article 40 of the Directive on Central Counterparty Risk Management Implementation Principles. Accordingly, the following information is disclosed to the members and the public to ensure transparency in the CCP services provided by Takasbank:

a) For the Governance arrangements;

- Issues relating to the organization and corporate governance;
- Audited financial statements for the latest period;

b) For the business rules;

- Regulations, directives and procedures;
- Information related with the bank's central clearing and settlement services;
- Principles regarding the risk management, membership and default management;
- Assets accepted as collateral and collateral valuation haircuts;
- Monitoring and segregation of collaterals and the characteristics of collateral accounts;
- Trade margin requirements and guarantee fund parameters;
- Summary results for the stress tests and the backtesting;
- Current CCP members;
- The volume of transactions cleared daily;
- Average margin amount required in the market;
- Clearing commissions and fees;
- Technical requirements for the system communication protocols.

With regard to the data to be disclosed to public, due attention is paid to the protection of trade secrets as required by the BRSA, CMB and CBRT regulations. In the disclosure of results related with stress tests, the names of members are not disclosed. The notifications to be made to the authorities and the disclosures to be made to the members within the framework of default management are provided in articles 9 and 14/4 of the Directive on Central Counterparty Default Management Implementation Principles.

Takasbank Assessment Result for CPMI-IOSCO Principle 2

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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We are of the opinion that the corporate governance framework that Takasbank is subject to pursues the interests of both Takasbank and its stakeholders and the public as well as the financial stability; and thus, it observes principle 2.

Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Key considerations

- 1. An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.*
- 2. An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.*
- 3. An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.*
- 4. An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.*

Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational and other risks.

Key considerations

3.1. An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

Risk management policies and procedures are prepared by the Risk Management Unit and presented to the Audit Committee, which then approves them if it considers appropriate and submits them to the Board of Directors for approval. The policies and procedures approved by the Board of Directors are transferred to a platform (system) accessible to all Bank employees and also notified to the personnel via e-mails.

The Board of Directors is responsible for establishing the system necessary for assessment of the risks that the Bank is exposed to, developing a system that will be associate the Bank's risks with its level of capital, and determining the necessary methods for monitoring compliance with internal policies.

The Audit Committee is responsible to assess whether the necessary methods, tools, and implementing procedures are in place to identify, measure, monitor, and control risks that by the Bank is exposed to.

In risk management, the approach of three lines of defence is run, comprising business line management, central risk management function, and independent review process.

- In business line management, the risks arising from the products and services offered by each unit of the Bank, and the processes, human resources and systems used are identified; the service and subservice-based risks and controls are defined and the Senior Management is informed, ensuring that appropriate actions are taken.
- The central risk management function is ensured by establishing risk and control systems within the Bank, segregating the roles and responsibilities, and having the processes and functions reviewed by the Risk Management Unit and the Internal Control and Compliance Unit, other than the operational units that execute them.
- The independent review process is comprised of the assessment of the risk management and internal control framework from all aspects, and this function is executed by the Internal Audit Unit.

While Pillar 1 risks that the Bank is exposed to are the credit risk (including the counterparty credit risk), market risk (including the specific risk) and operational risk (including the legal risk); Pillar 2 risks are the liquidity risk, interest rate risk in banking book, and central counterparty general business risk. Due to the fact that any disruption likely to occur in the services offered by the Bank could affect all capital markets due to the nature of the Bank's structure and activities, particular importance is given to the business continuity risks. Business continuity risks are categorized under operational risks. All financial and non-financial risks that Takasbank is exposed to are identified, measured and limited with credit, risk, trade, collateral, custody or concentration limits; the signal values which would trigger the warning mechanism upon approaching to the risk limits are determined; the legal and/or internal capital is allocated for the risks; and the decision-making and management mechanism and the measures to be taken in case of physical or financial emergency situations are already specified.

The risks that are defined by each unit of the Bank on a service and subservice basis are monitored through the Operational Risk Database as per Takasbank Operational Risk Management Procedure. In the Operational Risk Database that is updated at least once a year, subservice risks and controls established in relation to such risks can be defined in an open platform that is accessible to the Bank personnel at all times by service owners and/or risk and control supervisors, after holding mutual meetings with all units under the coordination of the Risk Management Unit and Internal Control and Compliance Unit, based on the Bank's Service Catalogue. The records related to the said database also provide inputs for the annual internal audit and internal control activities as well as the Governance Statement document. The actions recommended for the risks with net risk level equal to or above the operational risk appetite and key risk indicators are monitored by the Internal Control and Compliance Unit, and these risks are reported by the Risk Management Unit to the Senior Management and it is ensured that necessary actions are taken.

The Board of Directors is the body responsible at the highest level for the establishment of an efficient risk management function within the structure of Takasbank and the supervision and oversight of the sufficiency of this function. The regulations made by the Board of Directors and listed in an itemized manner in (2.6) above provide a comprehensive, consistent and robust risk management framework for identification, measurement, monitoring and management of the risks. The regulations forming the risk management framework are prepared under the coordination of the Risk Management Unit or the Central Counterparty Department, as the case may be, by obtaining the opinions of the Legal Consultancy and the business units; and are submitted to the Board of Directors by the General Manager or the Audit Committee.

Takasbank's risk management framework is reviewed at least once a year; and its currency is maintained. The efficiency of the risk management policy, procedures and systems is assessed by the Internal Control and Compliance Unit and Internal Audit Unit through internal control and audit activities. It is essential that

the policies, procedures and systems are up-to-date and comply with legislation; and the activities for keeping the Bank's internal legislation, job descriptions and workflows up-to-date are conducted by all units of the Bank under the coordination of the Internal Control and Compliance Unit. In addition, these issues are also audited by independent auditors, external auditors focusing on business continuity and information security, as well as regulatory and supervisory authorities.

Takasbank manages the risks arising from CCP activities at three stages; (i) before assuming the clearing and settlement risks; (ii) while assuming the clearing and settlement risks; and (iii) after assuming the clearing and settlement risks.

In the first stage;

- the financial strengths of those to be accepted to the CCP membership are measured;
- a risk limit is allocated to the members accepted to the CCP membership pro-rata to their financial strengths;
- a written commitment is obtained from the boards of directors of the institutions to be accepted to the CCP membership, indicating that they will ensure and constantly maintain the adequacy of their information technologies, internal control and risk management systems;
- the amount to be used from Takasbank capital for the counterparty credit risk and market risk that the bank may be exposed to in case of default of the members is calculated and allocated as the CCP default management resource (for covered risks);
- internal capital is allocated for the CCP general business risk;
- the types of collaterals that may be deposited by the members as trade margin requirements or guarantee fund contribution amount, the composition limits for the collaterals to be deposited (minimum and maximum rates) and the collateral valuation haircuts are determined;
- the initial margin and guarantee fund contribution amounts required to be deposited by the members against the positions (risks) to be taken are calculated through statistical methods and at high confidence levels.

In the second stage;

- The risk generated/to be generated by the positions taken/intended to be taken by the members and the collateral requirement are estimated/calculated;
- Whether or not the risks taken/intended to be taken by the members are exceeding/will exceed their limits is checked;
- Whether or not the collateral and the guarantee fund contribution amount that will cover the risks taken/intended to be taken are available/deposited is controlled.

In the third stage;

- The positions and collaterals of the members are updated with daily market prices and the variation margin amounts are calculated;
- Margin calls are placed to the holders of loss-making positions and/or the members for which a collateral obligation arises;
- The compliance of the members with the individual risk and collateral compositions and limits is monitored;
- The market-wise compliance with the liquidity and concentration risk limits is monitored;
- The adequacy of both the guarantee funds and all default management resources are controlled with stress tests;

- Whether or not the risk parameters and collateral valuation haircuts constituting the basis for calculation of trade margin requirements and guarantee fund contribution amounts maintain their validity is controlled through backtesting;
- Takasbank Internal Audit Unit conducts on-site audits at the selected CCP members regarding the adequacy of their information technologies, internal control and risk management systems;
- Takasbank Internal Audit Unit reviews the CCP risk management processes and models;
- The Risk Management Unit tests the sufficiency of Pillar I and Pillar II capital allocated for the financial and non-financial risks through stress tests at the corporate scale;
- The Internal Control and Compliance Unit controls the parameter changes, legislation, stress tests, back-tests, guarantee funds, risk parameters, collateral valuation haircuts and the calculations related with allocated and committed capitals;
- Cash trade margins and guarantee fund contribution amounts received from members are taken into account in Pillar I regulatory capital adequacy calculations according to the accounts they are held in Takasbank assets.

In fact, the risks arising from the interest accrued by Takasbank over cash trade margins and guarantee fund contribution amounts deposited by the CCP members to the accounts held with Takasbank, their transfer to other banks or their safekeeping at the depository institutions are managed in an extremely effective manner in accordance with the protection provided with the second paragraph of article 73 of the Capital Markets Law no. 6362.

Pursuant to article 73/2 of the Law no. 6362; the collaterals held at the clearing and settlement institutions to prevent the clearing and settlement risks and the assets in the guarantee fund established cannot be used for any purposes other than their intended purposes; they may neither be seized even for collection of public receivables, nor pledged, nor affected by the liquidation decisions of administrative authorities, nor included in a bankrupt's estate, nor be subject to a precautionary attachment that may be imposed on them. Takasbank may, pursuant to the CCP Regulation, accrue interest on cash margin requirements and guarantee fund contribution amounts deposited by CCP members; and the interest income is transferred to the accounts of collateral owners after the deduction of Takasbank commission. In the interest accrual process, either O/N term deposit accounts opened exclusively at the banks or the GDDS-based reverse repo transactions can be used in accordance with the Directive on Central Counterparty Collateral Management Implementation Principles. In case special deposit accounts are preferred, the accounts are opened by segregating on the member's portfolio and customer basis for each market to which CCP service is provided, and it is notified in writing, as a warning, to the bank in which the accounts are opened that monies deposited to such accounts are assets protected under article 73/2 of the Law no. 6362. Thus, the collaterals belonging to the CCP members or their customers and delivered to Takasbank by the CCP members are protected from the bankruptcy or liquidation of both Takasbank and the banks/ institutions where the accounts in which Takasbank deposited such collaterals are held, as well as from any proceedings of the creditors of both Takasbank and other banks or institutions where the collaterals are deposited or kept under custody.

In addition, pursuant to article 73/2 of the Law no. 6362, the trade margins and guarantee fund contribution amounts delivered to Takasbank in the markets to which central counterparty service is provided may only be used to cover the risks and obligations arising from the positions taken by the members or their customers.

Article 23 of the Directive on Central Counterparty Collateral Management Implementation Principles approved by Takasbank Board of Directors prohibits the use of trade margins and guarantee fund contribution amounts received for the CCP service to fulfil the obligations resulting from any activity of Takasbank, even for a temporary period, including those arising from other capital market or banking activities of Takasbank; hence, in the management of CCP risks, an extremely strong framework which would also prevent Takasbank's other activities from posing any risk for the CCP activities has been established.

On the other hand, the members' CCP risks can be monitored and assessed collectively with the risks arising from Takasbank's other activities. For example; the total risk of the CCP members is firstly restricted by the upper limits indicating the total risk threshold that they can assume in all markets that they operate in across Takasbank; and the risk limit allocation for the CCP markets is made considering such upper limits. The upper limits set forth for the banks also restrict the guarantee amount that can be received from such banks. The collective monitoring of all risks (CCP and non-CCP) of the members across Takasbank is conducted by the Financial Analysis and Rating Team. The members' risks at different CCP markets can also be monitored collectively by the Central Counterparty Department.

In addition, a CCP Risk Advisory Committee that is in charge of and authorized to present its advisory opinions to the Board of Directors on issues regarding CCP arrangements and the management of CCP risks has been established; the Committee comprises two independent members of the Board of Directors, two members to represent CCP members, and one member to represent the clients of CCP members. Within the framework of Takasbank Directive on the Establishment, Duties and Working Principles of the CCP Risk Advisory Committee, article 5 regulates the composition and structure of the Committee; article 6 sets forth the operating principles and procedures; and article 7 stipulates the duties and authorities in detail.

3.2. An FMI should provide incentives to participants, and, where relevant, their customers to manage and contain the risks they pose to the FMI.

Takasbank has established the necessary infrastructure and made the related arrangements to enable its members to manage and restrict their obligations against Takasbank. The members are able to monitor their obligations against Takasbank, the amounts of their collaterals, their open positions and the transitional profit/loss positions of their accounts through the member screens. Warning messages are also sent to these screens; and the members are provided with all information related to the accounts having an outstanding margin call in the form of a report.

Takasbank shares with the members all information relating to the risk models it uses in the markets to which it provides CCP service and daily publishes the risk parameter files and information used in margin calculations. Members are able to create hypothetical scenarios through the necessary tools and simulate the collateral requirement calculations. When the CCP members exceed the risk-based limits assigned to them; they encounter collateral obligations increased by up to 100%; hence, they become obliged to closely monitor their risk limit and collateral positions. Accounts having a collateral deficit are precluded from engaging in risk-enhancing transactions.

In order to help individual customers to better monitor their risks and collaterals, Takasbank has established a system by which the information about the positions and collaterals held in individual customer accounts opened by CCP members with the Bank/CRA can be monitored directly by the relevant customers through remote access in Borsa İstanbul Futures and Options Market and Takasbank Securities Lending Market.

The CCP members have to take all necessary measures in the markets or capital market instruments to which CCP service is provided to ensure continuity of the required internal control, risk management and internal audit mechanisms in order to become a party to the said service. During the process of admission to CCP membership, Takasbank also takes into account the adequacy of the member's internal systems and technical infrastructure; and Takasbank Internal Audit Team may conduct on-site audits at the members. As prepared by Takasbank based on the fourth paragraph of article 78 of the Capital Markets Law no. 6362, and subparagraph (ç) of the first paragraph of article 7 and the second paragraph of article 8 of the Central Counterparty Regulation, the 'Directive on Information, Risk Management, Internal Audit and Internal Control Systems of Takasbank Central Counterparty Members' was approved by the Capital Markets Board on 10 March 2016. The Directive sets forth the principles and procedures regarding the information systems, risk management, internal audit and internal control activities to be established by the members approved to receive the central counterparty service so as to manage and control the risks that they have undertaken in relation to their obligations towards Takasbank and the oversight of the adequacy of such activities in terms of the provisions of the Directive.

The contributions made by the members to the guarantee funds established for the markets to which CCP service is provided help raise the members' awareness about the risks in the relevant markets.

In addition, all policies, procedures and technical information related with the risk management system practices are disclosed over the website in a transparent manner. On the other hand, a CCP Risk Advisory Committee that will make recommendations to the Board of Directors on important issues likely to affect the markets in which CCP service is provided has been established; and the members of the said committee are comprised of two independent members of the Board of Directors, two members to represent the CCP members and one member to represent the clients of the CCP members.

3.3. An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

Due to the central counterparty and clearing & settlement activities that it conducts, Takasbank has interdependencies with other institutions and service providers. The risks that Takasbank may be exposed to due to the current interdependencies with the service providers such as the Members, Borsa İstanbul, Central Registry (Depository) Agency, Central Bank of the Republic of Turkey and SWIFT as a result of the activities performed are considered important.

The technological interdependence between Borsa İstanbul markets in which trade orders are executed, Takasbank where clearing & settlement and central counterparty transactions are conducted and the Central Registry Agency where the custody takes place is particularly regarded as critical; and for this reason, Borsa

İstanbul, Central Registry Agency and Takasbank conduct joint emergency tests to enhance business continuity.

The support service received from Borsa İstanbul is a service for hosting of the Bank's main systems; and in case of a disruption in the support services provided to the Bank, the services can be maintained over the systems located in Ankara Turk Telekom Data Center, thanks to the fact that there are back-up lines established between Borsa İstanbul Data Center and the Disaster Recovery Data Center located in Ankara. In addition, Borsa İstanbul, CRA and other outsourced service interruptions are monitored on a semi-annual basis within the scope of business continuity, and the Summary IS Risk Assessment Report containing the results is submitted to the Board of Directors at a minimum annual period.. Moreover, these biannually-prepared Risk Assessment Reports related to Information Technologies are sent to the CBRT, together with Takasbank continuity-reliability report and penetration testing report.

The risks related with the CRA and Borsa İstanbul are monitored via the Operational Risk Database and the Operational Risk Loss Database; and there is no loss related with the CRA and Borsa İstanbul in the Bank's Operational Risk Loss Database.

The Bank's risks, arising from Borsa İstanbul and CRA, are assessed with regards to an operational risk, and the operational risks that the Bank is/may be exposed to are comprehensively covered by the purchased insurance policies. Within this scope, Electronic Device Insurance Policy and Comprehensive Workplace Insurance Policy have been taken out by the Bank and electronic/portable device, fire, earthquake, flood/flood, strike, lockout, riots and civil commotions, malicious acts and terrorism, weight of snow, internal water , storm, smoke, landslide, collision of air and land vehicles, debris removal, tenancy/neighborhood liability, theft, glass breakage, third party liability, employer liability, machinery breakage and individual accident cases and losses are defrayed.

Again, "Comprehensive Crime and Professional Liability Insurance Policy" and "Manager Liability Insurance Policy" are procured jointly by Takasbank, BİAŞ and CRA. The risks of theft, damage to offices and contents, threats of cyber attacks on persons, assets, forgery, forged documents, computer and telephone crimes, and data protection risks that may occur due to loss of money and incorrect transfer are defrayed.

Furthermore, the Bank may also ask the relevant companies to take out liability insurance in order to compensate potential damages that might result from the risks that the Bank may be exposed to due to the services procured from supplier companies/service provider companies according to the criticality of the service.

The insurance policies purchased are renewed every year; and the general process related to insurance policies is reviewed annually with respect to all services, including the Bank's operations that must be included in insurance coverage as a result of the Bank's new products or services.

Regarding IT and operational risk management, Takasbank is granted ISO 27001 (Information Security Management Systems) and ISO 22301 (Business Continuity Management System) certificates since 2014. As a requirement of such certificates, Takasbank is audited by independent external auditors every year. Takasbank has aligned all its processes with the ISO 20000-1 IT Service Management system.

The risks arising from the interdependencies in the lines of trading, clearing & settlement and custody are first addressed within the scope of ISO 22301 business continuity; the potential impacts of the risks are analysed, and the critical processes are identified. In the scenarios included in emergency tests routinely conducted at Takasbank, special importance and place are given to the situations in which the connection with other institutions and service providers is interrupted.

In addition, Takasbank signs service level agreements particularly with service providers and uses insurance policies to restrict such type of risks.

For the restriction of risks related to service providers, Takasbank has established all necessary processes in accordance with the banking legislation it is subject to; and it uses qualitative methods to measure the risks and reviews the service provider companies once a year. In addition, such risks are also reviewed once a year pursuant to ISO 27001 standard from the information technologies perspective.

The risk analysis reports and technical adequacy reports prepared for the companies from which Takasbank receives support services, the Support Services Risk Management Program, and the Audit Committee assessment report prepared at least once a year are reported to the Board of Directors. The said reports deal with the risks that the Bank may be exposed to due to the support service received, including dependency risk in particular, the actions that may be taken, the cost-benefit analysis and the substitutability of the service. Besides, the criticality levels of the suppliers are determined by Takasbank and important vendors/suppliers are identified.

The mandatories of the counterparty are explicitly defined in the contracts concluded with external service providers, and different service level agreement provisions (such as the form and duration of intervention, maintenance conditions and penal provisions) are included in the contract depending on the criticality of the service. Reports are prepared so as to monitor compliance with the provisions of the service level agreement are submitted to the Purchasing and Administrative Affairs Team to concretize that the necessary actions are taken. Assessment of supplier performances in line with the said processes related to materiality analysis, preparation of technical competence reports and information records (including risk assessment and exit strategy, etc.) are elaboratively stated in Takasbank Purchasing Directive, Takasbank Purchasing Procedure, Takasbank Supplier Relations Management Procedure, Takasbank Support Service and Foreign Service Procurement Procedure and Service Level Agreements Procedure for Takasbank Foreign Service Procurements. In addition to this, the Directive on Takasbank Information Security Policy and the Statement of Responsibilities for the Utilization of Takasbank Information Assets by External Institutions are annexed to the contracts.

Since Takasbank has a banking license, it has the right to access the liquidity of the Central Bank of the Republic of Turkey; however, the stress tests conducted for the CCP markets with the assumption of concurrent default of two largest members indicate that the occurrence of the need for the liquidity of the Central Bank of the Republic of Turkey is a low possibility even for the greatest defaults to be experienced in the CCP markets (since the trade margin requirements and guarantee fund contribution amounts are kept in extremely secure accounts with O/N maturities, as explained in (3.1) above). However, in case of need, resources allocated or committed from Takasbank capital as default management resources and invested to the GDDSs can be liquidated on the same day through the Central Bank of the Republic of Turkey. IN

addition, bank guarantees are not accepted as collateral in the markets to which CCP service is provided; and thus, the dependency to the liquidity of the banking sector is mitigated in the markets to which CCP service is provided.

3.4. An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

In addition to the Business Continuity Plan and the Emergency Plan related to physical risks, Takasbank also has a Recovery Plan and an Orderly Wind-Down Plan related to financial risks, which are approved by the Board of Directors and reviewed on an annual basis. Among the scenarios addressed in the recovery plan, there are critical incidents such as exposure to unexpected losses due to the members' default or other reasons, encountering liquidity shortfalls, etc. Given the robust capital structure of Bank, the recovery plan has been designed to prevent any wind-down and maintain the continuity of services by taking the actions listed in the plan. Takasbank Orderly Wind-Down Plan includes the actions designated in regulations published by the CMB, which should be taken in the wind-down of CCSI operations carried out by Takasbank and the actions to be taken pursuant to the Payment Systems Law in the event that the licenses/permits given by the CBRT for the payment and securities settlement systems-related activities conducted by Takasbank are cancelled/transferred to other institutions.

The principles for replenishing the exhausted portion in case of usage of default management resources are already set forth in the CCP legislation; and the CCP members warrant to fulfil their unfunded guarantee fund obligations under their membership agreements. Furthermore, the legislation grants Takasbank the power to use profoundly effective recovery tools like variation margin haircutting, forced transfer or termination of positions, etc. under extraordinary circumstances; and the said powers of Takasbank are also incorporated into the membership agreements.

Takasbank also sets aside capital for the general business risk and recovery costs. In 2020, the amount of the internal capital set aside as the provisions for CCP business risk and recovery risk was approximately TL 56 million. In the Central Counterparty Default Management Practice Directive approved by Takasbank Board of Directors, the 'termination of CCP activities' has been specifically regulated and stated as follows:

- If the CCP service provided by Takasbank is terminated for any reason, the current positions and collaterals shall be ported to another institution that may be commissioned as a central counterparty by the Capital Markets Board in accordance with the legislation or Takasbank shall, if deemed appropriate by the Board, continue its clearing and settlement and collateral management services without acting as a central counterparty;
- In case of occurrence of any conditions which would prevent Takasbank from continuing its clearing & settlement or central counterparty services and the positions and collaterals cannot be ported to another institution; then, the positions and collaterals shall be liquidated in accordance with the principles to be determined by the Capital Markets Board.

Thus, it seems as a natural consequence that the developments related with termination of CCP activities will be required to be directed by the authority.

In Bank's business continuity management system (BCMS), disruption scenarios are determined after all parties assess potential cases in which the resources (assets) that are critical in the provision of services are identified and such resources become unavailable, useless, or inaccessible for any reason whatsoever. Resources at Bank have been grouped in 6 categories:

- Financial Assets (Money),
- Human Resources,
- Facilities (workplaces and equipment/hardware),
- Technology (applications, infrastructures, and all other related IT assets),
- Suppliers (Türk Telekom, etc.) and
- External Organizations that we depend on for Bank's Services (the institutions that we are technologically dependent on in the provision of Bank services, including Borsa İstanbul, CRA, CBRT, SWIFT, EMOC, correspondent banks, etc.)

The cases in which each resource might become temporarily or permanently unavailable are analysed both by service managers as part of the Operational Risk Database activities, and by the BCMS Team from a business continuity perspective; and risks are identified and reviewed on an annual basis. Occupational health and safety risks are incorporated into the risks of the related unit, i.e. the Human Resources and Support Services Department and thus covered under insurance. The BCMS Team also enriches business continuity risks by assessing all stakeholders outside the Bank (neighbours, partners, statutory regulatory authorities, employees and their families, supplier groups, etc.) through the relevant party analysis it carries out.

There is a total of 23 different business continuity disruption scenarios defined at Takasbank as follows:

- Unserviceability of the Bank building (the building's exposure to earthquake or an earthquake risk, acts of terrorism in front of the building, lack of access to the bank due to natural disasters, actual or a threat of fire or flooding in the building or other situations that may endanger employee safety, power outages due to any breakdown in power supplies)
- Breakdown in the systems and backups at the Primary Data Center (PDC) (exposure to earthquake, fire, flood, power outage)
- Configuration / hardware / software problems in the Primary Data Center (PDC) firewall, spine switch, load balancer, virtualization systems and their backups stored in the PDC
- Breakdown of the primary and also the backup virtualization system at the Primary Data Center (PDC)
- Hardware / configuration / software problems in the banking database servers
- Loss of data integrity in the banking database (breach of information security, human / process / application error)
- Hardware / configuration / software -related problems in the application and/or web and/or queue servers and their backups
- Lack of access by members and other stakeholders and lack of internet connectivity within the bank due to a hardware / configuration / software – related problem in the Internet and local routers and their backups

- Problems occurring in Borsa İstanbul BDC extranet lines and their PDC backups
- Hardware / configuration / software problems in the CRA messaging queue servers
- Hardware / configuration / software problems in BISTECH application and/or queue servers
- Hardware / configuration / software problems in EFT GW application and/or queue servers
- Hardware / configuration / software problems in SWIFT Backoffice and SWIFT application and/or queue servers
- Loss of data integrity in SWIFT database servers (breach of information security, human / process error)
- Problems occurring in BISTECH primary and backup hardware
- Corruption / deletion of one or more of the objects (.exe, stored procedure, tables, etc.) that are necessary for the proper functioning of applications
- Problems in the messaging interface system that allows for data communication with the CBRT
- Problems in the webservice messaging or lines of communication between us and EMOC
- Service provider-related problems in SWIFT communications
- Hardware problems occurring simultaneously in the primary and backup domain servers
- The issue of corruption of the operating system (Linux, Windows) configuration data and/or software
- The issue of lack of internet access inside or outside the bank attributable to internet service provider/s
- The issues making critical services non-functional or creating a performance problem as a result of denial of service attacks (DOS, DDOS, hacking, etc.) to the externally accessible services of the Bank

The disruption scenarios listed above have been analysed and designated so as to include all risks defined in the Operational Risk Database; and they cover independent and relevant risks that the FMI is exposed to.

Takasbank Assessment Result for CPMI-IOSCO Principle 3

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank has a robust risk management framework allowing for comprehensive management of all risks that it is exposed to.

Principle 4: Credit Risk

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Key considerations

- 1. An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.*
- 2. An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.*
- 3. [N/A for CCPs]*
- 4. A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.*
- 5. A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the OOP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when*

the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a OOP's participants increases significantly. A full validation of an OOP's risk-management model should be performed at least annually.

6. In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

7. An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Key considerations

4.1. An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

Credit risk management framework is included in Takasbank Risk Management Regulation. In this context, the maintenance of the Bank's activities in a manner not exceeding the legal and internal capital limits and remaining below the risk appetites determined by the Board of Directors in general and on the basis of risk types constitutes the Bank's risk policies on the basis of risk types.

The capital amount that the Bank will need within the next three-year period for the risks that the Bank will be exposed to is calculated for the base, negative and extremely negative scenarios in the ICAAP Report prepared pursuant to the Regulation on Banks' Internal Systems and Internal Capital Adequacy Assessment Process. If, pursuant to the legislation that the Bank is subject to, the Bank's capital adequacy level falls below the targeted rate calculated within the framework of ICAAP, an action plan that will allow the Bank to swiftly raise the capital adequacy above the target rate is prepared and presented to the BRSA. There were no occasions in which the Bank's current capital adequacy level remained below the target the rate.

It is required that the risk management processes, policies and implementing procedures should be adapted to changing conditions. The Board of Directors regularly reviews the adequacy of such policies and implementing procedures, and makes the necessary changes.

The credit risk appetite is reviewed at least once a year. Credit risk limits and signal values are reviewed according to the changes in market conditions and the Bank's strategy.

Pursuant to Takasbank Internal Capital Adequacy Assessment Process Directive, ICAAP is reviewed annually. If there are any changes likely to cause material impacts on the Bank's strategies, business plan, operational framework or the assumptions and methods used by the Bank within the scope of ICAAP; necessary adjustments are immediately made in ICAAP, without waiting for its periodical review.

Takasbank Recovery Plan containing credit risk-related actions is reviewed at least once a year with the participation of all relevant units of the Bank under the coordination of the Risk Management Unit.

For management of the risks that Takasbank may be exposed to due to the CCP services it provides, Takasbank applies the risk management framework comprehensively explained in Principle 3 and reviewed at least once a year. Takasbank manages the credit risks that it is exposed to under its CCP service in accordance with the following considerations.

- Credit risk is restricted with the risk limits set forth considering the individual creditworthiness of the members.
- In case of default of members, an initial margin with 99,5% confidence level and two-day margin period is requested to cover the losses likely to occur during the period that will elapse until the settlement of the positions.
- Positions and collaterals are valued with current market prices on a daily basis and a margin call is issued for the accounts having a collateral deficit.
- Increased collateral obligations are imposed on the members exceeding their risk limits; and if such exceedance reaches a specific level, the members are prevented from executing risk-enhancing transactions.
- The size of the guarantee funds funded by members is determined at 99,9% confidence level and by taking account of the first member with the largest exposure or the total sum of the second and third members with the largest exposure.
- Members also make commitments for their unfunded guarantee fund obligations.

- Takasbank capital can be used in the default management in two separate tranches as before and after the guarantee funds of non-defaulting members.
- Total default management resources must cover the risk that would arise in the event of default, together with the two members with the highest risk from the minimum, as well as their subsidiaries and/or parent companies.

As particularly explained in Principle 3.1, Takasbank has a robust risk management framework that will also allow for efficient management of the possible credit risks that the bank may be exposed to in the safekeeping and utilization of the trade margins and guarantee fund contribution amounts deposited by the members and pertaining to the members or their customers.

All risks of the members at Takasbank are restricted and monitored both individually on the basis of market and transactions and collectively through the credit, risk, trade, collateral, and custody limits allocated by the Board of Directors.

4.2. An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

The failure of the system-participant brokerage firms and banks to fulfil their settlement obligations towards Takasbank completely or timely is defined by Takasbank as credit risk. The credit risk may result either from the system participant's failure in fulfilling its obligations towards Takasbank completely or timely, or from the size of depreciation in the values of assets accepted and received as collaterals against such risks falling short of covering the potential loss in case of any default.

However, trade margins and guarantee fund contribution amounts deposited by system participants to Takasbank are placed at certain institutions for investment or safekeeping purposes. In addition, Takasbank features placements as part of its banking operations. Takasbank may face credit risk if relevant institutions fail in fulfilling their repayment obligations towards Takasbank with respect to such placements.

The credit risk may result either from the payment, clearing and settlement processes in the system, or the cash credit practices and treasury practices processes that are not directly related with clearing and settlement, but the system participants may be involved in.

In the Bank, the credit risk is measured on a monthly basis using the standardised approach in accordance with the provisions specified in the Regulation on Measurement and Assessment of the Capital Adequacy of Banks published by the BRSA and the relevant secondary arrangements; and then reported to the BRSA via the legal forms designed by the BRSA.

Furthermore, the Bank's Board of Directors has established five concentration limits and signal values in order to control the credit risk. Such credit risk concentration limit values are monitored by the Risk Management Unit and notified to the Senior Management and the Bank's relevant units via e-mails on a daily basis.

The Risk Management Unit reports any breaches exceeding the signal values to the Audit Committee, Senior Management and the relevant unit managers responsible for risk via e-mail. In case of exceeding the allocated risk limits and risk appetite, written information is given to the Audit Committee by the Risk Management Unit to notify the Senior Management and the Board of Directors in order to take the necessary measures.

Banking activities related to credit risk are carried out by business units with a risk-oriented perspective and with software developed and used with this approach. The primary responsibility to review credit risk limits and the responsibility to oversee that the risks assumed by the Bank are within the designated risk limits and are monitored by the Bank's Senior Management rest with the Board of Directors.

Banking activities related with credit risk are maintained by business units with a risk-focused perspective. In addition to the controls performed by business units (daily reconciliation, dual approval mechanism, etc.), the activities of units are periodically audited by the Internal Audit Unit conducting reviews and audits on behalf of the Board of Directors; and are controlled by the Internal Control and Compliance Unit with a risk-based approach at specific intervals.

Takasbank adopts the delivery versus payment (DvP) principle in order to allow for collective execution by Takasbank of the settlement of the highest number of records at determined intervals with the purpose of controlling the credit risk arising from the clearing and settlement processes. In this context, the receivables of the members not fulfilling their clearing and settlement obligations are not paid, and the receivables that are released against the obligations partially fulfilled are also partially paid. The details regarding the fulfilment of cash and securities obligations and the distribution of receivables are provided in the relevant market procedures.

The member risk limit in the markets to which we provide Takasbank CCP service restricts the total sum of the initial margin amount required to be deposited, which is calculated with a minimum 99,0% confidence level and for two-day margin period and the variation margin amount not collected yet, if any.

The members' risks are updated and monitored by intraday and end-of-day valuation of their positions and collaterals with current market prices. The collateral deficits occurring under normal conditions should have been remedied on the next business day at the latest through collateral enhancement and/or risk mitigation methods. In the markets to which CCP service is provided, the members are allowed to go one level above the limit allocated to them providing that they deposit additional collaterals. When the said levels are reached, the members are not able to trade even against cash collaterals unless the risk limit has been increased by the Board of Directors.

The credit risk that may be faced due to the institutions where the trade margins and guarantee fund contribution amounts delivered by members to Takasbank are invested or kept in custody is also monitored within the limits allocated to such institutions by the Board of Directors. In addition, with article 73/2 of the Law no. 6362, it is aimed to minimize the credit risk that might arise from such operations.

Similarly, in the markets to which CCP service is provided, in order for the non-cash collaterals to be safe-kept at the depository institutions resident abroad; such collaterals should have the necessary legal protection in case of bankruptcy or liquidation of the depository institution or against the claims that may be raised by

the creditors from such depository institution; and a limit should have been allocated by the Board of Directors for the relevant depository institution; as for the limit allocation as such, the depository institution must have received, at minimum, an investable rating from the international rating agencies.

4.3. A payment or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral or other equivalent financial resources. In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of participants and their affiliates that would create the largest aggregate credit exposure in the system.

Takasbank manages the credit risks that it is exposed to in accordance with the following considerations.

- Credit risk is restricted with the risk limits set forth considering the individual creditworthiness of the members.
- In case of default of members, an initial margin with 99,5% confidence level and two-day margin period is requested to cover the losses likely to occur during the period that will elapse until the settlement of the positions.
- Positions and collaterals are valued with current market prices on a daily basis and a margin call is issued for the accounts having a collateral deficit.
- Increased collateral obligations are imposed on the members exceeding their risk limits; and if such exceedance reaches a specific level, the members are prevented from executing risk-enhancing transactions.
- The size of the guarantee funds funded by members is determined at 99,9% confidence level and by taking account of the first member with the largest exposure or the total sum of the second and third members with the largest exposure.
- Members also make commitments for their unfunded guarantee fund obligations.
- Takasbank capital can be used in the default management in two separate tranches as before and after the guarantee funds of non-defaulting members.
- From the total default approach, the member with the highest risk from the minimum level should be considered as risky to default along with line completions and/or main applications.

In the markets to which CCP service is provided, Takasbank conducts stress tests as outlined below.

- With stress tests, the sufficiency of current and potential financial resources for CCP services is tested considering the financial asset price changes that will occur under extraordinary market conditions. In stress tests, extreme market conditions are determined using statistical, historical and/or hypothetical scenarios.
- The stress testing program analyses, at least, whether the trade margins, guarantee funds and other financial resources, including the capital amounts allocated and committed from Takasbank's own capital, ensure the Bank with the two members with the highest risk, as well as their subsidiaries and/or parent companies. analyzes whether it is large enough to protect against potential loss due to

default. In such analysis, the Bank's borrowing and access to liquidity capabilities are also evaluated.

- With the stress testing practice, it is also tested whether the trade margins and guarantee funds are sufficient to provide protection against the greater of the risks that may result from the default of the member with the largest exposure and the concurrent default of the second and third members with the largest exposure.
- In stress tests, the fact that the correlations between the contracts subjected to settlement may change under extraordinary market conditions. Therefore, the correlation effects may be addressed with a prudent approach or not included at all in stress testing scenarios.
- In stress tests, the effect of the changes that may occur in the holding periods is taken into account.
- The sufficiency of liquid resources is also measured in the stress tests.
- Stress tests are applied by the Central Counterparty Department on a daily basis. Stress test results and the measures proposed to be taken, if any, are presented to the Board of Directors via internal system units monthly and quarterly (at least four times a year by the periods of March, June, September, and December). Stress test results submitted to the Board of Directors are reported by the CCP Department to the Board. Stress test results are also presented to the CCP Risk Committee at least by the periods of June and December. In addition, stress tests are also conducted at monthly intervals without waiting for the end of quarters and reported to Takasbank Board of Directors.

In addition, the backtesting results of the models used in calculation of the parameters related with the initial margin and the measures proposed to be taken, if any, are presented to the Board of Directors through internal system units at least four times a year by the periods of March, June, September, and December. Backtesting results are also submitted to the CCP Risk Committee at least by the periods of June and December.

4.4. A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systematically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to the amount of total financial resources it maintains.

Takasbank undertakes the completion of settlement of the positions generated in the markets to which central counterparty service is provided; and, accordingly, it runs a multi-layered defense mechanism that would step in should the need arise. This mechanism is comprised of the trade margins received from members, the funded guarantee fund established with the contributions of the members and the unfunded guarantee fund commitments of members, plus Takasbank capital that can be used in default management.

In Takasbank CCP model, the safety of both the market and Takasbank is addressed at the highest level. In CCP default management, Takasbank's capital can be used in two separate tranches as allocation and commitment. The use of the portion allocated from Takasbank capital to the CCP default management (SIG

– *skin in the game*) before the guarantee fund contribution amounts of the non-defaulting members is compulsory. On the other hand, the second portion committed from Takasbank capital to the CCP default management shall be used after the funded and unfunded guarantee fund obligations of the non-defaulting members.

The default management resources and their sequence for use are shown in Figure 3; and the relevant arrangement is laid down in article 36 of the CCP Regulation.

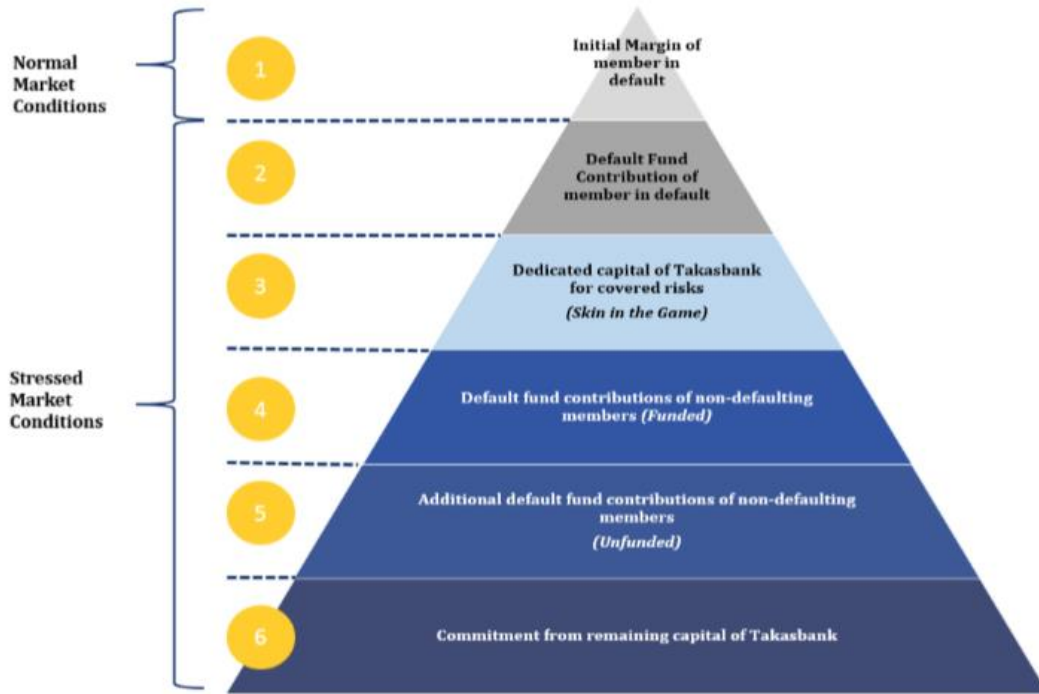


Figure 3- Takasbank CCP Default Management Resources and Order of Use

The calculation of the capital allocated and committed from Takasbank capital to the CCP Default management is made in accordance with Basel 2 capital adequacy arrangements and EMIR master document no. (EU) 648/2012 of the European Union and EMIR technical arrangements no. (EU) 152/2013 and (EU) 153/2013 on the capital adequacy and default waterfall of the central counterparty institutions (See Figure 2); and the capital amounts allocated and committed separately by the markets to which CCP service is provided upon the Board of Directors' decision and the period in which they will be applicable are disclosed to the public.

The use of Takasbank capital in CCP default management has been designed in a manner that would enable Takasbank to survive under all circumstances, but also to use its entire capital remaining above its regulatory and internal capital obligations, where necessary. Pursuant to paragraph 6 of article 36 of the CCP Regulation, the payments to be made in advance by the shareholders or other people and institutions so as

to be used in Takasbank's potential capital increase as well as the equity and quasi-equity resource commitments of irrevocable nature may also be added to the capital committed in default management. Therefore, Takasbank has generated default management resources sufficient to cover much more than the resource requirement that might be faced in case of default of its one or two members with largest exposure under extreme market conditions.

The sufficiency of the total default management resources is tested through stress tests regularly conducted on a daily, monthly and quarterly basis. Although Takasbank's central counterparty activities are limited to Turkey, the principle of two members with the largest exposure is applied in testing the sufficiency of the default management resources. The results of the comprehensive stress tests conducted by quarterly periods are reported to the Board of Directors and the Capital Markets Board in the form of a written document. According to the scenarios, the risk arising in case of default with the two members that would pose the greatest credit risk, as well as their subsidiaries and/or parent companies, is fully covered by the additional financial resources of the CCP.

In the margin calculations, Takasbank seeks to calculate the risks carried by the members during the time interval in which the positions taken by them remains open in an accurate and timely manner and to manage the margin-collateral balance in an efficient manner. In order to ensure that the initial margins reflect the risk on a near real-time basis, decisions are made by analysing specific conditions such as the confidence levels to be used in parameter calculations, holding periods and the length of the data set to be applied. In addition, article 18 of Takasbank CCP Regulation has set forth minimum conditions, stipulating that initial margin calculations should be made with a minimum 99% confidence level and 2 business day-holding period and on the basis of 12-month historical data.

In order to ensure that the initial margins reflect the risk on a near real-time basis, decisions are made by analysing specific conditions such as the confidence levels to be used in parameter calculations, holding periods and the length of the data set to be applied; and in determining the parameters, risk characteristics such as the complexity of assets traded in the market and uncertainties in their pricing, volatility, durations, liquidity, non-linear price characteristics, specific wrong-way risk, etc. and the extent to which other risk controls in the market restrict the credit risks, the degree of difficulty in closing out the positions or the concentration level of the trades in the market on several members are taken into account.

In the context of CCP practices, the processes related with the calculation, establishment and monitoring of the initial margin, variation margin, guarantee fund contribution amount and additional guarantee fund contribution are provided in detail in the Market Procedures; and the required detailed explanations about such issues are made via general letters/announcements. In addition, it is aimed to ensure that the said margin requirement and its sufficiency are in compliance with international arrangements.

Since Takasbank's CCP activities are limited to Turkey, CCP is not systematically important in multiple jurisdictions.

4.5. A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to

appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.

Takasbank conducts stress tests on a daily basis and by daily, monthly and quarterly periods for the markets to which it provides central counterparty service, by taking into account many risk factors such as exchange rates, stock and debt instruments, interest rates, etc.; and the sufficiency of current and potential default management resources is tested under extreme market conditions. In addition to testing whether these resources are sufficient in case of default with at most two members as well as their subsidiaries and/or parent companies, the transaction collateral and guarantee fund will arise as a result of the default of the member with the highest risk and the joint default of the member with the second and third highest risk. It is also checked whether it is sufficient to protect against the greater of the risks. In addition, the effect of any changes that may occur in the holding periods is also taken into account, and the adequacy of liquid resources is also measured.

The stress tests for the sufficiency of total default management resources are conducted on a daily and monthly basis; and their results and the measures proposed to be taken, if any, are submitted to the Audit Committee and the Board of Directors through the internal system units at least four times a year (on a quarterly basis). The stress test results submitted to the Board of Directors are also reported by the CCP Department to the Capital Markets Board. In addition, test results are also presented to the CCP Risk Committee at least twice a year.

According to article 37 of the Directive on CCP Risk Management Implementing Principles; it is possible to use statistical, historical or hypothetical scenarios in the stress tests; and in practice, a 'base-case' historical scenario statistically determined with minimum 99,5% confidence level is supported with two historical worst-case scenarios tested since 2000.

The models used in stress testing, and the data, parameters and assumptions used in development of these models are validated by Takasbank Internal Audit Unit.

The "Stress Test Report" and the "ICAAP Report" containing the results of the credit risk stress tests performed by the Risk Management Unit on an annual basis are submitted to the Board of Directors via the Audit Committee. The accuracy of the data used in the credit risk stress tests included in the ICAAP Report, the adequacy of the systems and processes and whether such data, systems and processes provided proper information and analysis are reviewed by the Internal Audit Unit and presented to the Board of Directors on an annual basis via the "Review Report" attached as an appendix to the ICAAP Report.

4.6. In conducting stress testing, a CCP should consider the effects of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

In the stress tests conducted to test the sufficiency of the total default management resources, Takasbank uses a statistically-selected base-case historical scenario and specific historical event scenarios. In the statistical base-case scenario, the volatility values derived from the last five-year historical data with minimum 99,5% confidence level are defined as extreme market conditions; and the sufficiency of the default management resources is tested by diversifying the holding period by markets. In the historical event scenarios, the highest shift levels that occurred in the stock prices and exchange rates are applied to the parameters to be used in the model, by taking the specific volatilities experienced in the past as basis; and the level of sufficiency of current resources in case of default of two members with the largest exposure is measured.

4.7. An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

The rules and procedures for the members that Takasbank will apply in the management of any individual or combined defaults likely to be experienced in the markets to which it provides CCP service are already stipulated in the CCP Regulation and the Market Directives and Procedures issued in accordance with this Regulation; whereas the rules and procedures to be used by Takasbank business units are already stipulated in detail in the Directive on Central Counterparty Default Management Implementation Principles.

As explained in (4.4) above, the credit losses that may be faced in case of default of members in the CCP activities shall be covered using, firstly, the defaulting member's trade margin and guarantee fund contribution amounts, then the capital allocated by Takasbank, and if still insufficient, the non-defaulting members' funded guarantee fund contribution amounts.

If there is any credit loss still remaining uncovered, the members shall be asked to pay their unfunded guarantee fund contribution amounts; and if these resources are not sufficient, the uncovered credit losses shall be covered from the capital committed by Takasbank. As also mentioned in (4.4) above, pursuant to paragraph 6 of article 36 of the CCP Regulation, the payments to be made in advance by the shareholders or other people and institutions so as to be used in Takasbank's potential capital increase as well as the equity and quasi-equity resource commitments of irrevocable nature may also be added to the capital committed in default management, where necessary.

Under articles 37 and 44 of the CCP Regulation, Takasbank is equipped with profoundly effective recovery tools like variation margin haircutting, forced transfer or termination of positions; and it also possesses extraordinary tools allowing it to allocate the losses that it fails to cover with normal resources to and among its members. Thus, a structure allowing Takasbank to pursue its CCP activities even under the most severe crisis circumstances and ensuring the order and stability in the market has been designed.

If Takasbank has borrowed from and become indebted to the Central Bank of the Republic of Turkey or another liquidity provider in the CCP default management; the cash proceeds to be derived from conversion into cash of the non-cash trade margin and guarantee fund contributions or its allocated or committed capital invested in the GDDSs or from the legal proceedings against its defaulting members shall firstly be used for the discharge of the debt borrowed. This is explicitly stipulated in paragraph 5 of article 36 of the CCP Regulation.

If the guarantee funds funded by members have been used in part in the default management or the guarantee fund obligation has been increased, the members are called to supplement the guarantee fund; and the guarantee fund should be supplemented up to the requested level in 3 business days. If the funded guarantee fund has been completely used or if and when required, the members are asked to fulfil their obligations to deposit additional (unfunded) guarantee fund, providing that it shall not exceed the funded guarantee fund amount on the date of default. The time period given to the members to fulfil their obligation to deposit additional guarantee fund is 5 business days following the call. Additional guarantee fund may be requested from the members not more than four times a year.

Takasbank Assessment Result for CPMI-IOSCO Principle 4

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank has the capacity to effectively measure, monitor and manage its credit exposures resulting from the positions of CCP members as well as the risks arising from its own payment, clearing and settlement processes. It maintains sufficient financial resources to cover the credit exposure that may be faced due to each member with a high degree of confidence and also to cover the default of two CCP members that would potentially cause the largest aggregate credit exposure in extreme but plausible market conditions; and it tests the sufficiency of its financial resources with stress tests conducted on a daily, monthly and quarterly basis.

Principle 5: Collateral

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Key considerations

- 1. An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.*
- 2. An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.*
- 3. In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.*
- 4. An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.*
- 5. An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.*
- 6. An FMI should use a collateral management system that is well-designed and operationally flexible.*

Principle 5: Collateral

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity and market risks. An FMI should also set and enforce appropriate conservative haircuts and concentration limits.

Key considerations

5.1. An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity and market risks.

Pursuant to article 19 of the CCP Regulation, it is legally required to give priority to the assets with low credit, liquidity and market risk in determining the assets to be accepted as collateral by Takasbank. In fact, the types of collaterals that may be accepted in the markets to which CCP service is provided are listed in the same article. Accordingly, Takasbank can accept the following assets as collaterals in the markets and capital market instruments for which it provides CCP service.

Assets acceptable as collateral:

- 1) Cash (in Turkish Lira /Convertible foreign currency),
- 2) Government Domestic Debt Securities,
- 3) Shares (Stocks),
- 4) Investment Fund Participation Certificates,
- 5) Eurobonds issued by the Republic of Turkey Ministry of Treasury and Finance,

- 6) Lease certificates issued by the Republic of Turkey Undersecretariat of Treasury, Asset Leasing Company (T.C. Hazine Varlık Kiralama A.Ş.),
- 7) Gold in the standart traded in the Exchanges,
- 8) Mortgage-backed securities, mortgage-based securities, asset-based securities and asset-backed securities;
- 9) Electronic warehouse receipts;
- 10) Domestic debt securities and Eurobonds issued by G7 countries

Any assets other than those listed in the Central Counterparty Regulation may only be accepted as collaterals following the amendment of the said regulation with the approval of the Board of Directors and the Capital Markets Board. The process to be followed for addition of new collaterals or termination of the eligibility of current ones as collaterals within the limitations of the CCP Regulation are already specified in the Directive on CCP Collateral Management Implementation Principles. There is no exceptional practice deviating from the application of general rules for accepted collaterals.

All parameters related with collaterals are already defined in Takasbank system; and there is no manually operated process. Therefore, it is not systematically possible to deposit any ineligible assets as collaterals. In addition, assets exceeding the composition limits are not subjected to valuation.

Collateral composition limits are set by considering the liquidity, credit and concentration risks and the risk profile of the relevant market. The measures taken to limit the liquidity, market and concentration risks of the collaterals accepted in the markets to which central counterparty service is provided are already specified in the Directive on CCP Collateral Management Implementation Principles and in the Market Directives.

In the Directive on CCP Collateral Management Implementation Principles, specific wrong-way risk is defined as the risk that may result from the presence of a wrong-way correlation between the market value of the received collateral and the current value of the risk faced. Due attention is paid to not receive as collaterals the assets that may fall in value due to the increase of the specific risk carried by the member. It is clearly specified in the related market procedures that members cannot pledge to Takasbank any securities issued by themselves and/or by other banks and companies belonging to the same capital group of the member or their guarantees as collateral (excluding the securities issued by the Ministry of Treasury and Finance and the guarantees and securities of the other banks with their majority of capital belonging to the Ministry of Treasury and Finance).

5.2. An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

The collaterals accepted by Takasbank as collateral in the markets to which it provides CCP service are subjected to at least daily valuation by Takasbank. In addition to the latest traded or weighted average prices, the values determined as benchmark by the CBRT or Borsa İstanbul are used in collateral valuation. In case no trading occurs in the market, the average of the buy and sell prices prevailing in the market at the moment of valuation or the theoretical price is used as the valuation price. Prices to be used in the valuation of assets accepted as collateral and their order of priority are specified in the market procedures. Collateral valuation rules are detailed in the market directives and procedures of the market to which CCP service is offered. In

addition, the prices subject to valuation are announced by Takasbank over Takasbank Integration Menu within the day. The theoretical pricing formulae and methods that can be used in the valuation of assets accepted as collateral by Takasbank are also published on Takasbank website.

The risks to be taken into account in the calculation of collateral valuation haircuts to be applied to the collaterals accepted by Takasbank, the principles to be observed in the calculation of valuation haircuts, the features of the historical data sets to be used, in-sample and out-of-sample data-based calibration of the valuation haircuts and the methods and timing for performance of backtesting have been stipulated in the Directive on CCP Collateral Management Implementation Principles and in the Market Directives. The collateral valuation haircuts are disclosed to the public within the relevant legislation.

In determining the valuation haircuts, the credit or specific risks of the relevant assets, their maturities, the volatility they display in extreme market conditions, and the liquidity and currency risks they carry are taken into account. In calculations, the historical simulation-based value-at-risk approach, minimum 2 business day-holding period with 99.9% confidence level and minimum 5-year data set are used. In the generation of data set, attention is paid to reflecting financial volatilities experienced in the recent period in order to reduce procyclicality and facilitate prudent calculation of collateral values.

The collateral valuation haircuts are calibrated before they are used by applying in-sample backtesting. If, in the last one-year period, the relative value changes calculated using the assets accepted as collateral, the collateral valuation haircuts and the holding periods exceed the discount factor by more than two business days; the valuation haircuts are calibrated by the multiplication factors. In case any excess hit by more than 5 business days; the data set, confidence level and model used are reviewed again.

Likewise, the haircuts used in collateral valuation are validated on a monthly basis by undergoing backtesting using out-of-sample data. If there is an exceedance over two business days on average in an asset group in the last one-year period and the valuation haircuts have not been subjected to any calibration before; these haircuts are calibrated with the multiplication factors; and if they have been previously calibrated, they are recalculated.

The thresholds for market price volatilities that absolutely necessitate the review of the collateral valuation haircuts are already set forth in the Directive on Collateral Management Implementation Principles. In addition, these values are reported and monitored on a daily basis.

5.3. In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

As explained in detail in (5.2) above; in the determination of valuation haircuts, minimum 5-year data set and 99,9% confidence level are used to take into account the volatility recorded in the collateral value under extreme market conditions, to reduce procyclicality and to set a prudent and stable level. Particular attention is paid to ensure that the data set covers the extreme volatilities experienced in the recent periods.

5.4. An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

In the markets in which central CCP service is provided, a collateral management mechanism based on continuous review of the credit, concentration and wrong-way risks is operated to ensure that the received collaterals provide protection for the risks assumed by virtue of the executed transactions, against any event of default throughout the time period such risks are carried.

The concentrations of assets in the collateral pools is monitored on the basis of those issuing or warranting the financial instruments subject to collateral as well as the types of assets that will be accepted as collateral. In order to avoid concentration in certain asset groups and on an instrument basis, there are composition limits controlling the ratio of non-cash collaterals to total collaterals in each market. In addition, for some markets to which central counterparty service is provided, a certain rate of the total mark-to-market collaterals must be kept in collateral accounts as minimum cash. For instance, this rate is 50% for Borsa İstanbul Futures and Options Market, 30% for Takasbank Securities Lending Market, and 10% for Borsa İstanbul Equity Market. Private sector debt securities are not accepted as collateral and the stocks with the highest liquidity (BIST 100) are accepted as collateral in the CCP markets. Conservative valuation haircuts have been adopted to restrict losses that may result from price volatilities under stressed market conditions in the liquidation of government debt securities. On the other hand, the total sum of the capital market instruments issued and the guarantees given by the same issuer, except for the Ministry of Treasury and Finance, should not be more than 25% of the total outstanding collaterals in the relevant market. The concentration limits are determined considering the best international practices on CCP applications as well as the country and market conditions, and are reviewed at least once a year.

5.5. An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

If it is intended to use the Eurobonds issued by the Republic of Turkey Ministry of Treasury and Finance or the domestic debt securities and Eurobonds issued by G7 countries as collateral in the markets to which Takasbank provides CCP service; such assets are safe-kept in the international central securities depository institutions resident abroad. In order to mitigate the risks related with the acceptance as collateral of the domestic debt securities issued by G7 countries, Takasbank only accepts as collateral, the domestic debt securities issued by the United States of America and Germany under its current structure. However, in order for the FX non-cash collaterals (e.g. Eurobonds) that may be received for CCP risks to be safe-kept in cross-border depository institutions, such collaterals should have the necessary legal protection against the

bankruptcy or liquidation of the depository institution or against the claims of the creditors from the depository institution.

5.6. An FMI should use a collateral management system that is well-designed and operationally flexible.

The collateral management system managed by Takasbank in the markets to which it provides central counterparty service is operated in an integrated manner with the markets as a whole, covering the types of assets that it accepts at a broad spectrum, accurate and timely update of margin requirements, collateral valuation methodology it applies during and at the end of each day and the rules it has established to minimize all risks that may be faced.

Pursuant to the third paragraph of article 79 of the Capital Markets Law no. 6362; the rights and powers of the central settlement and clearing institution on the values of assets it has received as collateral due to the transactions it executes as a clearing & settlement and central counterparty institution may not be limited in any way whatsoever. Granting of a period for composition with creditors to the member institution or the party providing such collateral, approval of such a composition, composition after bankruptcy or entry into a composition process through cession of assets, restructuring through settlement, bankruptcy, postponement of bankruptcy, or other enforcement proceedings initiated under the Execution and Bankruptcy Law no. 2004 or the relevant provisions of this Law regarding gradual liquidation may, under no circumstances, restrict the central clearing and settlement institution from exercising its rights and powers over such collaterals. Thus, it was aimed to prevent, at the law level, any and all types of legal risks that may arise in relation to Takasbank's right of disposition on the collateral delivered by the member in case of default of such member.

In addition, pursuant to the second paragraph of article 73 of the same Law, the collaterals held at the clearing and settlement institutions to prevent clearing and settlement risks and the assets in the guarantee fund established thereof may not be used except for their intended purposes. Moreover, it is considered that there is no legal problem for Takasbank to borrow from the CBRT in the CCP default management, by pledging as collateral the securities it has acquired with the agreements stipulating the transfer of ownership. However, it is not possible to use the received collaterals for purposes unrelated to the CCP default management; and as a matter of fact, as stated in (3.1) above, article 23 of the Directive on Central Counterparty Collateral Management Implementation Principles approved by Takasbank Board of Directors has already prohibited the usage of trade margins and guarantee fund contribution amounts received for CCP service to fulfil Takasbank's obligations resulting from any of its activities, even for a temporary period, including those arising from its other capital market or banking activities.

The collateral management system is operationally flexible, allowing for determination of new limits, acceptance of different types of collateral and modification of applied risk parameters, where necessary.

At Takasbank, the management of collaterals accepted in the markets to which CCP service is provided in accordance with the relevant legislation and the risk limits and parameters is closely monitored by the Collateral Monitoring and Default Management team specifically established within the CCP Department. The said Team is also responsible for the CCP Default Management and has the rules and procedures for the management of collaterals under stress.

Takasbank Assessment Result for CPMI-IOSCO Principle 5

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank accepts collaterals with low credit, liquidity and market risks against CCP risks and it has already determined steady collateral valuation haircuts calculated with a high degree of confidence and concentration limits in line with best practices.

Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Key Considerations

- 1. A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.*
- 2. A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.*
- 3. A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the sub portfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.*
- 4. A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.*
- 5. In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorized to offer cross-margining, they must have appropriate safeguards and harmonized overall risk-management systems.*
- 6. A CCP should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting – and at least monthly, and more-frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.*
- 7. A CCP should regularly review and validate its margin system.*

Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Key considerations

6.1. A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.

Takasbank applies a margin system that has been customized by considering the risks and particular attributes of the markets and capital market instruments for which it offers central counterparty service. This system features basic attributes such as accurate and timely risk-based margin calculation at the product, portfolio and market, continuous comparison of the risks with the outstanding marked-to-market collaterals and making intra-day and end-of-day margin calls for the accounts having a collateral deficit.

Margin is requested from the members to cover the risks arising from the positions that they have taken for themselves or on behalf and in the name of their clients. In determining margin requirements, the factors such as volatilities in the prices, current price correlations between the products, market liquidity, etc. and the product-specific features are taken into consideration. The margin requirement requested from members is comprised of the initial margin requested against the potential risks that may arise from the positions in case of any possible future default and the variation margin arising from the update of the position prices.

The margin methodologies employed in the markets to which CCP service is provided are provided in the Market Directives and Procedures explaining the market-specific rules and processes within the framework of the provisions of the CCP Regulation. In addition, the members are able to simulate and test their risk management models using the market procedures and the guidelines disclosed in relation to risk management methodologies.

Takasbank monitors the margin amounts that it has requested from the members due to the positions they have taken, throughout the day; and it is authorized to make intra-day and end-of-day margin calls if the marked-to-market value of outstanding collaterals falls below the risk level. Takasbank system allows for issuance of margin calls at any time outside the hours specified in the relevant market procedures. If the member fails to fulfil the margin call made on a daily basis in the ordinary course of business within the time period specified in the Market Procedures; this is considered as a “pre-default” and an extra time period specified in the Market Procedures may be given to the member to resolve the default. If the default is not resolved within the given time period, Takasbank ‘CCP Default Management Committee’ may decide to terminate the pre-default event and to run the default management process. During the pre-default period, the member may be prevented from withdrawing cash or securities from its collateral accounts or taking any risk-enhancing positions.

All time periods given to the members in the Clearing & Settlement and CCP legislation are in “Turkey Time”.

6.2. A central counterparty should have a reliable source of timely price data for its margin system. A central counterparty should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

Takasbank obtains the price data that it uses in the margin management system it operates for the markets to which it provides central counterparty service from the corporate sources like Borsa İstanbul and the CBRT and from data providers. The consistency and accuracy of the price data automatically feeding the system and used in the off-system parameter calculations are controlled; and it is possible to adjust the price data, where necessary.

The positions taken by members and the collaterals they have provided for such positions are valued with intra-day and end-of-day market prices and the margin-collateral balance is monitored on a near real-time basis.

If it is concluded that the prices on options contracts traded in the FOM have not been formed in a reliable manner due to the reasons such as liquidity shortage and demand-supply imbalance in the market; the end-of-day settlement prices may be revised; the principles regarding such revision are already specified in Borsa (Stock Exchange) legislation.

The prices to be used in the valuation of assets accepted as collateral and their order of priority are specified in the Market Procedures. Unless an alternative valuation price is specified for the financial assets for which prices have not occurred under the valuation rules set forth in the Procedures and which do not have any theoretical prices or for which the theoretical price is considered to show significant deviation, the values to be determined by the Central Counterparty Department or the previous end-of-day prices are used. Theoretical prices or the prices of the previous day may be entered into the system in accordance with a two-level control.

The models to be used in the calculation of theoretical prices are subject to the same principles with other risk models. The Internal Audit Unit reporting to Takasbank Board of Directors via the Audit Committee is in charge of reviewing the validity of the risk management and collateral valuation models and methods.

6.3. A central counterparty should adapt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a central counterparty that calculates margin at more-granular levels, such as the sub portfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed marked conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.

In the margin calculations, Takasbank seeks to calculate the risks the members carry in the time interval during which the positions taken by them remain open in an accurate and timely manner and to manage the margin-collateral balance in an efficient manner. In order to ensure that the initial margins truly reflect the risk, the confidence levels and the holding periods to be used in the parameter calculations and the length of the data set to be applied are decided by analysing certain conditions. In addition, article 18 of Takasbank CCP Regulation has stipulated that it is required to make the initial margin calculations with minimum 99% confidence level, for a holding period of 2 business days and based on 12 month-historical data and set forth the minimum conditions.

In the determination of parameters and confidence levels; the risk characteristics such as the complexity of assets traded in the market and uncertainties in their pricing, the volatility, durations, liquidity, non-linear price characteristics, and specific wrong-way risk, etc. and the extent to which other risk controls in the market restrict the credit limits or the degree of difficulty of closing out the positions are taken into account.

According to Takasbank Directive on CCP Risk Management Implementation Principles, the parameters for the products for which there is inadequate or no historical data can be determined by analysing the data of products of similar nature following the principle of prudence; and the parameters can be defined above the values implied by historical data, considering the current and future market conditions.

According to the Directive On CCP Default Management Implementation Principles, the liquidation strategy to be implemented in the default manager is determined by the CCP Default Management Committee comprising the General Manager and relevant managers. However, the CCP Department submits to the Committee the prioritization that it will make considering the liquidity risk and similar issues for the positions required to be closed out.

The specific wrong-way risk is defined in the Directives on CCP Risk and Collateral Management Implementation Principles as the risk that may result from the existence of a wrong-way correlation between the market value of the collateral received and the current value of the risk faced. Due attention is paid to not receive as collateral the assets that may fall in value due to the increase in the specific risk carried by the member.

Trade margin requirements are determined with margins that will decrease the procyclicality and increase the stability; and the need to raise trade margin requirements under adverse market conditions is minimized. The measures that can be taken to decrease the procyclicality in the margin calculations are already specified in the Directive on CCP Risk Management Implementation Principles. Accordingly, it is possible to take one or several of the following measures;

- Setting maximum and minimum confidence levels, providing that they are within the limits prescribed in the market directives and procedures, in cases where the initial margin risk parameters are defined amount-wise;
- Defining minimum initial level parameters providing that they are not less than those estimated with a retrospective 10-year data set;
- Giving at least 25% weight to those having extreme values in the prices used for calculations;
- Increasing the collateral amounts or ratios with a multiplier coefficient not exceeding 1.5.

6.4. A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.

One of the key elements of the margin system employed by Takasbank in the markets to which central counterparty service is provided is the variation margin requested to minimize the risk that the positions may be exposed to due to the price changes in the time period during which they remain open. In variation margin calculations, the current positions are marked-to-market with intra-day and end-of-day current prices, and the scheduled margin calls are made on a daily basis.

In case that the ratio of marked-to-marked collaterals to the market value of positions falls below the values specified in the relevant market procedures and directives and when it is deemed necessary, Takasbank is entitled and authorized to make unscheduled intraday margin calls.

6.5. In calculating margin requirements, a central counterparty may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of other product. Where two or more central counterparties are authorized to offer cross-margining, they must have appropriate safeguards and harmonized overall risk-management systems.

Takasbank takes into account the effects of correlation across products under the structure of the portfolio-based margining methods that it applies in the markets to which it provides CCP service. In case of implementation of portfolio-based margining, the calculations of correlation between the relevant product groups should be made using at least 5-year data set and the correlation value calculated should be financially and econometrically meaningful for identification of a correlation across different product groups. In portfolio-based margining, the discount to be made in the margin amount required to be calculated as a result of the effects of correlation between product groups may not exceed 80% of the difference between the portfolio's margin obligation calculated regardless of the correlation effects and the margin obligation calculated by considering the correlation effects.

Takasbank does not have any interoperability arrangement with another CCP institution. However, the general principles regarding interoperability with other CCP institutions are set specified in article 38 of the CCP Regulation; and permission for interoperability should be obtained from the Capital Markets Board.

6.6. A central counterparty should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting – and at least monthly, and more-frequent where appropriate, sensitivity analysis. A central counterparty should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a central counterparty should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.

The models employed for initial margin and guarantee fund calculations in the markets to which central counterparty service is provided and the data, parameters and confidence levels used for developing the models are reviewed through the tests conducted periodically. In case of identification of any deficiency related thereof, the data, confidence level and the model used are reviewed, and they are revised if deemed necessary.

The adequacy of the models and confidence levels used in initial margin calculations are daily tested through backtesting. In such backtesting, it is checked whether the size of the initial margin requested for positions can cover the changes that might occur in the value of the positions during the holding period. The number of observations in which the initial margins exceed the outstanding margin requirement is expected to be less than the number of exceedance/hits (5 per thousand) implied by 99.5% confidence level. Otherwise, the parameters and confidence levels used in the initial margin calculations are reviewed. In the backtesting of the collateral valuation haircuts, the number of exceedance/hits implied by 99.9% confidence level (1 per thousand) should not be exceeded. The backtesting results and the recommended measures are presented to the Board of Directors via the internal system units at least four times a year. IN addition, pursuant to the Directives on CCP Risk and Collateral Management Implementation Principles; if, at the markets, any overnight price change occurs in at least one of the following variables at a rate exceeding;

- 10% of BIST 30 and/or BIST 100 index(es);
- 300 basis points of Benchmark DIBS interest rate;
- 5% of the market price of the currency basket comprising 1 United States Dollar (USD) and 1 European Currency Unit (EUR);
- 200 basis points of 10-year Eurobond interest rate;
- 10% of TL gold price per gram;

then, both the initial margin parameters and the collateral valuation haircuts are recalculated, and they are revised if deemed necessary.

In addition, in stress tests, it is analyzed whether the default management resources consisting of initial collateral and other financial resources are large enough to protect against the potential loss that may arise due to the default of the two members with the highest risk, along with their subsidiaries and/or parent companies. In the base-case scenario used in the stress tests, the volatilities separately selected for each risk factor with 99.9% confidence level from minimum five-year historical data are assumed to occur simultaneously, without taking account of the correlations among them; and the base-case scenario is supported with two separate historical-event scenarios. In addition, sensitivity analyses are also performed to test the effects on the initial margins of the unit changes in the parameters and confidence levels used in the margin models. Stress tests and sensitivity analyses are conducted on a ‘daily and monthly basis’, and the comprehensive results obtained are reported to the Board of Directors on a monthly and quarterly basis and then to the Capital Markets Board on a quarterly basis. In case of occurrence of any resource deficit in the stress tests, the solutions to remove such deficit should be identified and if such deficiency results from the margin system, corrective actions should be taken.

The summary of the stress test results is disclosed to the members and the public.

6.7. A central counterparty should regularly review and validate its margin system.

The validation of the risk management models employed by the Central Counterparty Department and of the tests conducted for the liquidity risk management is reviewed by Takasbank Internal Audit Unit at least once a year.

The criteria used in validation according to the Directive on CCP Risk Management Implementation Principles are determined by the Internal Audit Unit conducting such validation; however, the validation to be conducted should address, at least, the following issues:

- Evaluating the conceptual soundness of the models and methods employed;
- Evaluating the risk monitoring activities including the validation of processes;
- Evaluating the data, parameters and assumptions used for development of the models;
- Evaluating the adequacy and appropriateness of the models employed, considering the products included in the risk calculations;
- Evaluating the scenarios used in the stress tests, and analysing the reverse-stress tests.

The findings identified by the Internal Audit Unit are submitted to the relevant senior managers and the Board of Directors.

Takasbank Assessment Result for CPMI-IOSCO Principle 6

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank collateralizes the risks that may arise from its members' clearing and settlement positions, through a risk-based margin system that it regularly tests for accuracy.

Principle 7: Liquidity Risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key considerations

1. An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.
2. An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.
3. [N/A for CCPs]
4. A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.
5. For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.
6. An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.
7. An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party,

has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

8. An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

9. An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

10. An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

Principle 7: Liquidity Risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key considerations

7.1. An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

Takasbank's liquidity risk management framework consists of the banking and capital markets legislation and the arrangements made by the Board of Directors. Article 42 of Takasbank CCP Regulation has specifically regulated the liquidity risk. In addition, since Takasbank owns a banking license, it is subject to all liquidity arrangements and ratios made and imposed by the BRSA; and the liquidity risk is specifically addressed in the internal capital adequacy assessment process (ICAAP), and internal capital is allocated for the worst-case scenarios like disposal of the financial assets below their ordinary prices in extreme stress conditions or obtaining liquidity at costs above the ordinary funding costs. Liquidity risk limits have already been set by the Board of Directors both across Takasbank and for the markets to which CCP service is provided; and a warning mechanism that will be triggered when the specified limits reach or fall to critical signal values has been established.

In Takasbank's CCP activities, there are five main reasons that may cause exposure to liquidity risk if they are not managed well:

- The trade margin and guarantee fund contribution amounts deposited by the members are insufficient and/or not liquid enough;
- Resources allocated by Takasbank for default management are not liquid enough;
- Takasbank's failure in investment of the CCP collaterals in a liquid and safe manner;
- Using the CCP default management liquidity for non-CCP obligations of Takasbank;
- Takasbank's lack of access to the liquidity of the Central Bank of the Republic of Turkey and/or commercial banks.

Takasbank's risk management framework has been designed in a manner to effectively eliminate the liquidity risk that may arise from these five reasons listed above.

Firstly, the rule stipulating that the sum of the liquid collaterals of the 2 members having the largest exposure, as well as their subsidiaries and/or parent companies for each market to which central counterparty service is provided, the assets with a high level of liquidity in the guarantee fund established for the relevant market, and the amounts allocated and committed by Takasbank from its own capital and invested in liquid assets should not fall below the relevant member's clearing and settlement risk amount calculated with a minimum 99,00% confidence level in the markets to which CCP service is provided is applied and monitored on a daily basis. In such monitoring, only the qualifying assets (cash and O/N placements and assets accepted as collateral by the CBRT) are included in the liquid asset definition.

In the 2 members with the largest exposure rule applied in daily liquidity monitoring, as well as their subsidiaries and/or parent companies the clearing and settlement risks are calculated with a minimum 99,00% confidence level; however, in the stress tests performed with a minimum 99,50% confidence level in the markets in which CCP service is provided, the rule stipulating that the settlement risk of the member generating the largest payment obligation can be covered by qualifying assets (on-demand or O/N cash

placements and assets accepted as collateral by the CBRT) is also applied pursuant to CPMI-IOSCO principle 7.4.

The adequacy criterion used by Takasbank is that under base-case scenario, the portion of the trade margin and guarantee fund contribution amounts deposited in advance by the 2 members, as well as their subsidiaries and/or parent companies which is accepted as qualified, and the capital amount allocated and committed by Takasbank and satisfying the liquidity requirement should be sufficient to cover the funding need that will arise as a result of the default of the member having the largest risk exposure in the relevant market (Cover 2).

The liquidity stress test conducted by Takasbank covers monthly and quarterly periods. The purpose of such stress testing is to test the adequacy of the qualifying assets, assuming the disruptions that might occur in the liquidity provision activity as an additional stress element.

In the settlement transactions, the currency of the transactions is used and accordingly, minimum cash collateral maintenance ratios are imposed for FOM, SLM and Equity markets. In addition, it is ensured that the collaterals are sufficient in size, by applying collateral valuation haircuts to the assets eligible as collateral according to their cash conversion potential. In this context, 99,90% confidence levels and 2-business day liquidation period are applied when calculating the collateral valuation haircuts; and it is possible to differentiate the liquidation period on an asset basis, if deemed necessary.

Furthermore, the said liquidity risk stress tests are diversified, considering the usage of the resource requirement arising under historical credit risk stress scenarios, the changes occurring in the current situations of liquidity providers, and the possible changes that may occur in the liquidity preference of the market.

The requirement that the capital allocated from Takasbank capital to the CCP default management should be invested in liquid assets is specified in article 39 of the CCP Regulation.

On the other hand, as explained in principles 3 and 4; it is not possible to use the cash and non-cash trade margins and guarantee fund contribution amounts accepted from members in the CCP markets to fulfil Takasbank's payment obligations likely to arise from its other capital market or banking activities, even for a temporary period, and cash collaterals are accrued interest with O/N maturities in the special accounts opened in the banks having credit default and loss risks regarded as close to zero and protected under article 73/2 of the Law no. 6362.

In addition, considering that Takasbank is entitled to borrow from both the CBRT and commercial banks, it can be easily understood that the CCP activities are carried out in an extremely sound framework in terms of the liquidity risk.

7.2. An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

Thanks to the banking license it obtained, Takasbank has a strong treasury management organization and infrastructure that it has developed over time, and effective operational and analytical tools that continuously and timely detect, measure and monitor funding flows, including the use of intraday liquidity.

Within the scope of liquidity risk management, Takasbank is able to continuously monitor the clearing & settlement transactions and fund flows by currencies, members and accounts through in-house developed software; and the members are also able to monitor their fund flows over their screens. In addition, online banking tools and SWIFT confirmations are used for the monitoring of such flows.

Exchange transactions are followed instantly; Members who do not close their debt at the last hour of clearing are contacted, and the Treasury Team is informed to ensure effective and uninterrupted management of fund flows. In addition, the receivables of the members not fulfilling their obligations are blocked.

In addition, the cash flows over the EFT system are monitored instantaneously and continuously through the provision monitoring screen. The clearing and settlement payments within the processes are always executed with priority, considering the market times. For the CBRT payment systems, the said clearing and settlement times have been defined as critical hours and prioritized within the scope of business continuity.

Takasbank has in-house developed analytical and operational software through which the intraday liquidity required at the settlement times is calculated and the presence of such liquidity in the pool accounts is monitored.

7.3. A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

In determining the liquidity level, the level at which the settlement risk arising in case of default of the 2 members, as well as their subsidiaries and/or parent companies generating the largest payment obligation in the relevant market under stress conditions is covered by the qualifying resources (the portion of the CCP default management resources invested in on-demand or O/N cash placements or assets accepted as collaterals by the CBRT) belonging to the CCP default management is taken into account.

As for the scenarios, the liquidation properties of collaterals are tested through base-case and historical scenarios.

The assets considered as qualifying liquid assets are expected to cover the settlement risk that may arise in case of default of the 2 members as well as their subsidiaries and/or parent companies generating the largest payment obligation in the market under stress conditions.

7.4. A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest

aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systematically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the one participant and their affiliates that would generate the largest payment obligations to the CCP in extreme but plausible market conditions.

Takasbank's CCP activities are limited to Turkey; and in order to prevent occurrence of liquidity shortage in the fulfilment of settlement commitments, a series of very comprehensive measures has been taken in the liquidity risk management, as indicated in (7.1) above. In this context, firstly, the rule stipulating that the sum of liquid collaterals of the 2 members (Cover 2) as well as their subsidiaries and/or parent companies having the largest exposure for each market to which central counterparty service is provided, the assets with high level of liquidity in the guarantee fund established for the relevant market, and the amounts allocated and committed by Takasbank from its own capital and invested in liquid assets should not fall below the settlement risk amount of the said 2 members as well as their subsidiaries and/or parent companies calculated with a minimum 99,00% confidence level is applied and monitored on a daily basis. In such monitoring, only the qualifying assets and the portion of the CCP default management resources invested in on-demand or O/N cash placements or the assets accepted as collateral by the CBRT are included in the liquid asset definition.

As also emphasized above, the rule stipulating that the settlement risk of the largest 2 members as well as their subsidiaries and/or parent companies should be covered by qualifying assets belonging to the CCP default management is also applied in the stress tests performed with a minimum 99,50% confidence level. In the base-case scenario used in the stress tests, the volatilities selected separately with a minimum 99,50% confidence level from five-year historical data for each factor are assumed to occur simultaneously, regardless of the correlations among them; and the base-case scenario is supported with two different historical-event scenarios.

In the stress test scenario of the markets to which CCP service is provided, liquidation period is applied as two days; and the base-case scenario analysis is supported with calculations made using 3-day holding period. Since, in the application of the largest 2 members as well as their subsidiaries and/or parent companies rule, the principle stipulating that the settlement risk should be covered with the qualifying assets that can be used in the CCP default management is adopted, both the qualifying collaterals remaining above this obligation and other highly-liquid assets included in the default management resources and easily convertible into cash are considered as additional (backup) liquidity reserve.

The liquidity risk stress tests conducted by Takasbank cover monthly and quarterly periods. The basic liquidity risk stress test conducted on a monthly basis are performed using the credit risk base-case scenario. The liquidity risk stress test covering the quarterly periods is tested under 4 different subsections. The basic liquidity stress test has been performed on the basis of the base-case scenario used in the credit risk stress testing. Afterwards, tests were performed according to 2001, 2008 and 2018 crisis scenarios. With such tests, whether the qualifying resources within the default management resources (on demand or O/N cash placements, assets accepted as collaterals by the CBRT) can cover the default of the 2 members as well as

their subsidiaries and/or parent companies generating the largest risk exposure under stress conditions is tested.

In addition to the base-case and historical scenarios covering the quarterly periods applied in this context, the sufficiency of qualifying resources is tested, assuming that the 2 members as well as their subsidiaries and/or parent companies generating the largest exposure has cash collaterals only, and then only half of the current cash collaterals were established, and finally that only the minimum cash requirement amount was established, considering the disruptions that may occur in the liquidity provision in the relevant market as an additional stress factor.

7.5. For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

Cash and cash-equivalent placements and the assets accepted as collateral by the Central Bank of the Republic of Turkey are considered as qualifying liquid assets. Since the trade margins and guarantee fund obligations deposited in TL in the markets to which Bank provides central counterparty service are placed with O/N maturity; the related amounts can be considered as liquid assets. While cash trade margins and guarantee fund obligations included in the default management resources are taken into account in the analysis; the minimum obligations in TL are taken as basis instead of all liquid assets owned by the member on the relevant day; and it is assumed that the unblocked amount exceeding such amount can be withdrawn.

In determining the size of liquid resources, the rule specified below applies:

The level at which the settlement risk arising in case of default of the 2 members as well as their subsidiaries and/or parent companies generating the largest payment obligation in the relevant market under stress conditions is covered by the qualifying resources (the portion of the CCP default management resources invested in on-demand or O/N cash placements or in assets accepted as collaterals by the CBRT) belonging to the CCP default management, which can be used for the relevant member, is taken into account. Almost all of Takasbank's default management resources allocated in the markets to which it provides CCP service is comprised of liquid resources that can be used as cash on the same day or the next business day at the latest:

- the cash portion out of the trade margin requirements and guarantee fund contribution amounts deposited by members in cash, which is invested on an O/N basis in the special accounts opened at the commercial banks whose credit default and loss risks are regarded as zero by Takasbank and protected under the second paragraph of article 73 of the Law no. 6362;
- the securities out of the trade margins and guarantee fund contribution amounts deposited by members as non-cash assets, which can be provided as collaterals to the CBRT within the borrowing limits of Takasbank.

- The portion of Takasbank capital allocated and committed to CCP default management and placed in commercial banks with O/N maturity or invested in securities that can be given as collateral to the CBRT within Takasbank's borrowing limit.

The order in which non-cash collaterals can be converted into cash if and when needed has been already determined. Takasbank periodically monitors the lines of credit extended to it by other banks. There has been no obstacle met by Takasbank in the access to liquid resources so far.

7.6. An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

Takasbank accepts highly-liquid assets as collaterals in the markets to which it provides CCP service.

The size and composition of Takasbank's supplemental liquid resources are as follows;

- the cash portion out of the trade margin requirements and guarantee fund contribution amounts deposited by members in cash, which is invested on an O/N basis in the special accounts opened at the commercial banks whose credit default and loss risks are regarded as zero by Takasbank and protected under the second paragraph of article 73 of the Law no. 6362;
- the securities out of the trade margins and guarantee fund contribution amounts deposited by members as non-cash assets, which can be provided as collaterals to the CBRT within the borrowing limits of Takasbank;
- the portion out of the capital allocated and committed from Takasbank capital to the CCP default management, which is placed with O/N maturities to the credible commercial banks or invested in securities that can be provided as collaterals to the CBRT within the borrowing limits of Takasbank.

The amount of these resources may vary periodically.

Takasbank does not consider the borrowing facility from the CBRT late liquidity window (with a higher cost) as an instrument that can be used to meet its liquidity requirement under normal conditions.

The capital allocated and committed to the markets to which CCP service is provided is held in cash and/or as GDDS. In the markets to which CCP service is provided, GDDS, government foreign debt securities (eurobond), asset-backed securities, foreign currencies and cash qualify as potential collaterals accepted by the CBRT. Besides, in accepting as collateral of the assets not accepted as collateral by the CBRT (i.e. share certificates and securities investment funds), due attention is paid to the liquidity of stocks (the index that they belong to), and for the securities investment funds, to the content of the funds; and all assets, except for cash, are received as collateral within certain composition limits.

7.7. An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

Takasbank does not need any additional liquid provider, except for the liquidity of the Central Bank of the Republic of Turkey to which it has the right of access due to its status and can use when needed; and in determining the minimum liquidity requirements of the CCP markets, the capability of access to the liquidity of the CBRT is not considered as an ordinary resource.

Takasbank only accepts the banks and capital market brokerage firms to the CCP membership. In Turkey, banks are subject to the BRSA's and the brokerage firms are subject to the Capital Markets Board's license, supervision and oversight; and any weakness they may show in the liquidity management is subject to severe sanctions.

Takasbank reviews the creditworthiness of the banks in which it invests the collaterals of both CCP members and CCP markets or from which it can borrow commercial debt when needed, at least two times a year through internal credit rating and assessment system; and in the internal credit rating, the independent credit rating scores of the institutions, if any, are used for validation purposes.

Takasbank invests the cash trade margins and guarantee fund contribution amounts of the CCP markets, with O/N maturities, in the special accounts opened at the commercial banks whose credit default and loss risks are regarded as close to zero and protected from the liquidation or the proceedings of the creditors of both Takasbank and the relevant commercial bank under article 73/2 of the Law no. 6362. The cash held in the relevant commercial banks is recalled to our accounts at the CBRT every day and re-invested; thus, the access to liquidity is tested on a daily basis.

In Turkey, banks have access to both the CBRT liquidity and the debt securities outright purchases and sales or reverse-repo/repo markets, SWAP market or money markets at Borsa İstanbul; whereas the brokerage firms can meet their liquidity needs from money markets or the debt securities outright purchases and sales or repo/reverse-repo markets at Borsa İstanbul.

Since the liquidity of the CCP markets cannot be used for Takasbank's other liquidity requirements; the likelihood of encountering a systemic liquidity shortfall and spreading of such shortfall to the CCP markets is considered extremely low.

On the other hand, there are not only members with liquidity provider status in the markets to which CCP service is provided; and the rights and obligations related with the market maker members have also been defined in detail in Borsa İstanbul legislation.

7.8. An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

Thanks to its banking license and being a member of payment and securities settlement system, Takasbank has the right of access to the liquidity of the Central Bank of the Republic of Turkey and also operates in an integrated manner with the Turkish Lira, Electronic Funds Transfer (EFT) and Electronic Securities Transfer System (ESTS) within the CBRT's system. Takasbank offers its member brokerage firms the opportunity of access to the national payment system (EFT-ESTS) through Takasbank Electronic Funds Transfer System (TETS) that it has established; thus, it also allows its members to make use of the payment systems.

Thanks to the SWIFT system that it is a member of and the nostro and custody relationships that it has established with the highly-credible international depository institutions and banks resident abroad, Takasbank has the configuration, equipment and organization to manage its foreign currency securities and liquidity in the best manner.

7.9. An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

Due to its banking license, Takasbank is subject to the BRSA's liquidity and stress test arrangements at the corporate scale. In this context, the liquidity gaps estimated with a minimum 99% confidence level and adjusted with discount factors determined by the BRSA are used for each currency in the liquidity stress tests conducted at monthly intervals; and the costs to be incurred due to the funding of the estimated liquidity gaps again under stress are estimated; and the achieved results constitute the basis for capital allocation for the liquidity risk during the internal capital adequacy assessment process (ICAAP). The results of the stress tests conducted in accordance with the banking legislation are reported to the senior management, the Audit Committee and the Board of Directors.

Since a structure that would prevent the risks arising from Takasbank's other activities from affecting the CCP markets has been established at Takasbank; the sufficiency of both total resources and liquid resources is tested under various assumptions in the stress tests performed from an FMI perspective specific to the CCP markets only. In the base-case scenario used in the stress tests, the volatilities selected separately with a minimum 99,50% confidence level from five-year historical data for each risk factor are hypothetically assumed to occur simultaneously, regardless of the correlations among them; and the base-case scenario

involving extreme conditions with a highly low likelihood of combined occurrence is supported with four hypothetical scenarios and two separate historical-event scenarios.

In the stress tests performed for the CCP markets on a monthly and quarterly basis, whether or not the CCP default management resources will be sufficient in case of combined default of the largest 2 members as well as their subsidiaries and/or parent companies under the stress conditions depicted with a minimum 99,50% confidence level is also tested; in addition, whether or not the default of the largest 2 members as well as their subsidiaries and/or parent companies under the same stressed conditions can be covered only with the qualifying assets (cash and assets that can be provided as collateral to the CBRT) is tested.

The basic liquidity stress test has been performed over the base-case scenario used in the credit risk stress testing. In such testing, firstly, the extent to which the assets included in the default management resources and accepted as qualifying liquid resources cover the resource requirement of the 2 members as well as their subsidiaries and/or parent companies with the largest exposure that may occur under stressed conditions is reviewed in relation to each market.

The sufficiency of the liquid management resources is tested by taking account of the resource requirements calculated using the financial turbulence data experienced in Turkey 2001, 2008 and 2018, in addition to the resource requirement arising in the base-case scenario. In this context, unlike the base-case scenario, the historical-event scenarios have been applied over the last business day of the period of analysis; and the resource requirement assumed to arise due to the default of the 2 members as well as their subsidiaries and/or parent companies with the largest exposure is compared with the liquid default management resources.

The changes occurring in the market under stressed conditions may also affect the liquidity preferences of economic operators. Therefore, it is required to measure the sufficiency of default management resources in terms of liquidity under different liquidity alternatives preferred by the members of the markets to which central counterparty service is provided. To this effect, four scenarios created in relation to cash TL collaterals deposited by members according to the relevant market rules are analysed.

In the first scenario used in the basic liquidity stress test conducted for the markets to which central counterparty service is provided, it is measured whether or not the total resource requirement that will arise after a 10% further increase in the uncovered risk amount of the 2 members as well as their subsidiaries and/or parent companies with the largest exposure as a result of the disruptions likely to occur in the provision of liquidity by the members providing liquidity in the relevant market under stressed conditions can be covered by qualifying liquid resources explained within the scope of the basic liquidity stress test.

The other scenarios used in the basic liquidity stress testing analyses how the changes occurring in market conditions affect the liquidity preferences of economic operators. Therefore, it is required to measure the sufficiency of default management resources in terms of liquidity under different liquidity alternatives preferred by the members of the markets to which central counterparty service is provided. To this effect, three scenarios created in relation to cash TL collaterals deposited by members according to the relevant market rules are analysed. In the first scenario showing the current situation, the test is performed assuming that the members only have the cash TL amounts that they have deposited by the date of the analysis. In the

second scenario, the test is performed assuming that only half of the cash TL amount used in the first scenario exists in the members' collateral accounts. Finally, the test is conducted with the scenario in which the member only maintains the minimum cash TL amount as collateral according to the relevant market rules, if any. Stress tests in the CCP markets are conducted based on the fact that the liquidity risks in these markets is assumed by Takasbank and more specifically, by the CCP default management resources only.

The comprehensive CCP stress test results obtained by quarterly periods are presented to the senior management and to the Audit Committee and the Board of Directors through the internal system units. In addition, the basic credit and liquidity risk scenario is also reported to senior management on a monthly basis for information purposes. If, in the stress tests, a possibility of facing any cash or qualifying resource deficit occurs in the CCP default management resources; the measures required to be taken must be presented in the report submitted to the Board of Directors. The CCP stress test reports submitted to the Board of Directors are also submitted thereafter to the Capital Markets Board.

The Internal Audit Unit reporting to Takasbank Board of Directors is in charge of reviewing the validity of the CCP risk management and collateral valuation models and methods at least once a year. Stress test scenarios and parameters are subject to the same principles with other risk models; and are reviewed at least once a year.

7.10. An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

Takasbank undertakes the settlement finality by using default management resources. Takasbank is obliged to deliver or pay its cash payment obligations within the normal settlement period irrespective of any default, and its asset delivery obligations until the end of the period granted in the relevant market procedures to find the asset, and, if it fails to do so, the market value thereof until the end of the same period. Setting aside the measures that may be taken in extreme conditions under the default management (such as variation margin, making deductions from dividend distribution, etc.), Takasbank is obliged to pay default interest to its members for the delayed period if the settlement commitments are not timely fulfilled for any reason. The obligations of Takasbank as a Central Counterparty towards its members are explicitly set forth in the relevant market directives and procedures.

Excluding the period given in the asset defaults to find the asset; if there are not any conditions necessitating resorting to the extraordinary measures by the CCP Default Management Committee, the default of its one or several members is not a factor that would cause Takasbank to not fulfil its obligations arising against its members.

In article 36 of the CCP Regulation, it is explicitly specified that in case of default, Takasbank is not limited to the liquidity in its default management resources, and the sequential order given in the Regulation for the

use of default management resources is intended for loss allocation; and Takasbank can make the necessary prioritization with respect to the liquidity management and may borrow to manage the default if and when needed. Therefore, it is possible for Takasbank to promptly eliminate a default-originated liquidity shortfall and timely fulfil its commitments by firstly using the liquid resources to which it invested its capital allocated and committed to the default management and/or accessing to the liquidity of the CBRT, where necessary.

If the default management resources are used, how they will be replenished is already stipulated in the relevant Market Directives and Procedures. The members can be asked to deposit additional guarantee funds four times a year. Members are obliged to fulfil their additional guarantee fund obligations within 5 business days following the date of request.

Takasbank Assessment Result for CPMI-IOSCO Principle 7:

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank has the capacity to effectively measure, monitor and manage its liquidity risk. In the central counterparty activities, in case of default of the member with the largest exposure under extreme stressed conditions, the default is aimed to be resolved with the cash resources only (without resorting to other qualifying collaterals).

Principle 8: Settlement Finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Key considerations

- 1. An FMI's rules and procedures should clearly define the point at which settlement is final.*
- 2. An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.*
- 3. An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.*

Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Key considerations

8.1. An FMI's rules and procedures should clearly define the point at which settlement is final.

Takasbank undertakes the fulfilment of obligations of the parties and completion of settlement for the executed transactions, by acting as the counterparty against each party in the markets to which it provides central counterparty service. In article 6 of the Directive on CCP Default Management Implementation Principles, it is specified that the liability of Takasbank in its capacity as the central counterparty against the member shall start at the moment the buy/sell or bid/ask orders are matched and end with the completion of the settlement. In the same article, it is also stated that completion of settlement shall take place by delivery to the relevant accounts or transfer between the accounts of the payables and receivables arising from the positions generated upon matching of the orders in the markets to which CCP service is provided. Thus, the point at which settlement is finally completed is accepted as the point at which the transfer of assets between the accounts is executed.

Pursuant to article 79/1 of the Capital Markets Law no. 6362 governing the 'settlement finality', revocation or reversal of the payment and transfer instructions after the completion of settlement is not possible. In article 79/1 of the Capital Markets Law no.6362, it is stated as follows: "clearing and settlement instructions and transactions of the capital market instruments as well as the payment transactions cannot be revoked or reversed, including the temporary or permanent suspension of the activities of the members of the central clearing and settlement institutions and the initiation of liquidation processes before administrative and judicial authorities".

Article 10 of PSL (Payment Systems Law) no. 6493 contains the provision which reads as follows: "All kinds of measures and decisions that are regulated by laws and preclude the participant or the system operator to make transactions with their funds or securities including the temporary suspension, imposition

of restrictions, or permanent suspension of a participant's or system operator's fund or securities transfers apply only to the transfer orders that will enter into the system after the notification regarding the aforementioned measures and decisions is made to the system operator". (in terms of the Equity and Debt Securities Markets)

In the Market Directives and Procedures, the principles regarding the "Finality of Settlement transactions" are explicitly specified and the relevant Directive and Procedure have been announced to the members via General Letters and are always accessible on Bank's website.

In the agreements signed with the members, it is explicitly stated that "The member cannot withdraw from the payment/transfer made through the system and will accept the payment/transfer sent to the member; and the payment instruction becomes final and binding upon satisfaction of the settlement conditions specified in Takasbank arrangements".

In the markets to which central counterparty service is provided, the settlement commitments are between the members and Takasbank. Settlement commitments between members are not possible. The reciprocal obligations between Takasbank and CCP members arising from the settlement cease upon completion of settlement. Takasbank's CCP services are limited to Turkey; and the reciprocal obligations of Takasbank and CCP members are already explicitly set forth in the legislation and membership agreements.

The members' security obligations are fulfilled by making transfer from the member accounts held with the CRA and/or/ CBRT to Takasbank Member Account, precious metal obligations are as to fulfilled by making transfer member accounts held with the Borsa İstanbul to Takasbank Accounts. Settlement receivables are transferred to the members' relevant accounts held with the Takasbank, CRA and Borsa İstanbul. The cash receivables are released following the settlement by the system after the obligations fulfilled. In order for the securities and precious metal receivables to be paid, cash obligations must have been fulfilled and the related settlement must have been executed by the system.

Takasbank fulfils its cash obligations towards the CCP members by making fund transfer to the cash accounts of the members held at Takasbank; whereas the members fulfil their cash obligations towards Takasbank by making fund transfer to their cash accounts held at Takasbank.

In order for the members to be fulfilled from their cash settlement obligations, it is sufficient to have the transferred to the cash settlement accounts at Takasbank belonging to the relevant market. The risk (e.g. default risk of the intermediary bank) during the period elapsing until the cash transferred by the member is credited to Takasbank account belongs to the member; whereas the risks that will arise after the crediting to the said account as such belong to Takasbank. The loss to be incurred in case of occurrence of such a risk cannot possibly be covered by the CCP default management resources. Takasbank fulfils its obligations against the members by making transfer to the members' accounts held at Takasbank. Upon execution of transfer, Takasbank's liability in its capacity as CCP ceases. For example, if the member wishes to withdraw that amount and Takasbank falls into default for any reason, neither the member's receivable nor the loss to be incurred can be possibly covered by the CCP default management resources. This has been explicitly stipulated in article 6 of the Directive on CCP Default Management Implementation Principles with the provision which reads as follows: From the moment Takasbank's obligation for completion of settlement is

fulfilled, the losses that may be incurred by the counterparties for any reason whatsoever cannot be associated with the default management resources specified within the framework of the CCP Regulation”. In order for the asset obligations to have been fulfilled, the virement instructions received from Takasbank or the CCP members should have been executed by the depository institution. The risks that may arise until execution of the asset transfer/virement instructions belong to the parties.

Takasbank’s main global custodian is Euroclear Bank Brussels which is operating under international regulations. Euroclear Bank Brussels accounts are used for clearing and collateral of transactions realized on the exchange. These transactions are reflected in Takasbank system after Euroclear is realized. Within the scope of the settlement finality, they are subject to the European Union Central Securities Depository Law and the Settlement Finality Directive (EU Directive 98/26/EC).

8.2. An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

In Takasbank Securities Lending Market to which Takasbank provides CCP service, both lending, borrowing and the debt closing transactions are executed intraday and by Real Time Gross Settlement (RTGS) system. Members can monitor the execution of settlement online via the SLM member screens. In the Securities Lending Market, the settlement of the asset subject to transaction is made at the time the borrowing is executed for the same-day-value transactions; and within the same day for forward-value-date transactions. The debt closing cut-off time for the borrowing debts that have become due is 17:00.

In the Futures and Options Market, the settlement related with the variation margin is made on day T; the clearing and settlement of the cash-settled contracts is made on day-T being the maturity date; and the settlement of the contracts based on physical delivery is made within the times specified in the procedure according to the underlying asset type. During the day T, temporary variation margin calculations are made on an hourly basis; and the variation margin calculations subject to final settlement are made at the end of the day. Those having variation margin payables to Takasbank can fulfil their margin call obligations on the next day until 15:00. The physical transfer of the profit does not create any adverse effect on the collateral balances of the member/customer.

In the OTC derivatives market, transactions that are submitted by the members via BISTECH platform, are subject to clearing & settlement of variation margin, financing cost related with the contract value and periodic payment amount within the same day.

The OTC transactions notified by members via BISTECH screens and accepted for settlement by Takasbank are subject to the settlement of variation margin and the settlement of the financing cost related with the contract value within the same day. In determining settlement periods, the business days on which the relevant currency can be exchanged are taken into consideration. The party for which a net positive “variation margin amount” is calculated by the end of the business day receives the related variation margin amount on the following business day. The party for which a net negative variation margin amount is calculated by the end of the business day pays the related variation margin amount on the following business day until 11:00. The party with a net positive contract value by the end of the business day pays the financing

cost of such amount after two business days until 11:00; and the party with a net negative contract value receives the financing cost of such amount after two business days. If the overnight interest rate is negative, the party with a positive contract value also receives the financing cost amount after two business days. The rights and obligations arising from the clearing and settlement of variation margins and contract value financing costs are determined on a trading and associated custodian account basis and finalized using such accounts.

At Borsa İstanbul Money Market, the settlement of transactions executed at the Market is made within the same day (T+0). Transactions are netted on an individual member basis and by risk group details on the value and maturity date. The net cash liabilities related to the transactions executed at the Market are paid until 16:45 to the accounts opened at Takasbank on an individual member basis.

At Borsa İstanbul Equity Market, the settlement date of the transactions executed at the Market is the second business day following the trading day (T+2). In calculating the net debt or credit amount of the transactions executed, it is essential to apply multilateral netting method, considering also the securities-based customer/portfolio segregation. As a result of such netting, settlement instructions that will also contain the cash debit/credit details against each security are created. The liabilities of the members are based on the settlement instructions created; and the final debt closing time for cash and security obligations is 16:45.

The settlement of TL transactions executed at Takasbank Borsa İstanbul Debt Securities Market is made over the value date (T+0); and the settlement of the transactions in foreign currencies is made on the first business day following the trading day (T+1). Repo-reverse repo transactions are included in settlement on the start and end date of the transactions. The settlement of forward-value-date transactions is made on the value date. Net settlement cash and asset obligations are closed by members until 16:45. In the transactions executed at the Market except for the Committed Transactions Market and International Bonds Market, while calculating the net debt or credit amount, it is essential to apply multilateral netting method by reciprocally offsetting the debts and credits of the members arising from the transactions they execute in the Market, considering also the securities-based customer/portfolio segregation, and by converting them into a single credit or debt. The settlement of transactions in the Committed Transactions Market and International Bonds Market is made on an individual transaction basis; and no netting is applied.

Equity and Debt Securities settlement transactions are collectively concluded through settlement of the highest amount of records at periodical intervals specified by Takasbank. It is also possible to partially fulfil settlement obligations; and partial settlement may be made in consideration for the partially-fulfilled obligations at the times designated by Takasbank. The settlement receivables are released by taking account of the current status of the settlement pool balances and the members' remaining obligations at the time of release.

The settlement of the transactions executed at Borsa İstanbul SWAP Market is made on the start and end value date. In the calculation of net debt and credit amounts with respect to the transactions executed at the Market, it is essential to apply multilateral netting method by taking into account the distinction on the basis of currency and precious metals, taking into account the customer/portfolio distinction. Settlement obligations are paid to the accounts opened at Takasbank and Borsa İstanbul Precious Metal Market on an individual member basis until 17:15 for TL and until 21:00 for USD/EUR and for precious metal until 17:00.

With regard to variation margin settlements, the variation margin amounts are calculated by the end of the day in TL to neutralize the intrinsic value of the swap transaction executed at the Market and the variation margin settlements are made in TL. The obligations calculated by the end of the day are closed by members on the following business day until 13:00.

In the markets in which Takasbank provides CCP service, Takasbank has not had any experience not explicitly stipulated in the relevant market Directives and Procedures or in which it has failed to make the final settlement on time due to an unforeseen reason.

8.3. An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

It is not legally possible for the members to reverse or cancel their obligations arising from matched orders or the payments and transfers they have made to fulfil such obligations. First paragraph of article 79 of the CMB Law no. 6362 contains the provision which reads as follows: “*Clearing and settlement instructions and transactions of the capital market instruments as well as the payment transactions cannot be revoked or reversed.*” In terms of the Equity and Debt Securities Market, article 10 of the PSL also contains the provisions regarding the finality of settlement.

In addition, the related issue has been explicitly specified in the Market Directive and Procedure; and announced to the members via a General letter. The Directive and the Procedure are published on Bank’s website.

Therefore, cash or securities blocked at Takasbank for cash liabilities, at CRA for shares and Private Sector Borrowing Instruments, at Takasbank for GDDS and at Borsa Istanbul for Precious Metals, and or It is not possible to return the precious metals to their source, even if the settlement (precious metal and cash exchange) has not yet taken place.

In addition, the thirteenth paragraph of article 5 entitled “Rights and Obligations of the Member” as specified in the participant agreement signed with the members contains the provision which reads as follows: “*It cannot waive the payment/transfer made through the system and shall accept the payment/transfer sent to it, and the payment order shall be final and binding upon its fulfilment of the settlement conditions specified in Takasbank arrangements*”.

Assessment Result for CPMI-IOSCO Principle 8

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank ensures that the final settlement is made by the end of the settlement date at the latest, and it has the capacity to ensure final settlement intraday or in real time in the appropriate markets.

Principle 9: Money Settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Key considerations

- 1. An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.*
- 2. If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.*
- 3. If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.*
- 4. If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.*
- 5. An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.*

Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Key considerations

9.1. An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

Owning the banking license, Takasbank conducts its money settlements in the accounts opened at Takasbank, and neither central bank money nor commercial bank money is used in money settlements.

The members with money liabilities transfer their monetary debts to Takasbank accounts at CBRT via EFT and fulfil their settlement obligations in the settlement accounts at Takasbank using such monetary amounts reflected to their current accounts at Takasbank. Similarly, the monetary receivables of the creditor members arising from settlement are also transferred to their current accounts at Takasbank; and these members can transfer such amounts to their other bank accounts held with the CBRT via EFT. The monetary receivables of the banks are automatically transferred to their TIC accounts, i.e. the cash accounts held with the CBRT.

In addition to the Turkish Lira accounts opened at Takasbank, USD and EURO accounts are also used for cash collateral and settlement transactions; however, there is no need to make settlements over foreign currencies. The foreign correspondent banks and the SWIFT system are used for EURO and USD transfer transactions.

In the CBRT legislation, there is no arrangement stipulating the provision of money settlement service. Actually, due to the facts that Takasbank owns a banking license, that it has the right of access to the liquidity of the CBRT, that it executes the settlements at itself using the CBRT payment systems, and that no commercial bank money is used in settlements, and thus, it is not exposed to credit and liquidity risk; there is no need to use the CBRT money in settlements.

9.2. If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

Pursuant to article 19/3 of Istanbul Takas ve Saklama Bankası A.Ş. Central Clearing and Settlement Regulation governing the general principles for the fulfilment of clearing and settlement obligations; the members are obliged to open the required accounts to perform the clearing and settlement transactions at Takasbank and the correspondent banks determined by Takasbank, the Central Registry Agency, central securities depositories and Borsa İstanbul. Similarly, the membership conditions specified in the Market Directives and Procedures contain the provisions regarding the opening of accounts at Takasbank, the CRA, Borsa İstanbul and the correspondent banks determined by Takasbank.

In the money settlements, the Turkish Lira and Foreign Currency (EUR and USD) deposit accounts at Takasbank are used; and money transfers are conducted through the correspondent banks using the CBRT electronic payment systems or the SWIFT.

9.3. If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

Owning a banking license, Takasbank executes its money settlements in the accounts opened at itself, and no commercial bank money is used in money settlements. However, non-bank clearing and settlement members fulfil their settlement obligations through an EFT-member bank. If the settlement is in a foreign currency, Takasbank's accounts held with correspondent banks are used.

The depository institutions used by Takasbank for safekeeping of foreign securities are in line with CPMI IOSCO principles; and they have clear and detailed review procedures. Takasbank executes settlement of international securities accepted by it as collateral and the securities are safe-kept at Euroclear Bank-Brussels. In addition, it provides custody services through Clearstream Banking Luxembourg on behalf of its clients. These two institutions have been defined by CPMI IOSCO as ICSDs (International Central Securities Depositories) (Recommendations for securities settlement systems, 2011). Both institutions also

have banking licenses; and bear the status of a central securities depository with a banking license. These two ICSDs resident within the boundaries of the European Union are subject to the European Union banking and payment systems legislation. Euroclear Bank and Clearstream Banking constantly publish their clear and detailed review reports; and these reports are regularly monitored by Takasbank. In addition, the credit rating scores of their affiliates and the developments in the legislation and international principles that these institutions and their affiliates are subject to are also monitored regularly.

These institutions are subject to the European Union Central Securities Depository Regulation (2017), the Settlement Finality Directive (98/26/EC) and CPMI-IOSCO principles. Analyses are made before face-to-face or online meetings held at least once or twice a year; and the changes/ developments are discussed in such meetings and disclosures are made by the authorized officers of these institutions where necessary. Clearstream Banking Luxembourg is an international central securities depository institution having a service standard similar to that of Euroclear Bank Brussels. Therefore, Clearstream and Euroclear links are kept active as the backup of each other.

Both Euroclear and Clearstream are ICSDs with banking license, cash transfers are limited to the scope of delivery versus payment (DVP) transactions or the payment of rights related to securities (coupon, redemption, dividend, etc.). There is no credit facility in use, Takasbank works on pre-funded basis. In addition, there is a custody limit allocated for Euroclear and Clearstream as allocated by Bank.

9.4. If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

Takasbank conducts its money settlements in the accounts opened by its members as Takasbank; and as it is explained in detail in the foregoing principles, it has the knowledge, experience, organization, legislation and technical infrastructure to minimize and ideally manage its credit and liquidity risks.

Articles 42 and 43 of Takasbank CCP Regulation governs the liquidity risk management and the management of credit and concentration risks. In accordance with these articles, Takasbank is liable to regularly analyse and monitor the liquidity requirements arising from being a CCP and to take the necessary measures, in addition to the liabilities related with liquidity risk management as stipulated under the banking legislation. In the liquidity risk management, the issues such as maintenance of sufficient liquid assets, the liquidation of collaterals with low costs and in a short time period, and the access to the liquidity of the commercial banks and of the Central Bank of the Republic of Turkey are taken into consideration as well. In addition, Takasbank is obliged to establish appropriate limits to restrict the credit risks that may result from the counterparties, and to determine concentration limits in order to ensure the diversity of collaterals in addition to the requirements stipulated in the banking legislation with respect to the management of credit and concentration risks.

9.5. An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

Owning the banking license, Takasbank conducts its money settlements in the accounts opened at Takasbank; and no commercial bank money is used in money settlements.

Within the scope of global custody service, DVP transactions are conducted at Euroclear and Clearstream Bank. These two institutions are the central securities depositories that also have banking licenses. The “Terms and Conditions” agreements of Euroclear and Clearstream, i.e. our overseas security correspondent banks, contain articles regarding the timing of execution and finality of transfers. The finality of transfers is also included within the scope of the European Union settlement finality (98/26/EC) directive related with the payment and settlement systems.

In addition to Turkish Lira accounts, USD and EURO accounts are also used for cash collateral and settlement transactions. For EURO and USD transfers, foreign correspondent banks and the SWIFT system are used. In order to ensure that settlement members’ monetary receivables arising from Borsa İstanbul SWAP Market can be transferred to the members’ correspondent bank accounts as soon as possible, monetary receivables in foreign currencies are automatically transferred to the member correspondent accounts notified to Takasbank in writing through SWIFT connection. As it is also stated in article 19 governing the clearing and settlement transactions as specified in İstanbul Takas ve Saklama Bankası A.Ş. Borsa İstanbul SWAP Market Clearing & Settlement and Central Counterparty Service Principles Procedure; Takasbank is not responsible if the settlement receivables sent via automatic SWIFT are not transferred to the member’s account at the correspondent bank with the same-day value date or are transferred in delay.

Takasbank Assessment Result for CPMI-IOSCO Principle 9

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank concludes the money settlements in its members’ accounts held at Takasbank; and no CBRT or commercial bank money is used in the settlement. Takasbank has the knowledge, experience, organization, legislation and technical infrastructure to minimize and ideally manage its credit and liquidity risks likely to arise due to the preference of this method.

Principle 10: Physical Deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

Key considerations

- 1. An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.*
- 2. An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.*

Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

Key considerations

10.1. An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

Takasbank also provides central counterparty service for the derivative contracts with physical delivery option, which are traded in the Futures and Options Market. Therefore, Takasbank currently may have a physical delivery obligation for the derivative instruments for which the underlying assets are stock, foreign currency and commodities (wheat, cotton).

The obligations of the members and of Takasbank regarding physical delivery have been specifically set forth in detail in the Directive and Procedure regarding the clearing & settlement and CCP service to be provided at Borsa İstanbul Futures and Options Market (FOM). The said documents are available and accessible to the members and the public on Takasbank website.

In case of default of the member under physical delivery obligation, it is stipulated that the underlying assets subject to physical delivery shall be supplied from the relevant markets with the trade margins of the defaulting member at FOM and Takasbank's obligations shall be closed. If the asset subject to physical delivery cannot be supplied within the time period specified in the Procedure, its market value calculated in the manner specified in the Procedure is paid to the creditor; and the creditor, if wishes, can demand the payment of its market value instead of the delivery of asset.

10.2. An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

Physical delivery is executed in a dematerialized manner by book entry in the accounts held at Takasbank or the central depository institution - CRA. For the futures contract with an option of physical delivery of stock, the positions remaining open by the end of maturity are directly subjected to physical delivery and the securities-related physical delivery debts and receivables are netted over the member's relevant customer or portfolio account at Borsa İstanbul Equity Market and discharged at the CRA. The member having a security debt due to the EWR physical delivery obligations shall fulfil the relevant obligation in the CRA system. The cash receivable of the member fulfilling its security debt is transferred to its free accounts at Takasbank. The member with a cash debt shall discharge the relevant obligation through its free account held at Takasbank. EWR physical delivery obligations are netted on account basis and the settlement is concluded through the conditional transfer system. The Member, who has net foreign currency debt due to the physical delivery obligations of foreign currency, closes the related debt through the accounts at Takasbank's correspondent banks, and the net foreign currency receivables are transferred to the Members' free foreign currency accounts at Takasbank. The obligor member is obliged to send the amount owed on the value date to Takasbank's correspondent account. The Turkish Lira receivable of the Member paying the foreign currency debt is transferred to his free account at Takasbank. The Member, who owes Turkish Lira, closes the related debt through his free account at Takasbank.

The delivery obligations of the members, and accordingly, of Takasbank regarding the physically-delivered contracts as well as the members' physical delivery requests can be monitored in Takasbank system; and the members can follow their physical delivery obligations and whether or not their physical delivery requests have been fulfilled through their screens.

Takasbank Assessment Result for CPMI-IOSCO Principle 10

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank has clearly specified its physical delivery obligations and the risks related with such obligations in the markets to which it provides CCP service. Physical delivery obligations and risks can be monitored and managed in an effective manner.

Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Key consideration

1. An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Key consideration

12.1. An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

Article 21 of Takasbank's CCSI Regulation governs the delivery versus payment principle in clearing & settlement service. Accordingly, clearing and settlement is made by delivery versus payment principle in the Markets to which clearing and settlement service is provided; and according to this principle, no receivables are paid to the members failing to fulfil its obligations on the settlement day. Receivables are paid partially in consideration of the obligations fulfilled partially on the settlement date.

Payment versus payment (PvP) and delivery versus payment (DvP) principles are applied at Takasbank Borsa İstanbul SWAP Market. In this context, in order for cash settlement receivables to be paid, margin obligations should have been fulfilled and there should be sufficient balance in the settlement pool.

Since Takasbank makes settlements in accordance with the delivery versus payment and payment versus payment principles without exception, no principal risk arises. In the Market Directive and Procedures for the Market to which CCP service is provided, it is clearly stated that in terms of the relationship between Takasbank and the member, principle shall be applied for the settlement of transactions conducted in the market. For the linked transactions in the physical delivery, final settlement occurs simultaneously. Settlement instructions are created in a manner to contain cash debit/credit details in consideration of each security, considering the customer/portfolio segregation against the transactions executed by the members in the Equity and Debt Securities Market. The instructions created as such are fulfilled in accordance with the delivery versus payment principle. In other words, since Takasbank conducts the money settlement in the accounts held with it, no security is transferred to the central securities depository – CRA/the account

held with Takasbank until the monetary amount is blocked/transferred to settlement pool accounts. In the contrary case, the monetary settlement is not concluded at Takasbank and the value of the securities cannot be credited to the creditor member's free account until the securities held at the depository institution CRA / Takasbank are blocked/transferred to the settlement pool accounts. After completion of both legs of the cash and security blockage, the execution of final settlement is an automated process triggered by the 'system'. Thus, the final settlement is executed by the system simultaneously as soon as the second leg of the blockage is completed.

Settlements are collectively concluded through settlement of the highest number of records at determined intervals by Takasbank. It is also possible to partially fulfil settlement obligations; and partial settlement may be made in consideration for the partially-fulfilled obligations at the times designated by Takasbank. The settlement receivables are distributed by taking account of the current status of the settlement pool balances and the members' remaining obligations.

In the linked transactions executed at Borsa İstanbul. Futures and Options Market, the assets subject to blockage are held in the accounts and at the disposition of Takasbank during their period of blockage at Takasbank or the depository institution. In Article 79/1 of the Law no. 6362, it is stated as follows: "clearing and settlement instructions and transactions of the capital market instruments as well as the payment transactions cannot be revoked or reversed, including the temporary or permanent suspension of activities of the members of central clearing and settlement institutions and the initiation of liquidation processes before administrative and judicial authorities". Therefore, cash or assets that are blocked or transferred to the pool at Takasbank in relation to cash obligations or at the central depository institution CRA in relation to asset obligations cannot be returned to their origin even if their settlement (exchange of cash and assets) has not been yet executed; hence, they cannot be held subject to any attachment or similar claim of third parties, either.

In the CCP services it offers, Takasbank is not dependent on the DvP or PvP services provided by the central securities depository - CRA or another institution. However, any and all integration and connections technically required during the trading, clearing & settlement and custody processes of the capital market instruments are already provided and in place between Borsa İstanbul, Takasbank and the CRA. The business continuity between Takasbank and the CRA with respect to the trading and default transactions is already specified under a service agreement.

Takasbank Assessment Result for CPMI-IOSCO Principle 12

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank applies the delivery-versus-payment (DvP) system in the settlements; and for the transactions that involve the settlement of two linked obligations, it eliminates the principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key considerations

- 1. An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.*
- 2. An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.*
- 3. An FMI should publicly disclose key aspects of its default rules and procedures.*
- 4. An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.*

Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key considerations

13.1. An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

The conditions under which Takasbank CCP members shall be deemed to have defaulted are already explained in the relevant Market Directives and Procedures, including the CCP Regulation in particular, and also incorporated into the Membership Agreements. Pursuant to the first paragraph of article 35 of Takasbank CCP Regulation; if a CCP member fails to timely and completely fulfil its margin call and guarantee fund contribution, delivery or payment obligations specified for each market or capital market instrument as well as its delivery or payment obligations regarding the transactions it has executed, the member is deemed to have defaulted without any need for a further notice.

The actions to be imposed on the CCP member deemed to have defaulted for any reason whatsoever are set forth in the relevant Market Directives and Procedures; and how the actions and procedures relating to the default shall be handled within Takasbank are already specified in the Directive on CCP Default Management Implementation Principles. In this context, the member deemed to be in default may be given a time period specified in the relevant Market Directives and Procedures to fulfil its obligation pursuant to article 35/3 of the CCP Regulation. This period that may be granted for the defaults not resulting from any 'financial inadequacy' called as 'technical default' or 'operational default' in the international principles

and practices is defined as ‘pre-default’ in the Directive on CCP Default Management Implementation Principles.

In the Directive on CCP Default Management Implementation Principles, the events of default in which the member delays the fulfilment of its clearing and settlement obligations, at most, up to the end of the period set forth in the relevant directives and procedures and which do not prevent the continuation of the member activities are defined as pre-default, and the measures that can be taken about the member in case of frequently recurring pre-default events are specifically stipulated. If the member fails to fulfil its obligation within this period defined as pre-default, the CCP Default Management Committee may convene and extend the ‘pre-default’ period providing that the default of the member has resulted from any reason (operational or technical) other than its financial inadequacy. Collateral outflow from the member accounts and/or execution of any risk-enhancing transactions by the member may be prevented during the pre-default period. It is also possible to impose disciplinary penalties on the member or administrative sanctions on the accounts of the member causing such default. If the CCP Default Management Committee does not extend the relevant member’s pre-default period or the member fails to fulfil its obligation despite the additional period granted, the CCP member is considered to have defaulted and the member’s default is urgently notified to the Capital Markets Board, CBRT, BRSA and the other relevant institutions. Following such notification, it is required to take any and all necessary actions to resolve the default in accordance with the decisions of the CCP Default Management Committee that will be taken considering the CCP legislation and the international principles and best practices, where necessary.

Pre-default events may be terminated by using the member’s initial margins; however, the use of other default management resources including the defaulting member’s guarantee fund contributions in the closure of the member defaults is only possible with the decision of the CCP Default Management Committee and notification of the member’s default to the Capital Markets Board and relevant institutions.

As long as the pre-default event and the defaults are closed within the due period, they are not considered as an event absolutely necessitating termination of CCP membership, despite the disciplinary penalties that may be imposed. However, it is not possible for a member and the customers associated with that member declared to have defaulted due to financial inadequacy with the decision of the CCP Default Management Committee and subjected thereby to Takasbank’s CCP Default Management actions to not be affected by such actions at all or to normally continue its transactions. Default management actions to be taken by the CCP Default Management Committee depending on the financial inadequacy will have initiated a process which will simultaneously necessitate the suspension of the CCP membership and most likely its permanent termination in the end.

The major tools that can be used by the CCP Default Management Committee in the default management include porting or closure of the positions, sale through auction or forced transfer, the restriction of profit distribution at the futures and options markets and the hedging transactions. The decisions regarding the usage of CCP Default Management Resources in the required order and to the required extent, including the usage of the guarantee fund contributions deposited by non-defaulting members and requesting additional guarantee fund contributions from non-defaulting members, shall be taken by the Default Management Committee. The responsibilities of the non-defaulting CCP members are explicitly set forth in the Market Directives and Procedures and the membership agreements. Takasbank’s CCP default management process

is designed not as a set of rules that must be applied in the same way under all circumstances without considering their effect; but as a process enabling the CCP Default Management Committee to use its discretion in a manner to protect the interests of both the defaulting member and Takasbank as well as non-defaulting CCP members and the markets. According to the Directive on CCP Default Management Implementation Principles, the CCP Default Management Committee shall take into consideration the reason of default and its effects on the markets when employing the default management tools. The CCP Default Management Committee is authorized to take any other measures that it deems necessary, considering the relevant legislation, the agreements signed with the members and the international principles as well. Therefore, even it is not explicitly specified in the CCP legislation, it is very well possible to develop new mechanisms that can limit the adverse impacts of the default or implement the examples of best practices in the default management. The order and timing of the default management actions are also the matters reserved to the discretion of the CCP Default Management Committee, providing that the provisions of the legislation shall also be taken into account.

Takasbank has established the default management resources that it will use in case of default of the members in the markets to which it provides CCP service, by considering the replenishment of such resources, the international principles and the examples of best practices; and a default management system that will allow Takasbank to continue its CCP services in an uninterrupted manner even under extreme conditions has been designed.

The default management resources and their sequence for use are stipulated in article 36 of the CCP Regulation as shown below.

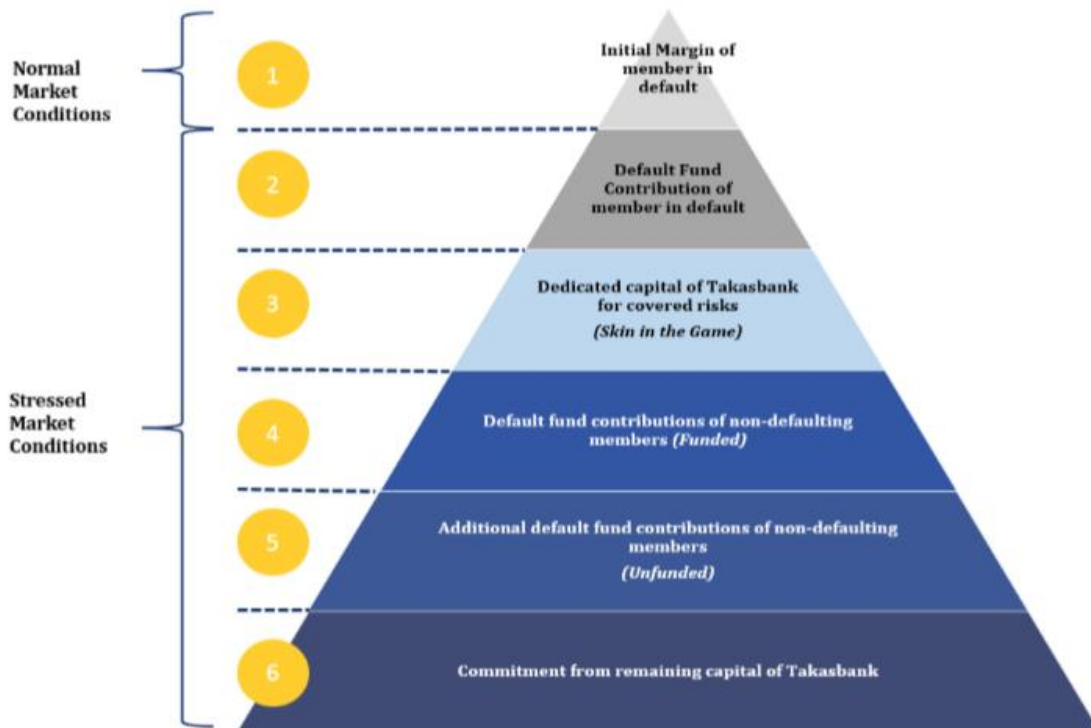


Figure 4- Takasbank CCP Default Management Resources and Order of Use

In Takasbank CCP model, the safety of both the market and Takasbank is addressed at the highest level. In CCP default management, Takasbank's capital can be used in two separate tranches as allocation and commitment. The use of the portion allocated from Takasbank capital to the CCP default management (SIG – *skin in the game*) before the guarantee fund contribution amounts of the non-defaulting members is compulsory. On the other hand, the second portion committed from Takasbank capital to the CCP default management shall be used after the funded and unfunded guarantee fund obligations of the non-defaulting members.

The calculation of the capital allocated and committed from Takasbank capital to the CCP Default management is made in accordance with Basel 2 capital adequacy arrangements and EMIR master document no. (EU) 648/2012 of the European Union and EMIR technical arrangements no. (EU) 152/2013 and (EU) 153/2013 on the capital adequacy and default waterfall of the central counterparty institutions (See Figure 5), and the capital amounts allocated and committed separately with the Board of Directors' resolution on the basis of markets to which CCP service is provided and the period in which they will be applicable are disclosed to the public.

A	<input type="checkbox"/> Minimum capital requirement for credit, market and operational risks under banking legislation (calculated under Basel II, Pillar One)
B	<input type="checkbox"/> Internal capital allocation related to CCP services as the provisions for business risks and the costs of recovery and orderly wind-down of activities (Calculated under Basel II, Pillar 2) B= 75% of the previous year's operational expenses related to CCP services
C	<input type="checkbox"/> Dedicated capital of Takas Istanbul for CCP services (<i>Skin-in-the-game for covered risks</i>) C= (A+B) * 25%
D	<input type="checkbox"/> Commitment made from the remaining capital of Takas Istanbul for CCP default management D= Regulatory Capital – A – B – C – other internal capital allocations under Basel II, Pillar Two

Figure 5- Capital 'Allocated' and 'Committed' to the CCP Default Management by Takasbank

The use of Takasbank capital in CCP default management has been designed in a manner that would enable Takasbank to survive under all circumstances, but also to use its entire capital remaining above its regulatory and internal capital obligations, where necessary. Pursuant to paragraph 6 of article 36 of the CCP Regulation, the payments to be made in advance by the shareholders or other people and institutions so as to be used in Takasbank's potential capital increase as well as the equity and quasi-equity resource commitments of irrevocable nature may also be added to the capital committed in default management.

In order to prevent any liquidity shortage that may be faced in CCP default management, the rule stipulating that the sum of liquid collaterals of the member having the largest exposure for each market to which CCP service is provided, the assets with high level of liquidity in the guarantee fund established for the relevant market, and the amounts allocated and committed by Takasbank from its own capital and invested in liquid assets should not fall below the settlement risk amount of the said two members calculated with a minimum 99,5% confidence level is applied and monitored on a daily basis. In such monitoring, only the qualifying assets (cash and O/N placements and assets accepted as collateral by the CBRT) are included in the liquid asset definition.

In addition, in article 36 of the CCP Regulation, it is explicitly specified that in case of default, Takasbank is not limited to the liquidity in its default management resources, and the sequential order given in the Regulation for the use of default management resources is intended for loss allocation; and Takasbank can make the necessary prioritization with respect to the liquidity management and may borrow to manage the default if and when needed. Therefore, it is possible for Takasbank to promptly eliminate a default-originated liquidity shortfall and timely fulfil its commitments by firstly using the liquid resources to which it invested its capital allocated and committed to the default management and/or accessing to the liquidity of the CBRT, where necessary.

If the default management resources are used, how they will be replenished is already stipulated in the relevant Market Directives and Procedures. The members can be asked to deposit additional guarantee funds four times a year. The periods in which the members are required to fulfil the requests related with the margin calls to replenish guarantee funds, to-redeposit already deposited guarantee fund contribution amounts used for default management and to deposit additional guarantee fund contributions within the framework of the default management process are already specified in the relevant Market Directives and Procedures. In addition, the maximum guarantee fund contribution that may be requested to be deposited in case of a default pending resolution at the time of the request from the CCP members that have requested to leave membership, but such requests have not been yet decided by the Board of Directors or the request to leave CCP membership has been accepted by the Board of Directors, but the members have been granted a period for the return of the deposited guarantee fund contribution is also clearly specified in the relevant Market Directives and Procedures. If the capital allocated by Takasbank is used, the exhausted portion is transferred from the committed capital tranche within one month. However, the aggregate amount of such transfers to be made in a year may not exceed the first allocation amount made at the beginning of the period.

13.2. An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

The rules and procedures to be applied in the CCP default management against the defaulting and non-defaulting CCP members have been stipulated in the CCP Regulation and the relevant Market Directives and Procedures; and the rights and powers of Takasbank and the responsibilities of the members in case of events of default have also been incorporated into the agreements signed with the members; thus, the legal risks that might arise thereof have been minimized. The internal rules and procedures to be implemented by Takasbank business units in the CCP default management, including the principles regarding the exercise of Takasbank's discretionary power, have been stipulated in the Directive on CCP Default Management Implementation Principles.

The general principles regarding the communications to be established with the Capital Markets Board, other regulatory and supervisory agencies, Borsa İstanbul, non-defaulting members and other stakeholders in the CCP default management are already set forth in the Directive on CCP Default Management Implementation Principles. In addition, it is also stipulated that the methods to be employed to facilitate communication and coordination with the defaulting member and their customers for porting of the positions and collaterals, where necessary, after the declaration of default shall be determined by the CCP Default Management Committee.

It is stipulated that at Takasbank, the CCP Department shall conduct the secretariat services of the CCP Default Management Committee and to prepare and submit to the Committee any and all types of technical analyses that will constitute the basis for the decisions to be taken by the Committee. The Collateral Monitoring and Default Management team reporting to the CCP Department is responsible to continuously monitor the progress of the default management resources and the risk/collateral balances and to review the collateral management process.

13.3. An FMI should publicly disclose key aspects of its default rules and procedures.

The default management rules applied in the markets to which central counterparty service is provided and the procedures regarding management of the process are explained in the Central Counterparty Regulation and the relevant market Directives and Procedures. These documents are available on Takasbank website².

A comprehensive information document explaining the events of ‘pre-default’ and ‘default’ specified in the Directive on CCP Default Management Implementation Principles setting forth the principles and procedures for management of the default management process by Takasbank business units, the establishment and composition of the CCP Default Management Committee and the actions that can be taken by the Committee in relation to the member and customer positions and asserts in the events of pre-default and default, the mechanisms that will be used by Takasbank in the default management process in fulfilling its obligations against the non-defaulting members and the obligations of the members that might arise against Takasbank is published and made available and accessible to the members and the public on Takasbank website³.

13.4. An FMI should involve its participants and other stakeholders in the testing and review of the FMI’s default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

Pursuant to the Directive on CCP Default Management Implementation Principles, a default management simulation is conducted once a year with the participation of the market participants designated by the CCP Default Management Committee in order to test the executability of the default management processes and to ensure their best level management by Takasbank. The results obtained thereof and the recommended revisions in the legislation are presented to the CCP Default Management Committee and further reported to the CCP Risk Advisory Committee and the Board of Directors.

Takasbank Assessment Result for CPMI-IOSCO Principle 13

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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²

<https://www.takasbank.com.tr/tr/mevzuat/prosedurler>

³ CCP Default Management General Practice Principles

Takasbank CCP Default Management Implementation Principles Directive

Takasbank OTC Default Management Practice Principles Directive

Takasbank has effective and clearly-defined rules and procedures for management of the CCP members' defaults. These rules and procedures have been designed in a manner to enable Takasbank to continue to fulfil its obligations by timely acting and constraining possible losses and liquidity pressures in case of any default in the CCP markets.

Principle 14: Segregation and Portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

Key considerations

- 1. A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.*
- 2. A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.*
- 3. A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.*
- 4. A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.*

Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

Key considerations

14.1. A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.

The principles regarding segregation and portability of the positions and collaterals in the markets to which Takasbank provides CCP service are stipulated in articles 25 and 26 of the CCP Regulation. Market-specific arrangements regarding the segregation and portability of the positions and collaterals are also included in the relevant Market Directives and Procedures.

The segregation of positions and collaterals in the markets to which central counterparty service is provided is addressed in two levels.

- (i) The positions and collaterals in the member and client accounts are monitored separately from Takasbank's own assets.
- (ii) The positions and collaterals of the members' clients are monitored separately from the positions and collaterals pertaining to the member's own portfolio at Takasbank.

In addition, the positions and collaterals of individual client can, upon their request, be monitored in the individual client accounts associated with the member, separately from the positions and collaterals of other client; and it is at Takasbank's discretion whether or not to offer an individual account alternative to the customers in the spot (cash) markets. However, it is compulsory to offer an individual position and collateral account alternative to the client at FOM.

Pursuant to the Market Directives approved by the Capital Markets Board, the client positions and collaterals are currently monitored in the individual client accounts associated with the member both in the organized derivatives market FOM, OTC and in the SLM; and no omnibus account alternative is offered for the client positions and collaterals. In the other markets to which CCP service is provided, a portfolio account is the account of transactions executed by the member for its own portfolio and it is essential that the client positions are collectively monitored in omnibus accounts. It is accepted by Takasbank that the collaterals deposited by the members to the collateral accounts associated with omnibus accounts belong to the Member. In addition, it is possible to monitor the client positions and collaterals in the SWAP Market, debt securities market and Equity Market at individual position accounts opened at Takasbank through the individual position accounts linked to the member and the client's collateral sub-accounts, providing that they are requested by the CCP member and the conditions specified in the Procedure are met.

Pursuant to the third paragraph of article 25 of the CCP Regulation, client collaterals associated with the positions in individual position accounts cannot be used for the collateral deficits in the CCP member's own portfolio accounts or for those in other individual client accounts. Hence, an infrastructure that will prevent the default or insolvency of the member or other clients associated with the member from affecting the positions and collaterals in the individual client accounts is provided with the CCP Regulation. However, Takasbank does not deal directly with the client in the CCP services, and it is not liable for the member's obligations towards its client, either. The right of disposition on individual client accounts opened with Takasbank belongs to the member; and Takasbank constrains the member's right to withdraw collateral from these accounts only for the collateral (risk) amount required to be maintained. Therefore, the excess collateral in the individual client accounts remaining above the required obligation can be freely withdrawn by the member. The member's right of disposition on the accounts is constrained in case of default; and unless specifically permitted, the member cannot execute any transaction on the accounts. Thus, as long as there is not any unlawful case such as the use of client collaterals out of the client's knowledge or instruction or beyond their intended purpose, the collaterals deposited to the individual accounts at Takasbank are protected from the default and insolvency of both the member and other clients.

The client's positions and the collateral accounts that they are associated with can be ported by Takasbank to the accounts to be opened by the transferee member, upon the customer's request to be made before the default to the member to whom it is associated and with the transferor member's approval and the transferee member's acceptance.

In case of default, however; it is stipulated that if any designation for the transferee member is made beforehand, the positions and collaterals in the individual customer accounts monitored in the accounts associated with the defaulting member should be ported within 24 hours following the notification of default without the need for further approval of the defaulting member.

If there is no designation made beforehand with respect to the transferee member, the porting can be possible only if a member willing to take over the positions and collaterals is found within the time period that will elapse until the positions are liquidated through any action.

Takasbank may prevent the withdrawal of collaterals by the transferee member until achievement of the reconciliation between Takasbank records and the defaulting member's records related to the ported collaterals.

Takasbank also works with two custodian institutions located abroad, and securities that are kept abroad within the scope of CCP and Central Clearing markets (only Turkish Treasury Foreign Debt Securities — Eurobond and G7 government debt securities) and foreign currency (USD/EUR/GBP) may also be offered as collateral. Takasbank Board of Directors allocates custody limits to global custodians to be used for safekeeping of the foreign currency-denominated securities that may be accepted as collateral in the markets to which CCP service is provided, by taking their international credit ratings as the basis. In order for the non-cash collateral and guarantee fund contribution amounts of the CCP markets to be safe-kept in the depository institutions resident abroad, it must be verified that non-cash assets are protected from the bankruptcy or liquidation of the depository institution as well as the proceedings that may be initiated by the creditors of such institution. Currently, Takasbank's international security collaterals and guarantee fund contribution amounts are safe-kept at Euroclear Bank Brussels. It operates pursuant to Belgian Laws and European Union Regulations. Euroclear Bank constantly publishes their clear and detailed review reports; and these reports are regularly monitored by Takasbank. In addition, the developments in foreign markets and global custody institutions are monitored on a monthly basis and published in the form of a bulletin; and the credit ratings are also monitored continuously.

The capital market instruments for which global custody service is provided are limited to the assets accepted for custody by or global custody network. The securities accepted for custody may be inquired through the global custodians with their ISIN code. The services provided within the scope of this service include the settlement transactions related with the capital market instruments held in the custody account, cash transactions related with settlements, and the custody services including corporate actions such as exercise of rights. The custody risk that the Bank may be exposed to due to such services is managed as follows:

- In article 9 of Takasbank Global Custody Service Supplementary Contract, it is stipulated that the Bank is not responsible for any loss or damages likely to be incurred by the customers to which custody service is provided if the securities or cash amounts are safe-kept or held by the foreign depository institutions abroad and due to the overseas depository institution's failure to fulfil its obligations due to its bankruptcy, liquidation or any other reason.
- Vast majority of foreign and international client securities and all of foreign and international collaterals of Takasbank are safe-kept by Euroclear Bank SA NV Belgium, are held in a fungible

manner in book entry form. Securities safekept at Euroclear are protected pursuant to Belgian Law and European Union regulations.

14.2. A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.

In the FOM, OTC and the SLM to which central counterparty service is provided, Takasbank monitors the positions and collaterals of the CCP members' customers in the sub-customer accounts separately defined for each customer under the accounts opened in the name of the member. In the other markets to which CCP service is provided, position and collateral accounts of the portfolio are monitored under the member portfolio accounts, while the positions and collaterals related to the customers are monitored in omnibus accounts segregated from the member's position and collaterals.

Individual customer accounts are already segregated both from the accounts in which the positions and collaterals belonging to the member's portfolio are monitored and from the other customer accounts. Offsetting among the customers' individual position accounts or between the customer accounts and the member portfolio accounts, or using the collaterals in the individual customer accounts for the collateral requirements arising from another individual customer or member portfolio account is not possible. The collaterals monitored in the accounts belonging to the member portfolio can be used to cover the collateral requirements arising from the customer positions.

Accounts at Takasbank are opened by the members of the Bank for Equity and Debt Securities, whether for portfolio or customer, on the other hand, at Derivatives Market, the accounts are opened by the members, and the power of disposition on the accounts belongs to the member.. There is no legal relationship established between Takasbank and the member's customers. If, in case of default of the member, the customer positions and collaterals are ported to another member, the new member's right to withdraw the ported collateral from the defaulting member may be constrained until achievement of the reconciliation between the defaulting member's records and Takasbank records.

In the markets to which Takasbank provides CCP service, the trade margins and the guarantee fund contribution amounts are monitored in separate accounts; and the customer's trade margins are used for the initial margin and variation margin obligations.

14.3. A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.

The principles regarding the segregation and porting of the positions and collaterals in case of default in the markets to which central counterparty service is provided are set forth in the 2nd paragraph of Article 78 of the Capital Markets Law. In this context, the clients' positions and collaterals can be ported, in the default management process, to other members when required directly or upon the request of the clients of the defaulting member, without any need for the consent of the defaulting members.

Moreover, Takasbank's CCP legislation has been designed in a manner to allow for both pre-default and post-default porting. The portability of collaterals and positions is specifically stipulated in Article 26 of the CCP Regulation.

In case of pre-default porting operations, the transferor member's request and the transferee member's acceptance must be presented to Takasbank in writing. Takasbank executes the porting operations considering the compliance with the transferee member's limits and position thresholds.

If, in case of porting operations to be conducted due to default of a CCP member, any designation has been made beforehand in relation to the transferee member; it is stipulated that the porting shall be performed within 24 hours following the notification of default without any need for further approval of the defaulting member. If there is no designation made beforehand, the porting can only be performed if a member willing to take over the positions and collaterals is found during the time period that will elapse until the positions are closed by any action.

14.4. A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.

The arrangements regarding segregation and portability are stipulated in articles 25 and 26 of the Central Counterparty Regulation, and under special headings in the Directives and Procedures specific to markets; the said arrangements are available on Takasbank website for public access.

Information is provided on the website about the issues regarding the following; if there is no designation made beforehand with respect to the transferee member or if the porting is not conducted within 24 hours despite such a designation made; the positions and collaterals may be subject to default management actions; it is important for the customers to closely monitor the positions and collaterals held in their name in the accounts associated with the member at Takasbank, by making use of the available remote access facility; whether or not the member has fully deposited the collaterals of its members to the customer accounts held at Takasbank is not under the control of Takasbank; Takasbank blocks the collateral deposited by the member to the customer accounts only up to the portion corresponding to the risk amount; Takasbank determines the CCP members by only taking account of their capacity to fulfil their financial and operational obligations against Takasbank and collateralizes the risks that may arise; the CCP members' capacity to fulfil their obligations against their customers or other persons or entities is not monitored by Takasbank; Takasbank is not responsible for the CCP members' obligations against their customers; and since the members are the legal addressees of Takasbank, it may not be legally possible for Takasbank to make direct payment to the customers and/or to execute transactions directly upon the customers' requests.

Takasbank Assessment Result for CPMI-IOSCO Principle 14

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank has the rules and procedures allowing for the segregation and portability of the positions of CCP members' customers and the collaterals related to such positions and it discloses such rules and procedures to the public.

Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Key considerations

- 1. An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.*
- 2. An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.*
- 3. An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.*
- 4. Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.*
- 5. An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.*

Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Key considerations

15.1. An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

Takasbank has to manage risks that it is exposed to as part of its operations in accordance with the capital adequacy regulations stipulated in Banking legislation. Under the supervision of the BRSA, Takasbank keeps its capital adequacy ratio, which represents the ratio to equity of the total amount subject to the Bank's credit risk, market risk, and operational risk above 12%. In this context, Bank complies with legal capital adequacy ratios in a manner that prevents its equity from reducing as a result of an income-expense imbalance due to any of its operations; and the Bank conducts its activities so that its equity can always cover the risks it is exposed to.

Takasbank budgets its income and expenses by also taking account of the trading volume forecasts of Borsa İstanbul to which it offers the CCSI service and the operations are continued within this framework. The income and expense realizations and the deviations from the budget are rigorously evaluated in the monthly ALCO (Asset & Liability Committee) meetings; and the necessary actions are taken to not fall below the income targets or exceed the expense targets. In addition, in the aforementioned meetings held on a monthly basis, necessary assessments are made with respect to the occurrence of operational loss, which is the risk that the operating income derived from all services offered by Takasbank except for clearing & settlement and CCP activities may not cover the operating expenses, and necessary actions are taken, considering all budget deviations related with all services. However, given Bank's strong capital structure and the continuity of the high return on equity achieved, the general business risk is deemed to be quite low.

In Takasbank's Directive on Central Counterparty Risk Management Implementation Principles, the 'general business risk' is defined as the "adversities that may occur in Takasbank income-expense balance depending on the CCP activities due to unforeseeable business conditions".

Takasbank allocates a specific amount of reserve as internal capital to support the uninterrupted continuation of its operations in case of occurrence of CCP business risks. However, the resource amount that can be used to fund the CCP operational expenses in case of occurrence of general business risks is not limited to the allocated internal capital amount under any circumstances. The internal capital allocation is made in line with articles 2 and 5 of EMIR supplementing regulation no. EU 152/2013 of the European Union and in a manner to ensure that it is not less than 75% of the last one-year operational expenses of CCP services, as the provision for general business risk and the costs of recovery and orderly-wind-down of activities. In the calculation of the capital to be allocated to the CCP covered risks, adding the provision for general business risk and recovery risk to the minimum capital obligation covering the credit, market, and operational risks has also been stipulated in article 39 of the CCP Regulation.

15.2. An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be

determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

The Bank sets aside provision for business risk and recovery cost in accordance with international principles, so that it can continue its operations and services as a going concern if it incurs general business losses. The provision for recovery cost is allocated to fund the operations during the process of recovery or orderly wind-down of CCP activities. The provision is set aside through allocation of internal capital unless it is stipulated as a legal requirement. Sufficient amount of liquid net assets is held for such provision.

Takasbank holds some of its equity as liquid net assets so that it can continue all of its CCP and CCSI activities without a problem if it incurs general business losses.

Takasbank's liquidity and liquidity risk management frameworks are explained in detail in Principle 7. In the Directive on CCP Risk Management Implementation Principles, it is exclusively stipulated that liquid assets shall be held against the capital set aside as provision for general business risk and recovery cost. The amount of such provision has been determined by taking account of CPMI-IOSO Principles European Union norms. The provision for general business risk corresponds to 3 months and the provision for recovery and orderly wind-down corresponds to 6 months of CCP operational service expenses.

15.3. An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

Takasbank has a recovery plan approved by the Board of Directors. In addition, the wind-down of Takasbank's CCP activities has been exclusively stipulated in article 26 of the Directive on CCP Default Management Implementation Principles approved by the Board of Directors. In the said Article, it is stated that;

- If the CCP service provided by Takasbank is terminated for any reason, the existing positions and collaterals shall be ported to another institution that may be commissioned as a central counterparty by the Capital Markets Board in accordance with the legislation or Takasbank shall, if deemed appropriate by the Capital Markets Board, continue its clearing & settlement and collateral management services without acting as a central counterparty;
- In case of occurrence of any conditions which would prevent Takasbank from continuing its clearing & settlement or central counterparty services and the positions and collaterals cannot be ported to another institution; then, the positions and collaterals shall be liquidated in accordance with the principles to be set forth by the Capital Markets Board.

Takasbank holds internal capital equal to 6 months of CCP operational service expenses as the provision for recovery and orderly wind-down (termination of business). However, the resource amount that can be used in such a situation is not limited to the allocated internal capital under any circumstances.

In article 39 of İstanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation, the issue regarding the calculation of the capital obligation to be allocated against the central counterparty risk has been regulated. The said article contains the provision which reads as follows: “*Takasbank shall dedicate 25% of the amount which is found upon addition of 75% of the previous year’s operational expenses related to the CCP services for the business risk and recovery costs to the minimum capital amount calculated within the framework of the banking legislation for risks subject to the legal capital adequacy obligation It is essential that this provision dedicated as such shall be invested in highly liquid assets.*”.

Although there is no requirement in the banking capital adequacy legislation to set aside capital for the general business risk or recovery risk, the provision for CCP general business risk and recovery and orderly wind-down is set aside during the Internal Capital Adequacy Assessment Process (ICAAP) conducted in accordance with the banking legislation. Following their approval by Takasbank Board of Directors, the ICAAP results are submitted to the Banking Regulation and Supervision Agency; and when the ICAAP results are approved by the BRSA, the provision for CCP recovery and orderly wind-down allocated in accordance with the ICAAP becomes a formal element of Takasbank risk-based capital adequacy. Takasbank tests its general capital adequacy under a wide range of stress scenarios and preparations are made for the worst-case scenario.

It is prohibited by law to use the collateral and guarantee fund contributions included in the CCP default management resources for any purposes other than default management. Therefore, the said resources cannot be used to cover the general business risk losses or recovery and orderly wind-down (termination of business) costs.

Pursuant to subparagraph (1) of the first paragraph of article 11 entitled “Operating Principles of the System Operator” as specified in the Regulation on Operations of Payment and Securities Settlement Systems, Takasbank Recovery Plan is prepared and approved by the Board of Directors. In addition, Takasbank Orderly Wind-Down Plan has been prepared in relation to the orderly wind-down of activities and approved by the Board of Directors. The said plan contains the actions designated in the statutory regulations published by the CMB, which should be taken in the wind-down of CCSI operations carried out by Takasbank and the actions to be taken pursuant to the Payment Systems Law in the event that the licenses/permits given by the CBRT for the payment and securities settlement systems-related activities conducted by Takasbank are cancelled/transferred to other institutions.

15.4. Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

In the Directive on CCP Risk Management Implementation Principles, it has been specifically set forth that liquid assets shall be held against the capital set aside as the provision for general business risk and recovery cost. The provision for general business risk is at a level that will cover 3 months of CCP operational service expenses and meets the minimum norms. However, the capital and liquid resources that can be used by Takasbank to cover the general business risk losses are not limited to such amount under any circumstances. As explained in (15.3) above, the provision for CCP recovery and orderly wind-down allocated during the Internal Capital Adequacy Assessment Process eventually becomes a formal element of Takasbank risk-

based capital adequacy. Takasbank tests its general capital adequacy under a wide range of stress scenarios, and preparations are made for the worst-case scenario.

It is essential that the capital allocated for covered risks should be invested in liquid assets with low market/investment risk.

15.5. An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

In capital planning, Takasbank acts in accordance with Takasbank Internal Capital Adequacy Assessment Process Directive and Takasbank Recovery Plan approved by the Board of Directors. Capital increase is considered as one of the actions to be resorted to when required; and although it is envisaged that the capital support that will be needed can easily be provided due to its shareholding structure; Takasbank tries to minimize the likelihood of encountering any capital increase requirement under difficult conditions by establishing the capital it may need under stressed conditions under normal conditions. The General Assembly (shareholders) is authorized to take the capital increase decision when necessary and Takasbank Board of Directors is entitled to call the General Assembly for an extraordinary meeting.

Takasbank Recovery Plan is reviewed at least once a year with the participation of all relevant units. The reviewing process is coordinated by the Risk Management Unit. In case of any change in the systems or services having a material impact on the Plan, the relevant service owner applies to the Risk Management Unit for a review of this Plan. Takasbank Orderly Wind-Down Plan is simultaneously reviewed with Takasbank Recovery Plan.

During the review process, the Bank's risk profile, new products and services and the results of the ICAAP activities are taken into account and the appropriateness of the actions specified in the Plan evaluated.

Takasbank Assessment Result for CPMI-IOSCO Principle 15

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank has defined the general business risk related to the CCP services; and made the necessary arrangements to hold sufficient amount of liquid assets funded by equity to cover the potential general business losses.

Principle 16: Custody and investment risks:

An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Key considerations

- 1. An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.*
- 2. An FMI should have prompt access to its assets and the assets provided by participants, when required.*
- 3. An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.*
- 4. An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.*

Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Key considerations

16.1. An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

Takasbank's domestic depository institutions are the Central Registry Agency (CRA) which is the central securities depository of the Turkish capital markets and which accordingly conducts the custody, registration, corporate actions and securities transfer transactions; and the Central Bank of the Republic of Turkey which operates the national payment system, provides safekeeping services for the government domestic debt instruments and executes both money and securities transfer transactions.

Cash and non-cash collaterals and guarantee fund contributions delivered to Takasbank by CCP members have been taken under protection with article 73/2 of the Capital Markets Law no. 6362. The said collaterals are protected both from the bankruptcy, liquidation and the proceedings of the creditors of Takasbank and from the liquidation or bankruptcy and the proceedings of the creditors of the banks to which they are transferred by Takasbank for interest accrual purposes or the depository institutions where they are safe-kept.

In addition to the legal protection, Takasbank places the cash collaterals and guarantee fund contributions of the participants for interest accrual purposes to the accounts it has exclusively opened at the commercial

banks whose credit default and loss risks are regarded as close to zero, within the limits it has allocated to such banks by analysing their creditworthiness. The limit allocations made in favour of the banks resident abroad are also made based on the international credit ratings.

In addition, the principles regarding entrusting or conducting repo transactions with cash collaterals to other banks for interest accrual or other purposes have been set forth in article 22 of Takasbank Directive on Central Counterparty Collateral Management Implementation Principles. In this article, it is stated that in entrusting collaterals to other banks on a term or call basis, or conducting repo transactions with such collateral, for interest accrual or other purposes, large-scale public banks are preferred as the counterparty to maintain credit and liquidity risk at low level. At least 95% of the cash collateral that cannot be entrusted to large-scale public deposit banks is subject to repo transaction at large-scale commercial banks or in organized markets. In the markets to which central counterparty service is provided, the maximum term of maturity for entrusting or conducting repo transactions with collaterals has been determined as maximum two business days; and collateral entrusting and repo transactions may be executed within Takasbank Treasury risk limits.

Takasbank holds the non-cash Turkish Lira collaterals of the participants in the accounts it has opened at the central securities depository – CRA; the collaterals provided as government domestic debt instruments in the accounts it has opened in the CBRT, standard gold collateral with Borsa İstanbul; and the custody service non-cash foreign currency collaterals in the accounts it has opened at the international clearing and custody institutions/global depository agencies.

With its 64% stake, Takasbank is the major shareholder of the Central Registry Agency in which securities are safe-kept; and it has two representatives in its Board of Directors. The Central Registry Agency is a financial market infrastructure authorized as a central depository agency by the Capital Markets Board and subject to the public supervision and oversight. The safekeeping procedure and the business continuity practices of the CRA are closely monitored; and the relevant certificates are obtained pursuant to the compliance with international standards. Accordingly, CRA employs ISO31000 risk management system in a compatible manner with ISO27001 information security management system and ISO22301 business continuity management systems certificates. In addition, the CRA has also developed recovery plans aimed at managing the potential financial problems under the assumption that unexpected sizeable risks may occur, in accordance with the legislation for payment and securities settlement systems. In addition, Takasbank processes were aligned with the ISO 20000-1 IT Service Management standard, and an external audit was conducted in 2021.

Takasbank Board of Directors allocates custody limits to the institutions where the foreign currency denominated securities will be safe-kept on the basis of their international credit ratings. Non-cash collaterals and guarantee fund contributions issued abroad and pertaining to CCP markets are safe-kept at the international central securities depositories (ICSD) resident abroad. Takasbank has accounts in two international central securities depository institutions. All foreign security collaterals are safe-kept in Euroclear Bank Brussels and there is also an active link with Clearstream Banking Luxembourg. Both of these institutions have been defined by CPMI IOSCO as international central securities depository institutions (Recommendations for securities settlement systems, 2011); and they are subject to the European Union Central Securities Depository Regulation, 2017) and the Settlement Finality Directive (98/26/EC). Takasbank periodically monitors the credit ratings, safekeeping procedures, and business

continuity policies of these institutions and their compliance with CPMI IOSCO; and Takasbank's global custody risk is reviewed. The service level agreements and/or operating/trading principles documents of these foreign depository institutions are also examined; and Takasbank works with the institutions operating in the countries where accounting, prevention of money laundering, and related standards that are in line with Turkey are applied. The foreign depositories abroad are selected by evaluating their credit ratings and their compliance with international principles (e.g.; CPMI-IOSCO survey answers, Wolfsberg questionnaires). Face-to-face meetings are regularly held with these institutions (2-3 times a year). Detailed review reports are reviewed on a yearly basis.

16.2. An FMI should have prompt access to its assets and the assets provided by participants, when required.

The second and fourth paragraphs of article 46 and the second paragraph of article 73 of the Capital Markets Law No. 6362 contain the provision stipulating that settlement and depository institutions may request from investment firms and investors to provide collateral within the scope of investment services and activities, and that the collaterals held at the clearing and settlement institutions to prevent the clearing and settlement risks and the assets in the guarantee fund established may neither be seized even for collection of public receivables, nor pledged, nor included in a bankrupt's estate, nor be subject to a precautionary attachment that may be imposed on them.

Takasbank's rights to dispose and use cash and non-cash assets delivered by its members as collateral or guarantee fund contribution amount are stipulated in the third paragraph of article 79 of the Law no. 6362. According to the said paragraph; the rights and powers of the central settlement and clearing institution on the values of assets it has received as collateral due to the transactions it executes as a clearing & settlement and central counterparty institution may not be limited in any way whatsoever. Granting of a period for composition with creditors to the member institution or the party providing such collateral, approval of such a composition, composition after bankruptcy or entry into a composition process through cession of assets, restructuring through settlement, bankruptcy, postponement of bankruptcy, or other enforcement proceedings initiated under the Law no. 2004 or the relevant provisions of this Law regarding gradual liquidation may, under no circumstances, restrict the central clearing and settlement institution from exercising its rights and powers over such collaterals.

Takasbank monitors the institutions from which it receives custody service (the CRA, global depository agencies) through the systematic and technological integration it has established, and is able to track instantaneously its own and the participants' assets and enter the relevant instructions. Within the scope of business continuity policies, Takasbank also prevents the occurrence of any access-related interruption by creating "B" plans against any systematic/technological, etc. disruption and regularly conducts simulation studies related to the tests.

No depository institution has the right to seize or retain the assets except for certain reasons (the related asset being subject to seizure/attachment, the participant's outstanding obligations, etc.), and there is no restriction of access, either.

In Turkey, collaterals and guarantee fund contributions subject to accrual of interests at the commercial banks whose credit default and loss risks are regarded as close to zero are held in O/N term deposit accounts

and are recalled to Takasbank's accounts at the CBRT and re-invested. The assets held at the CRA can also be accessed instantaneously.

It is also possible to access the foreign securities safekept at ICSDs within the same business day. The collaterals safe-kept at ICSDs are held in the accounts opened in the name of Takasbank. These accounts are accessible by Takasbank only.

The capital market instruments for which global custody service is provided are limited to the assets accepted for custody by Banks's global custodians. The securities accepted for custody may be inquired through the correspondents with their ISIN code. The services provided within the scope of this service include the settlement transactions related with the capital market instruments held in the custody account, cash transactions related with settlements, and the custody services including also the monitoring of the exercise of rights. The custody risk that the Bank may be exposed to due to such services is managed as follows:

- In article 9 of Takasbank Global Custody Service Supplementary Contract, it is stipulated that the Bank is not responsible for any loss or damages likely to be incurred by the customers to which custody service is provided if the securities or cash amounts are safe-kept or held by the foreign depository institutions abroad and due to the overseas depository institution's failure to fulfil its obligations due to its bankruptcy, liquidation or any other reason.
- Vast majority of foreign and international client securities and all of foreign and international collaterals of Takasbank are safe-kept by Euroclear Bank SA NV Belgium are held in a fungible manner in book entry form. Securities safekept at Euroclear are protected pursuant to Belgian Law and European Union regulations.

16.3. An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

Turkish Lira denominated securities accepted as collateral and guarantee fund contributions by Takasbank are safe-kept at the Central Registry Agency that is Turkey's authorized central securities depository institution; Standard quality golds are kept at Borsa İstanbul, the main partner of Takasbank, and GDBS under Takasbank account at the CBRT. Takasbank works with the international central securities depository institutions resident abroad only within the custody limits allocated by Takasbank Board of Directors considering their international credit ratings. There are no depository institutions that Takasbank works with, except for international central securities depository institutions.

Except for the CRA and the CBRT, custody limits are allocated by the Bank in order to constrain the risks that might arise from the depository institutions used for safekeeping of capital market instruments pertaining to the Bank's own portfolio, its customers and its customers' clients. The depository institutions used by Takasbank for safekeeping of foreign securities comply with international standards; and they have clear and detailed review procedures. Takasbank holds the international securities accepted as collaterals at Euroclear Bank Brussels. According to the Belgian laws, the institutions with a custody account at Euroclear Bank Brussels are the joint owners in proportion with the account balances of securities held in their accounts. The securities in custody accounts are monitored separately from Euroclear Bank assets. Euroclear Bank constantly publishes their clear and detailed review reports; and these reports are regularly monitored by Takasbank. In addition, the developments in foreign markets and global depository institutions are

monitored on a monthly basis and published in the form of a bulletin; and the credit ratings are also monitored continuously. Clearstream Banking Luxembourg is an international central securities depository institution having a service standard similar to that of Euroclear Bank Brussels. Therefore, Clearstream and Euroclear links are kept active as the backup of each other.

The global custodians are assessed at the time of their selection and thereafter routinely (yearly) during the period Takasbank works with them. In such assessment, custodians' credit ratings, their compliance with international principles (CPMI IOSCO Principles, PFMI, BSI, etc.), and the legal framework that they are subject to are taken into account. The two institutions that we in foreign countries, i.e. Euroclear and Clearstream have been defined by CPMI IOSCO as ICSDs (International Central Securities Depositories) (Recommendations for securities settlement systems, 2011). These two global custody institutions that are resident within the boundaries of the European Union are subject to the European Union Central Securities Depository Law, MiFID, MiFIR and the related secondary legislation.

The credibility and the placement limits of the domestic banks in which cash collaterals and guarantee fund contributions are invested for interest accrual purposes are reviewed twice a year through Takasbank internal credit rating system; and the collaterals and guarantee fund contributions of the CCP markets are subject to interest accrual in the commercial banks whose credit default and loss risks are regarded as close to zero.

16.4. An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

Takasbank aims to minimize the credit, market and liquidity risks while using its own capital and cash facilities in accordance with the investment strategy approved by the Board of Directors. In addition, the principles regarding entrusting or conducting repo transactions with cash collaterals to other banks for interest accrual or other purposes have been set forth in article 22 of Takasbank Directive on Central Counterparty Collateral Management Implementation Principles. In this article, it is stated that in entrusting collaterals to other banks on a term or call basis, or conducting repo transactions with such collateral, for interest accrual or other purposes, large-scale public banks are preferred as the counterparty to maintain credit and liquidity risk at low level. At least 95% of the cash collateral that cannot be entrusted to large-scale public deposit banks is subject to repo transaction at large-scale commercial banks or in organized markets. In the markets to which central counterparty service is provided, the maximum term of maturity for entrusting or conducting repo transactions with collaterals has been determined as maximum two business days; and collateral entrusting and repo transactions may be executed within Takasbank Treasury risk limits.

In this context, among the debt instruments, investment can be made into the securities issued by the Republic of Turkey Ministry of Treasury and Finance only. The securities issued by the Treasury can be provided to the CBRT as collateral for borrowing purposes and converted into cash with low costs, where necessary.

Takasbank can invest its cash funds into reverse repo transactions against the debt instruments issued by the Republic of Turkey Ministry of Treasury and Finance.

Takasbank does not make any investment into the share certificates or debt instruments issued by its members, private sector debt securities and share certificates, and the share certificates and debt instruments issued by itself, its subsidiaries or its controlling shareholder.

Takasbank may execute derivative transactions for hedging purposes only under the CCP default management; and holds no short or long foreign currency position for speculative reasons.

Takasbank can invest its cash resources in the domestic banks in accordance with the credit limits it has allocated using internal credit rating system.

Takasbank can invest its foreign currency denominated cash resources in the banks that are resident abroad, within the credit limits it has allocated using their independent credit ratings.

The foreign currency (USD/EUR) amount previously deposited by clearing & settlement members to the relevant accounts at Takasbank for fulfilment of Borsa İstanbul SWAP Market obligations are subject to interest accrual by Takasbank under the best possible conditions in accordance with the principles specified in the relevant Market Procedure and by considering the credit risk and liquidity conditions. Such interest accrual process is conducted by depositing the amount subject to interest accrual to the banks as depo or deposits within Takasbank limits. Interest accrual may not necessarily be made under extraordinary market conditions. No interest shall be paid if Takasbank fails to perform interest accrual due to market conditions.

The outlines of Takasbank's investment strategy summarized above are available for access by members on its website. The investment strategy is approved by the Board of Directors and in case of a change, it is submitted to the Board of Directors for revision.

Takasbank restricts all its banking, CCP and non-CCP related risks arising from any counterparty with a single upper limit, considering the credit rating results and the equity of the counterparty; and such upper limits are reviewed at least twice a year. The aggregate of all credit, risk, trade, collateral and custody limits allocated in favour of a single counterparty due to banking, CCP and non-CCP services may not exceed the upper limit.

It is essential that fund management activities are carried out within legal limits and are realized considering the Bank's risk appetite, risk limits and signal values. The restrictions related with the investment of financial instruments and resources that will be used in the implementation of the fund management strategy are specified in article 9 of Takasbank Fund Management Strategies Directive.

The Bank may be exposed to market risk due to the securities and other financial instruments added/likely to be added to the portfolio. There are also interest rate and currency risk limits and signal values, specified by the Board of Directors and monitored by the Risk Management Unit on a daily basis. Accordingly, if such limits and signal levels are exceeded, the Senior Management can take the actions such as changing the liquidity and funding strategy and creating a portfolio comprising instruments with less risks pursuant to the eleventh paragraph of article 8 of Takasbank ICAAP Directive.

Participant assets are not invested in the securities of the participant or its affiliates. The limits related with investing of participant assets are specified in Bank's directive on fund management strategies.

Takasbank Assessment Result for CPMI-IOSCO Principle 16

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank safeguards its own and its participants' cash and non-cash assets at the depository institutions in a secure manner or invests them by using the instruments with minimal credit, market and liquidity risks. There is no legal and operational obstacle which may restrict or delay Takasbank's prompt access to such assets when required.

Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key considerations

- 1. An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.*
- 2. An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.*
- 3. An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.*
- 4. An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.*
- 5. An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.*
- 6. An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.*
- 7. An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.*

Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key considerations

17.1. An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

Operational risk means the probability of loss resulting from inadequate or failed internal processes, people and systems or from external events, which also includes legal risk. Legal risk means the risk of expenses/loses arising from the disputes resolved at court or through mutual settlement (arbitrator/arbitration, negotiations on credits/receivables, etc.) due to violation of laws or rules or the Bank's voluntary actions (payment refunds without a complaint filed or discounts in future services to be rendered to customers, etc.) or the probability of loss that the Bank might be exposed to as a result of the misinterpretation or incomplete knowledge of the regulations, unforeseeable amendments in the laws or regulations, and unenforceability of contracts due to legal barriers. These definitions are provided in Takasbank Operational Risk Management Procedure approved by the Board of Directors.

When the legal risk, the risks arising from information technologies and the risks related with important stakeholders and affiliates that might have an impact on the Bank's operations and reputation are digitized, they are categorized under operational risk management. The business continuity risks that might disrupt the Bank services are also addressed within the framework of operational risk management.

The maintenance of the Bank's activities in a manner that ensures that legal and internal capital limits are not exceeded and remain below the operational risk appetite determined by the Board of Directors pursuant to Takasbank Operational Risk Management Procedure constitutes the Bank's operational risk policy. In the operational risk management, the principle of proportionality is taken into account pursuant to the BRSA regulations and best practices guidelines. Within the framework of the principle of proportionality, the issues such as the Bank's size, risk profile, risk appetite as well as the volume, nature, and complexity of its operations, tasks and transactions and similar issues are taken into consideration.

The principles and procedures regarding the Bank's reputation risk and the functioning of its operational and strategic risk management systems are set forth in Takasbank Operational Risk Management Procedure approved by the Board of Directors. It is reviewed by the Board of Directors at least once a year.

Operational risk is measured by the Risk Management Unit on an annual basis with the methods specified in the Regulation on the Measurement and Assessment of Banks' Capital Adequacy and sub regulations. Operational risk stress tests and scenario analyses are implemented in accordance with the policies and implementing procedures defined within the framework of the principle of proportionality as provided in Takasbank Procedure on Stress Testing Program Policy and Implementation Procedures; and the results are taken into account within the scope of ICAAP.

The operational risk limit and signal values determined by the Board of Directors and characterized as the early warning system as well as the level of compliance with operational risk appetite are monitored by the Risk Management Review on a monthly basis. The signal value breaches are reported by the Risk Management Unit to the Audit Committee, Senior Management and the managers of the units executing

the relevant process in the business line management via e-mail. The Risk Management Unit promptly issues a written notification to the Audit Committee for further notification to the Senior Management and the Board of Directors in order to ensure that necessary actions are taken in case of any breach in the allocated risk limit and risk appetite.

Information Systems (IS) risk management process; is determined risks by identifying threats and weaknesses related to Takasbank information assets in relation to information technology activities, determining the likelihood of exposure of information assets to risk according to detected threats and weaknesses. The effects on the criteria such as confidentiality, integrity and accessibility of the associated information assets should be determined in the event of risks. Moreover process is continued for calculation the impact of the relevant information asset and making a risk rating according to the specified probability and impact values of the risks that threaten the information assets. Then it is decided how the risks determined within the framework of these risk analysis results will be processed and to carry out risk assessments consisting of actions such as proposing actions to reduce risks. Eventually, it refers to the process by which the stages of creating, implementing and monitoring and reporting the results applied are repeated continuously within the specified periods and in a continuous life cycle, consisting of the stages of prioritizing risks and selecting appropriate control methods.

Takasbank enterprise risk management process also covers the Bank's IT risks. Considering that IT risks may be a factor of other risks arising from banking activities, an integrated risk management methodology is applied throughout the Bank, including the risks arising from information systems. Both IT risks and other risks are kept and monitored on Takasbank Operational Risk Database.

An effective IS risk detection mechanism, fed from different channels, has been established in order to detect IS-related risks in the Bank. IT Weekly Meetings, Information Systems Strategy and Steering Committee, Information Security Committee and IT Architecture Committee meetings provide input for both IS strategies, risks posed by developing new technologies, and risks related to projects. In addition, it ensures that the risks that may arise from new projects (such as legal risks that may be encountered in case of delay of the project, new risks that may be exposed in case of commissioning of the project) are recorded in the detailed meetings held specifically for the projects. Risks related to significant changes are evaluated at the Change Advisory Committee meetings.

Audit and vulnerability scan results, penetration tests, routine security checks, problem and interruption records created during the period are taken into account in periodic risk analysis studies carried out at least once a year within the scope of compliance with service level agreements. Capacity planning, satisfaction measurement results and complaint notifications, if made during the period, can also be used as inputs in the analysis of IS risks.

The analysis of IS risks is repeated at least once a year or before significant changes in information systems. In addition, risk records obtained individually during the year are analyzed periodically and added to the Operational Risk Database, without waiting for a routine review time. At least once a year, a summary risk assessment report representing the whole of the IS risk analysis is prepared and combined with the current risk action plan to form the IS Risk Inventory. IS Risk Inventory is reported to the Senior Management at least once a year.

The development of the IS indicators like business interruptions, compliance of companies that receive support services with contract provisions, etc. are monitored by the Information Security Department on a semi-annual basis and the Summary IS Risk Assessment Report, which includes the results, is reported to the Board of Directors and to the senior management annually.

Regarding information technologies (IT), the progress of the indicators such as business disruptions, compliance of support service provider companies with the terms of their contracts, etc. are monitored semi-annually and reported at least once a year to the Senior Management via “Brief IS Risk Assessment Report” by IT Security Department. The risks defined by every Unit of the Bank on an individual service basis are monitored through the Operational Risk Database. The impact levels of the risks related with information technologies as defined in the Operational Risk Database are measures on the basis of confidentiality, integrity, accessibility/continuity impact levels. In the Operational Risk Database that is updated at least once a year, subprocess risks and controls established in relation to such risks can be defined in an open platform that is accessible to the Bank personnel at all times by service owners and/or risk and control supervisors, after holding mutual meetings with all units under the coordination of the Risk Management Unit and Internal Control and Compliance Unit, based on the Bank’s Service Catalogue; and the records related to the said database also provide inputs for the activities related with the Governance Statement document. The actions recommended for the risks with net risk level equal to or above the operational risk appetite and key risk indicators are monitored by the Internal Control and Compliance Unit, and these risks are reported by the Risk Management Unit to the Senior Management and it is ensured that necessary actions are taken. Takasbank Internal Control and Compliance Regulation is taken into account in establishing necessary controls for operational risk; whereas the provisions specified in Takasbank Directive on Prevention of Money Laundering and Terrorist Financing are taken as basis in all practices aimed at prevention of proceeds of crime, financing of terrorism and weapons of mass destruction

The practices related to external services, business continuity and all services procured from service providers are governed by the provisions of all intra-Bank regulations, including, in particular, Takasbank Support Services and External Services Procurement Procedure, Takasbank Business Continuity Directive, Takasbank Business Continuity Procedure, Takasbank Purchasing Directive, Takasbank Purchasing Procedure and Takasbank Service Provider Relations Management Procedure, respectively.

The operational risks that the Bank is exposed to are mitigated and/or transferred through the following actions:

- a) Usage of insurance;
- b) Procurement of services from suppliers and /or support service companies;
- c) Determination and monitoring of risk appetite, limits and signal values;
- ç) Activities conducted to ensure business continuity;
- d) Establishment of controls and the existence of audit mechanisms.

Takasbank Human Resources Directive, Takasbank Career Management Procedure and Takasbank Human Resources Leave Procedure contain the details on issues such as human resources policy, human resources practices, recruitment and placement, compensation management, leave practices, social rights and benefits and work life, performance management and career management and training. Appointment of senior-level managers is conducted in accordance with the provisions of the CBRT, CMB and BRSA regulations. Human resources policies are established by implementing training and orientation programs. These

processes are carried out over the ERP (Enterprise Resource Management) application. The issues related with rewarding, motivation, training, rotation, succession, job descriptions and control points are also specified within the intra-Bank directives and procedures.

In addition, Takasbank also has in place Takasbank Conflicts of Interest Policy Directive, Takasbank Ethical Principles Directive, Takasbank Gifting Procedure and Takasbank Intrabank Irregularity-Problem and Suspicious Issues Reporting Procedure issued to establish the communication channels that will allow the Bank personnel to report the problems that they encounter to the relevant management levels and the Internal Control and Compliance Unit; the issues raising their suspicion or hesitation to the relevant management levels and the Internal Control and Compliance Units; and the intra-Bank irregularities to the Internal Audit Unit.

All critical systems including network infrastructure as Takasbank have been established with a redundant structure. Therefore, there is no isolated points of deficiencies identified.

In addition, the Information Systems Directive, IT Risk Management Procedure and information security policies have been developed; and the relevant announcements published by the BRSA, CMB and CBRT have been taken into consideration in defining RBISEBS IT-related operational risks.

Takasbank targets international standards in terms of business continuity and information security and it has ISO 27001 (Information Security Management Systems), ISO 22301 (Business Continuity Management System) certificates since 2014. Thus, the entire infrastructure required by these certificates has been provided, in both legislative and physical terms. In addition, Bank processes are compatible with the ISO 20000-1 standard.

Information technology systems and business continuity are specifically stipulated in the CCP Risk Management Practice Directive approved by Takasbank Board of Directors. Accordingly;

- Takasbank's information technology systems for the CCP activities must be efficient and reliable. The information processing capacity of such systems must have adequate capacity to ensure continuation of CCP activities in an efficient and secure manner. The information technologies systems are designed and established by taking internationally accepted technical standards and best practices into consideration.
- Takasbank's business continuity and emergency action plan for the CCP services aims to ensure the recovery of all operations at the moment of disruption. The plan contains the use of a redundant center and is designed in a manner to ensure that the operations can be resumed within two hours following the failure of critical information technology systems.

Change management and project management operations are conducted in accordance with pre-defined procedures. The risk management process that is an important subprocess of project management is also carried out according to the rules defined in the procedures; and project-based risks are assessed by the relevant teams and necessary measures are taken under the responsibility of the project manager. Changes are also made according to the procedure after all changes are recorded and saved through a portal, necessary approvals are obtained, and relevant parties are informed thereof.

In both processes, integrated tests are conducted in order to observe the effects of the changes to be made on the current system; and tests are also organized with the participation of market stakeholders where necessary. Practices are put into application after the tests yield positive results.

Related procedures:

- Project Management Procedure
- Operational Change Management Procedure
- IS Application Service Development Procedure
- Continuous Integration Distribution and Release Management Procedure

17.2. An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

Pursuant to Takasbank Operational Risk Management Procedure approved by Bank's Board of Directors, core roles and responsibilities have been defined employing the approach of three lines of defence. The approach of three lines of defence is comprised of business line management, central operational risk management function, and independent review process.

- a) In the first stage, the relevant unit is responsible for defining the process- and subprocess-based risks and controls emerging during the execution of operations;
- b) In the second stage, the Risk Management Unit and the Internal Control and Compliance Unit are responsible for establishing the risk and control systems within the Bank;
- c) In the third stage, the Internal Audit is responsible for the independent review of the entire operational risk management system and the internal control system.

It is essential that all Bank personnel actively take part in operational risk management in accordance with their tasks and responsibilities, as an integral part of their daily activities.

Service owners define risk and control supervisors for each unit, considering the Bank's organization chart. Risk and control supervisors are in charge of informing the Risk Management Unit about the risks arising from Unit operations carried out to support the works related with the Operational Risk Database and Operational Risk Loss Database, the developments in the risk and control levels, the losses incurred, and the situations that cause a disruption in the business continuity and entering the risks that the Bank is exposed to due to unit operations into the Operational Risk Database. In addition, the Bank employees are also liable to provide the necessary assistance for the risk and control supervisors during this process.

The Internal Audit Unit and the Internal Control and Compliance Unit report to the Risk Management Unit the risks and losses they have found to be absent in their database as a result of the audit and control operations they carry out.

The Internal Control and Compliance Unit is responsible for monitoring the risk-mitigating and/or risk-preventing actions recommended for the risks with net risk level equal to or above the operational risk appetite and the key risk indicators.

The Operational Risk Database results that are updated by all units of the Bank and consolidated by the Risk Management Unit are presented to Bank's Board of Directors on an annual basis.

It is compulsory to ensure the adaptation of operational risk management policies and implementing procedures to the changing conditions. The Audit Committee regularly reviews the adequacy of such policies and implementing procedures and in this context, the Operational Risk Management Procedure containing the operational risk management framework is reviewed at least once a year and approved by the Board of Directors. The operational risk appetite and operational risk limit and signal values are reviewed at least once a year.

The operational risk management framework and the methodologies, methods and models used are reviewed according to the changes in the risk profile and risk appetite of the Bank and the dynamics of the new products and services, processes, systems and external factors.

In the Annual Service Satisfaction Survey of Bank, the rules, contracts and all procedures regarding the service received are shared with the survey participants whether they are clear and understandable enough, and the process and rules are evaluated by the participants. Governance structure and process framework regarding the implementation of Takasbank information systems management in accordance with the applicable legislation, the Bank's business objectives and priorities, the effective management of risks arising from the use of information systems and the protection of information assets, the Regulation on Banks' Internal Systems and İSEDES, Banks' Information Systems and Electronic Banking The Regulation on the Services (BSEBY), the General Regulation on the Establishment and Working Principles of Central Clearing Institutions published by the CMB, the Information Systems Management Communiqué (VII-128.9), the Regulation on the Operations of Payment and Securities Settlement Systems and Payment and Securities, published by the Central Bank of the Republic of Turkey. Based on the Communiqué on Information Systems Used in Value Settlement Systems and Takasbank Strategic Plan; ISO 22301, ISO 27001, ISO 20000-1 standards, ITIL applications and Takasbank Information Systems Directive prepared with reference to CPMI-IOSCO principles and other sub-IT internal legislation prepared in accordance with the Directive. All the internal legislation documents are reviewed every year and updated if necessary.

Within the bank;

- An “Information Security Committee” has been established under the chairmanship of a member of the Board of Directors or the General Manager and under the coordination of the information security officer, in order to carry out the activities of establishing and implementing the information security policy on behalf of the Board of Directors.
- Considering the management of information systems as a part of corporate governance practices, allocating the necessary financial and human resources for the correct management of information systems, ensuring the establishment of effective controls on information systems in order to ensure the confidentiality, integrity and accessibility of information assets, and taking into account the developing new technologies. Being responsible for carrying out an effective oversight to manage the risks arising from the use of information systems, In line with the IS Strategy Plan, an “IS Strategy and Steering Committee” was established under the chairmanship of the General Manager and approved by the Board of Directors, in order to oversee whether the IS investments are used appropriately and the bank's business objectives and IS objectives are compatible with each other.
- The “IT Architecture Committee” was established under the chairmanship of the General Manager in charge of Information Technologies and under the coordination of the Corporate Architecture and Project Management Department, where information about the orientation and management of technology is shared and decisions are taken when necessary in order to achieve the business objectives.
- A “Change Advisory Committee” was established, where the evaluations of the requests for changes in information systems with high risk levels within the Bank are made.

- Business and Information Systems Continuity Committee was established.

Information Security and IT Compliance and Risk Management Team conducts periodical assessments, from the IT perspective, in the areas such as network, database, operating system, applications and services, etc. where “C-level” reporting is made; and audits them on an annual basis. In addition, independent penetration test processes monitored through the action plans and reported to the BRSA are also implemented.

On the other hand, Takasbank is subject to the Capital Markets Law no. 6362 and the supervision of the Capital Markets Board due to its central clearing and settlement institution license; to the Banking Law no. 5411 and the supervision of the Banking Regulation and Supervision Agency due to its investment banking license; to the Law no. 6493 on Payment and Securities Settlement Systems and the supervision of the Central Bank of the Republic of Turkey due to operation of a securities settlement system by Takasbank; to the supervision of the Financial Crimes Investigation Board (FCIB) under the legislation on the “prevention of the laundering of proceeds of crime, financing of terrorism and proliferation of weapons of mass destruction”; and to the supervision of the Ministry of Treasury and Finance under the Private Pension Savings and Investment System Law no. 4632 due to its role as a depository institution.

The independent external audit reviews both the Bank’s financial statements and the internal controls established on the business processes and IT processes. Under the BRSA legislation, the independent audit company audits the banking processes on an annual basis and the information systems on a biannual basis. The CMB information systems are subject to audit by the independent audit company on an annual basis under the relevant legislation. CBRT Information Systems legislation and self-assessment processes are also followed. In addition, external audits are also conducted within the scope of our ISO 22301, ISO 20000-1 and ISO 27001 certificates.

17.3. An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

Takasbank’s mission and vision are defined as “To be a trustworthy, effective and innovative institution providing clearing & settlement, collateral, risk management and banking services at global quality standards, as the institution of choice in international markets” and “Contribute to the development of markets with its reliable and effective post-trade services”, respectively. For the achievement of this vision and mission defined as such, Takasbank prepares a Strategic Plan covering a 3-year period on the basis of the expectations related with the capital markets and clearing & settlement and custody market.

The Strategic Plan basically includes the Bank's 3-years strategic goals (financial and business goals) and the initiatives determined to achieve these goals. With the aforementioned main objectives and initiatives in Takasbank's Strategic Plan, basically; it is aimed to protect the interests of the partners, to contribute to the country's economy and the development of the sector, to ensure that the members/customers continue to receive high-quality and uninterrupted service, and to increase the satisfaction and competencies of the employees together with the synergy within Borsa Istanbul Group. Qualitative and quantitative metrics have been determined for the objectives and initiatives included in the Strategic Plan, and sub-metrics that go down to the activity level have been determined for the realization of those initiatives. These determined metrics are periodically monitored and evaluated by the Bank's Senior Management and necessary actions

are taken. In addition, a member satisfaction survey is held once a year and all members are asked about their satisfaction levels regarding Takasbank reliability, and improvement actions for deviations from the target value are taken by the senior management.

Risks and opportunities are determined at the corporate level as a result of SWOT analyzes that carried out within the annual strategic planning and strategic plan review activities or information security and business continuity. After these issues are evaluated in the relevant committees or in the meetings held specific to the subject, if it is decided to carry out the work as a project; according to the portfolio it addresses (business development, IT infrastructure or corporate development), it is included in the IT Master Plan and managed with the Project Management Process, or it is included in the demand portfolio by being evaluated within the scope of the Demand Management Process.

For the maintenance of operational activities in an efficient and compatible manner, job description forms, business flows and business impact analyses, and service recovery plans have been documented in writing. In addition, the policies and procedures for the execution of operational activities are also put in writing.

The business continuity policies and practices established to ensure that the operational activities are effective and reliable are compatible with ISO 22301; and the information security policies and practices are compatible with ISO 27001; and they have been certified as a result of independent audits. In addition, it has been harmonized with the ISO 20000-1 IT Service Management standard.

FMI operational reliability goals have been documented in the information systems directive and IT process areas, processes, and subprocesses. Compliance with the CBRT, CMB, BRSA IS regulation are taken as basis in the principles and procedures regarding information systems management. All IT procedures and processes are covered in this directive. The entire documentation is versioned, stored, maintained and kept updated in the document management system. In addition, continuity goals with respect to IT services are set and documented for each critical service and these goals are periodically measured and reported to check whether the goals are achieved or not. If there are any goals not achieved, the necessary actions for improvement are taken. Reliability goals have been set for Takasbank as a whole, rather than for individual services; and whether or not such goals have been achieved is measured with a service satisfaction survey conducted by the Corporate Communications and Foreign Services Team on all members. The goals are documented and reported in the corporate key performance indicators report.

The goals set for IT are the goals of continuity; and while determining such goals, the expectations of stakeholders are taken into consideration. Measurement results are communicated to stakeholders and their feedbacks are evaluated. A service satisfaction survey is held once a year and all participant users are asked about their satisfaction levels regarding Takasbank reliability, and improvement actions are taken by the senior management for deviations from the target value.

17.4. An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

In Takasbank, an IT operations management function is operated, which performs the daily management and maintenance of the IT infrastructure in order to ensure that IT services are provided in accordance with the defined service levels. A help desk function and problem management process has been established to respond promptly to IT operational incidents, to provide support to users in technology-related problems, to

transfer problems to the relevant IT units for investigation and resolution, to record, analyze and follow up the incidents until the reported problems are corrected. . Monitoring activities are carried out in order to ensure that the performance of the Bank's information systems is continuously monitored and unexpected situations are reported in a timely manner. Capacity management and planning are carried out in order to ensure that the IT capacity is available in the Bank to meet the current and future business requirements specified in the IS strategy plan, in accordance with the defined service levels and workload forecasts. Routine maintenance and operation activities of the Bank's application services are carried out.

Takasbank systems are offered with capacities that are far higher than the current level of usage. The systems are regularly measured in terms of capacity; and their capacities are planned in accordance with ITIL processes. Capacities are assessed in the business continuity tests and continuity plans and IT investment plans are made accordingly.

Our infrastructure capacity is regularly reviewed and the probability of occurrence of capacity problems is considered unlikely since connections to the system are secured over Local Area Network. Disk capacities are also monitored regularly and the disks reaching certain levels are updated on a daily basis.

In Takasbank, the highest level of maintenance agreements are made for applications and other systems that make up the infrastructure, and systems that minimize technological risk factors are preferred. Necessary precautions are taken against risks that may interrupt our computer systems. In order to protect Takasbank from malfunctions in the operation of the computer system or other devices that may occur as a result of a power cut, a double uninterruptible power supply and double generator system is used to provide uninterrupted energy for the computers in the data center. The electricity supply of each system is passed through different fuses, thus preventing the failure of one system from affecting the others. Parts such as disk, power supply, network connections are available as redundant on the systems. Thus, an uninterrupted operation is ensured by automatically activating a spare unit instead of a faulty unit. Critical data is backed up regularly, and the accuracy and reversibility of the backups are periodically checked by a team independent of the backup operation.

17.5. An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

In Takasbank information systems, access and authorization controls are implemented on the basis of application, infrastructure, database and hardware. Bank employees only have access to programs determined by their job description and title. There is an authorization procedure for all transactions made in Takasbank system. Within the framework of this procedure, authorizations arising from the specific actions of the personnel regarding the title, responsibilities and division are made. The logs of the Bank's users transactions carried out in systems subject to access and authorization restrictions are stored and controlled. Equipped with a camera system around the Bank, identification at visitor entrances, checking the belongings of visitors with an X-Ray device, recording personnel and visitor entries and exits using magnetic cards reduce the possibility of operational risks regarding the Bank's physical security. Takasbank has established the necessary network security control systems for threats from both its internal and external networks. The establishment of security measures is based on a layered security architecture, in which another security layer is activated if one security layer is breached.

Takasbank has tightened and tested security configuration standards for the system, software, network devices and IT equipment where data is transported, stored, transmitted or processed. Bank secure standard configurations (minimum security baseline) are defined according to the relevant infrastructure components.

Techniques, detection mechanisms, patch impact assessment and testing processes are carried out to perform patch management by quickly and effectively addressing security vulnerabilities in systems, software and devices in order to reduce the possibility of situations that will interrupt or significantly adversely affect the Bank's operations.

Monitoring and scanning activities are carried out in the Bank regarding the detection of security vulnerabilities.

A cyber incident management and response to cyber incidents process has been established in the bank for the handling and follow-up of the cyber incidents, in order to return the IT services to their normal functioning as soon as possible and in a way that will affect the banking activities the least after the cyber incidents, and penetration tests are carried out.

Security barriers and access controls are applied to the Bank's data centers, system rooms and network equipment rooms, as well as the controls applied regarding physical access to the systems and devices where information assets are kept. Processes within the scope of Takasbank information security policy have been defined and the policy has been approved by the Bank's Board of Directors. Similarly, a self-assessment shall be conducted considering the processes compatible with ISO 27001 certificate and the guide on "Cyber Resilience for Financial Market Infrastructures". In addition, the process is monitored and improved through the penetration tests conducted annually and the vulnerability scans performed bimonthly within the scope of the BRSA communiqués. As a bank, Takasbank is subject to RBISEBS audits and the relevant processes are assessed every two years as part of independent audits. An audit of conformity to standards is also conducted every year at Takasbank that has ISO 27001 certificate. Independent audits are carried out annually within the scope of the CMB information systems legislation and every 2 years under the BRSA Information Systems legislation.

The risks that may arise during the projects are also evaluated regularly. Before the components of all projects developed within Takasbank are taken into the real environment, by Information Technologies (IT) Teams and/or users; Tests and controls are carried out regarding security, accuracy, performance, compliance with standards, user management and its effects on other systems.

17.6. An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

Takasbank Business Continuity Directive covers all processes, business flows, Business Continuity Management Plan, Takasbank Business Continuity Procedure and Business Continuity Plan, which are necessary to fulfil the business continuity requirements at the Bank.

The Business Continuity Management Review (MR) meetings are held at least once a year with the participation of the managers of all critical business and IT units under the chairmanship of the General Manager. As for the critical issues that come up during such MR meetings, the issue is moved forward with the recommendations of the process-owner business unit.

Business and Information Systems Continuity (BCMS) Committee is accountable on;

- a) Declaring a crisis situation by taking into account all the factors related to the events that occurred, deciding on the commissioning of the Information Systems Continuity Plan, and ensuring coordination with other rescue, continuity and response teams,
- b) To act as a consultant in activities within the scope of planning, implementation, control and improvement of the BCMS,
- c) To evaluate the applicable legal and regulatory requirements regarding the continuity of the Bank's activities and services, and the steps taken or to be taken regarding these, at periodic meetings.

In line with the business continuity plan, business impact analyses are made, goals are determined and service recovery plans are developed accordingly. An Emergency/Disaster Operation Center has also been established.

The FMI's business continuity plan was prepared by the (enabler) process owners that are responsible for both the business services subject to the FMI and the service enablers that make them possible. It is tested at least once throughout the year. The Service Recovery Time Objective (RTO) has been determined by process owners and the RTO objectives for the services provided by the FMI has been set as 2 hours. There is also a transition plan that provides for operation from the backup data center or backup operation service for the services that cannot be recovered within 2 hours. The compliance with RTO is tested through the emergency/disaster drills conducted at least once a year.

Takasbank Emergency/Disaster Drills held every year are conducted jointly with BIST and the CRA, both of which are in Borsa Istanbul Group, and with all Bank participants. In addition, critical service providers are contacted before each drill, and the timing and scenario of the drill are shared with them and they are asked to provide information related to their employees that will support the drill. Takasbank implements its business continuity arrangements in coordination with the institutions that it is dependent on such as the CBRT, the CRA and EMOC and completely covering all of its critical processes; and as with its own tests, it also participates in the business continuity-related tests of all these institutions. The assessment reports prepared in relation to the tests conducted are shared and evaluated together with the participants and actions for improvement are planned for the issues deemed necessary.

The Information Systems Continuity Plans for critical services is reviewed at least once a year and tested under the scope of the Disaster Drill. In addition, process owners also conduct unit testing and/or desktop testing. The service owners have determined the service-related risks included in the recovery plans specific to the service and the strategies to be followed in case of materialization of such risks. In the Information Systems Continuity Plans, the planning of the activities considering the recovery methods such as conducting business through manual processes according to the disruption, performance of operations by business units with instructions instead of the members, etc. have been taken into account.

Takasbank has a communication plan and a Communication Table document indicating the communication texts that must be used both during normal periods and at the time of a crisis.

Backups of all end-of-day data are taken every day; and the data at the bank are stored according to the legal storage periods. Furthermore, data are reflected to the secondary data center simultaneously in addition to the primary data center.

The secondary data center is at Türk Telekom Data Center located in Ümitköy, Ankara (DDC). A satisfactory infrastructure has been established by Türk Telekom Inc. The data center meets today's accepted data center standards. The DDC systems have the required capacity to carry out Bank's functions and to establish communication with other agencies and institutions.

The secondary operation center, Disaster Operation Center (DOC) is located in Borsa İstanbul Yenibosna campus. It is nearly 30 km away from Takasbank. It has been designed to accommodate an adequate number of employees in case of occurrence of a disaster. An adequate number of employees may quickly access the secondary data center (DDC) using the current client computers.

An Evacuation Drill also conducts at least once a year. BCMS awareness trainings are regularly organized for all employees of the Bank. In addition, the team members serving in the Emergency Teams also receive first aid trainings, fire safety and response trainings, search and rescue trainings and wreck response-earthquake-disaster preparedness trainings.

17.7. An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

The Bank's risks originating from Borsa İstanbul and the CRA are considered under operational risk. The risks relating to the CRA and Borsa İstanbul are monitored via the Operational Risk Database and Operational Risk Loss Database; and there are no records of any loss originating from the CRA and Borsa İstanbul in the Bank's Operational Risk Loss Database.

The risks that are defined by each unit of the Bank on an individual service basis are monitored through the Operational Risk Database as per Takasbank Operational Risk Management Procedure. In the Operational Risk Database that is updated at least once a year, the risks posed by services and the controls established in relation to such risks can be defined in an open platform that is accessible to the Bank personnel at all times by service owners and/or risk and control supervisors, after holding mutual meetings with all units under the coordination of the Risk Management Unit and Internal Control and Compliance Unit, based on the Bank's Service Catalogue; and the records related to the said database also provide inputs for the activities related with the Governance Statement document. The actions recommended for the risks with net risk level equal to or above the operational risk appetite and key risk indicators are monitored by the Internal Control and Compliance Unit, and these risks are reported by the Risk Management Unit to the Senior Management and it is ensured that necessary actions are taken.

The risks that may result from procurement of services are assessed by the Bank in order to ensure the continuity of the services outsourced from support service companies. In this context, pursuant to the Regulation on the Banks' Procurement of Support Services published by the BRSA, an annual risk management program is created and the Risk Analysis Report prepared by the Risk Management Unit regarding support service provider companies and the technical adequacy report prepared by the relevant unit receiving the support service are reported to the Board of Directors at least once a year as an appendix

attached to the Audit Committee assessment report. Besides, the criticality levels of the suppliers are determined by the Bank and important vendors/suppliers are identified. The obligations of the other party are clearly defined in the contracts made with external service providers, and different service level agreement provisions (such as the form and duration of intervention, maintenance conditions and penal provisions) are included in the contract depending on the criticality of the service. Takasbank IT External Service Management Periodic Monitoring Reports, prepared in order to monitor compliance with the provisions of the service level agreement, are submitted to the Purchasing and Administrative Affairs Team to ensure that the necessary actions are taken. With these processes, the processes related to the evaluation of supplier performances, materiality analysis, preparation of technical competence reports and information notes (including risk assessment and exit strategy, etc.) Takasbank Purchasing Directive, Takasbank Purchasing Procedure, Takasbank Supplier Relations Management Procedure, Takasbank Support Service and Foreign Service Procurement Procedure and Service Level Agreements Procedure for Takasbank Foreign Service Procurements. In addition, the Directive on Takasbank Information Security Policy and the Statement of Responsibilities for the Use of Takasbank Information Assets by External Institutions are annexed to the contracts. Periodic controls are also carried out by the Internal Control and Compliance Unit regarding the supplier management process. Support services and services received from companies that outsource services are followed quarterly by the IT Risk Management and Compliance Team, and an IT External HSA report is created. Additionally, the Summary IS Risk Assessment Report is reported to the Board of Directors.

The Bank's information technology management processes are audited based on the provisions of the information systems legislation of the BRSA, CMB and the CBRT, and the support and foreign service institutions that the Bank receives services from are also audited by the Internal Audit Unit of Bank. In addition, the Internal Control and Compliance Unit can also perform controls on external service organizations. The operational risks that the Bank is/might be exposed to are covered to a substantial extent with the insurance policies taken out.

Tests are coordinated and scenarios are determined in cooperation with other stakeholders that we rely on by virtue of Bank's services. In addition, the related party analyses are regularly repeated every year; and the communication efficiency under business continuity, the BCMS-related maturity of such institutions, the risks and the points for improvement are determined. The business continuity legislation, principles and requirements are evaluated and harmonized by Borsa İstanbul Group Business Continuity Works Committee jointly established with the CRA and especially Borsa İstanbul, Bank's highest point of dependency. In addition, there is also a B2B Business Continuity Document jointly prepared for the three organizations.

Takasbank Assessment Result for CPMI-IOSCO Principle 17

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank identifies its internal and external sources of operational risk, and mitigate the potential impacts of such risks by using appropriate systems and controls. The systems are designed in a

manner to provide a high degree of security and operational reliability and have adequate, scalable capacity. Business continuity management aims for timely recovery of operations and fulfilment of Takasbank's obligations, including in the event of a wide-scale or major disruption.

Principle 18: Access and participation requirements:

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Key considerations

- 1. An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.*
- 2. An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.*
- 3. An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.*

Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Key considerations

18.1. An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

Takasbank employs an objective, transparent, and risk-based assessment system in establishing membership for the markets and capital market instruments to which it offers central counterparty service.

The minimum conditions required to be met by the CCP members are listed in article 7 of the Central Counterparty Regulation. Accordingly, in order to be a CCP member;

- 1) It is required to become a member of Takasbank pursuant to the provisions of the Central Clearing and Settlement Regulation;
- 2) The authorization of trading on the markets or capital market instruments to which clearing & settlement or CCP service is provided by Takasbank must not have been revoked due to any contradiction with the relevant legislation;
- 3) The agreements and/or letter of undertakings related to the CCP service, the contents of which are determined by Takasbank, must have been signed and submitted to Takasbank;
- 4) The information processing, risk management, internal control and internal audit mechanisms necessary to ensure the continuity of the CCP service must have been established and made functional;

- 5) The minimum equity capital to be determined by Takasbank on a market or capital market instrument basis must be in place in order to become a party to the CCP services;
- 6) The financial strength must be at a level capable of fulfilling the commitments to Takasbank in relation to the markets or capital market instruments subject to CCP services;
- 7) The additional conditions that may be stipulated according to the special characteristics of the markets or capital market instruments to which the CCP service will be provided must have been satisfied;
- 8) Other information and documents to be requested by Takasbank must have been submitted.

In addition, the participation conditions for membership are specified in detail by the types of membership in the Section entitled “Principles for Participation” within the Market Directives and Procedures and are available on Takasbank’s website. In addition, the Participation Agreement to be signed with our Bank has a standard content; and the pre-agreement information form and the agreement are available on Takasbank’s website.

In the process of application and admission to membership, there is no discriminatory practice or restriction apart from the differentiation of the general and direct clearing membership (direct participation) or trading institution (indirect participation) conditions, which can be made according to the type of brokerage authorization, level of equity and financial or technical adequacy owned in the relevant markets in accordance with the capital markets legislation.

18.2. An FMI’s participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI’s specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

The membership in the markets to which Takasbank provides central counterparty service is implemented in two ways as direct and general central counterparty clearing membership. Direct CCSI members are authorized to conduct their and/or their customers’ clearing and settlement services only. As for general CCP members, they are also authorized to conduct the clearing and settlement transactions of the trading institutions as well as their and/or their customers’ clearing and settlement transactions. The distinction between the membership types is made by considering the capital amount and the adequacy of internal systems and technical infrastructure applied in the membership conditions and the results of the internal rating, financial analysis and intelligence studies conducted by Takasbank. The conditions required for each membership type and for transition between membership types are specified in the relevant market directives and are available on Takasbank’s website.

On the other hand, the brokerage firms applying for a CCP membership must have been authorized by the Capital Markets Board to be engaged in trade intermediation and custody in the relevant markets and/or capital market instruments. The Capital Markets Board authorizes the brokerage firms under three categories such as ‘narrowly authorized’, ‘partially authorized’, and ‘broadly authorized’; however, only partially and broadly authorized firms may engage in ‘trade intermediation and custody’. For direct and/or general clearing membership, the ‘trade intermediation and custody authorization’ is required. The Capital Markets

Board determines the type of intermediation authorization by taking into account the requests of the brokerage firms and their equity amounts. In addition, the authorization of the brokerage firms holding a bank status is restricted in some areas by the Capital Markets Board.

The conditions stipulated in article 7 of the CCP Regulation and sought for the institutions that may become a CCP member of Takasbank, including the following;

- The authorization of trading on the markets or capital market instruments to which clearing & settlement or CCP service is provided by Takasbank must not have been revoked due to any contradiction with the relevant legislation;
- The information processing, risk management, internal control and internal audit mechanisms necessary to ensure continuity of the CCP service must have been established and made operative;
- The minimum equity capital to be determined by Takasbank on a market or capital market instrument basis must be in place in order to become a party to the CCP services;
- The financial strength must be at a level capable of fulfilling the commitments to Takasbank in relation to the markets or capital market instruments subject to CCP services;

pursue the security of both the markets and the CCP members satisfying these conditions as well as Takasbank; and are considered fair. Among the membership conditions, there is no condition restricting the access in an unfair and unjustified manner. The specific conditions that may be sought specifically for the markets to which CCP service is provided are explained in the relevant Market Directives.

The members in the same category can access to the CCP services under equal conditions within the risk limits allocated to them. The limits are determined by taking account of internal credit rating results of the CCP members and their equity; and in case of exceedance of limits, increased collateral obligations are imposed. Thus, each CCP member's level of facing increased collateral obligation differs on a risk basis. The members' limits are regularly reviewed twice a year.

18.3. An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

The necessary conditions for membership are expected to prevail after establishment of the membership; and whether or not the criterion of having adequate capital and financial strength is continued to be met is controlled and analysed at least twice a year in June and December periods through the Internal Credit Rating and Assessment System. It is required that the information used in such control and analysis should pertain to the relevant period. In addition, Takasbank internal audit unit may examine on-site whether or not the CCP members continue to meet the membership conditions, including the information processing, risk management, internal control and internal audit mechanisms in particular.

The restriction of the CCP members' activities is stipulated in article 14 of the CCP Regulation. According to this article; activities of the members conducted as a central counterparty member, whose operations have been restricted or temporarily suspended by the Capital Markets Board or the relevant public agencies/institutions, are restricted by Takasbank until any notice to the contrary is received from the relevant institutions. Again, pursuant to the same article, if Takasbank identifies that the financial adequacy of any CCP member remains insufficient against the risks it assumes; the Board of Directors can restrict the activities of the said CCP member on the basis of the market or capital market instrument to which CCP

service is provided. In fact, article 13 of the CCP Regulation stipulates that if Takasbank foresees that any of its CCP members will be unable to partially or completely fulfil their obligations, it has to notify this situation immediately to the Capital Markets Board and other relevant public agencies and institutions, together with all substantiating information and documents containing the related reasons. Therefore, in case of any emergency, there is no need to absolutely wait for the restriction decision of the Board of Directors.

As a matter of fact, the usage of the risk limits allocated by Takasbank Board of Directors to the CCP members can be temporarily or permanently suspended in accordance with the authorization given by the Board of Directors to the Head Office in the Credits Regulation in case that it is identified that the membership qualifications have been lost, the risks carried by the member are at a level exceeding its financial adequacy, occurrence of uncertainty about the activities of the member or when it is deemed necessary for any other reason; and the order transmission and position taking of the member may be blocked through coordination with the market operator, if necessary. Thus, during the time period that will elapse until the Board of Directors takes a decision, it is possible for Takasbank to reach quickly against the sudden adversities likely to be experienced.

Pursuant to article 24 of the CCP Regulation, the CCP member whose activities are restricted may be granted a period not exceeding six months by Takasbank by taking account of the market rules and trading hours in order to facilitate the remedy of the insufficiencies on issues subject to such activity restriction; and if one or more conditions that have caused the restriction of activities continue to exist by the end of this period; the Board of Directors shall be authorized to terminate the membership of the relevant CCP member.

The termination of CCP membership has been stipulated in article 15 of the CCP Regulation. Accordingly, the CCP membership is terminated with the resolution of Takasbank Board of Directors to be taken ex officio or upon the application of the member. The Board of Directors may ex officio terminate the membership if Takasbank identifies that any condition of the CCP membership set forth in the CCP Regulation and other relevant arrangements has been lost or if Takasbank determines that significantly important risks that may endanger the safe and uninterrupted operation of the CCP system have occurred due to the failure to fulfil the obligations stipulated in the CCP Regulation or the other relevant arrangements. Even in case of termination of the CCP membership, the obligations of the institution whose CCP membership is terminated against Takasbank with regard to the transactions executed until the date of the Board of Directors' resolution regarding termination of membership within the scope of the CCP Regulation and the other relevant arrangements shall survive. Thus, the measures for the orderly termination of the membership have been taken.

Pursuant to article 14/5 of the CCP Regulation, it is not possible to make any public disclosure about the CCP member whose activities have been restricted, without obtaining the approval of the Capital Markets Board or other relevant public agencies and institutions. For public disclosure about the restriction of activities, it is required to obtain permission both from the Capital Markets Board, and, if the CCP member whose activities are restricted is - for instance - a bank, from the BRSA. In case of termination of the CCP membership upon the relevant member's request, there is no special arrangement in the CCP legislation regarding making such public disclosures. However, in such cases, both the membership lists are updated and the list of institutions whose CCP membership is terminated for any reason is made publicly available

on the website. In case of termination of the CCP membership due to default, the issues relating to the announcement of both the event of default and the developments to be experienced in relation thereof shall be determined by the CCP Default Management Committee.

Takasbank Assessment Result for CPMI-IOSCO Principle 18

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank has objective, risk-based and publicly disclosed membership criteria that are applied in a fair manner.

Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Key considerations

1. An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.
2. An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.
3. An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.
4. An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Key considerations

19.1. An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

Takasbank's CCP arrangements stipulate that the brokerage firms (trading institutions) that cannot or do not want to become a direct CCP member can have access to the CCP services indirectly by using the general clearing members. General CCP membership conditions are much stricter than the direct CCP membership conditions; and it is envisaged that the financial and operational risks that may arise from the trading institutions shall be easily managed by the general CCP members. The general CCP members shall be directly responsible against Takasbank for the transactions of the trading institutions.

The principles for making use of the CCP services by the trading institutions are specifically stipulated in article 16 of the CCP Regulation. Accordingly, trading institutions are obliged to satisfy the following conditions:

- a) Monitoring the customer positions and collaterals both at itself and at the CCP member and complying with the arrangements specified in this Regulation and the relevant market directives in relation to margining methods;

- b) Acting in accordance with all rules and principles specified in the Law and the other relevant arrangements with respect to the monitoring and safekeeping of customer assets and collaterals;
- c) Facilitating continuous reconciliation between the accounts of its own clients held with the general CCP member that it is associated to and the records of the customer positions and collaterals held by itself;
- d) Ensuring that their clients are completely and accurately informed of the fact that the power of disposition on their own customers' collateral accounts opened with the general CCP member belongs to the relevant CCP member and that this power is restricted by Takasbank through its limitation with the collateral amount required to be maintained;
- e) Furnishing any and all information and documents that may be requested by the relevant general CCP member, Takasbank and the Capital Markets Board on issues deemed necessary in relation to their business and transactions within the scope of the CCP Regulation, and providing any and all support for the reviews to be conducted by those commissioned by Takasbank and the Board.

If the relevant general CCP member determines that any trading institution has failed to fulfil the aforementioned obligations in part or as a whole, this situation is immediately notified to Takasbank together with all information and documents substantiating the failure in fulfilment of such obligations; and all necessary measures are taken to facilitate the correction of such discrepancies.

In cases where the relevant trading institution fails to completely fulfil its obligations despite all measures taken by the general CCP member; the positions and collaterals pertaining to the trading institution's customers shall be transferred to the relevant general CCP member in accordance with the agreement between them upon the request sent by the relevant CCP member to Takasbank. The trading institution notifies the transferee member of the ownership details related to the transferred customer positions and collaterals. Takasbank gives information to the Board and the relevant public authority within 1 business day about the transfer operation together with the justifications of such transfer taken over from the relevant CCP member.

19.2. An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

In the markets to which CCP service is provided, there is no trading institution that presently trades indirectly; but if such an institution exists, Takasbank has the ability to identify the dependencies that might affect it pursuant to article 16 of the CCP Regulation.

19.3. An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

In the markets to which CCP service is provided, there is no trading institution that presently trades indirectly; but if such an institution exists, Takasbank has the ability to identify the dependencies that might affect it pursuant to article 16 of the CCP Regulation.

19.4. An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

Takasbank does not directly assume the risks of indirect CCP participants (trading institutions); and the general CCP members directly undertake the transactions of trading institutions towards Takasbank. Although there is no trading institution that presently trades indirectly in the markets to which CCP service is provided; Takasbank is able to identify the dependencies that might affect it under article 16 of the CCP Regulation.

Takasbank Assessment Result for CPMI-IOSCO Principle 19

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank has all types of means to manage the risks that might arise from tiered participation arrangements.

Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Key considerations

- 1. Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.*
- 2. A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.*
- 3. (N/A)*
- 4. (N/A)*
- 5. (N/A)*
- 6. (N/A)*
- 7. Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.*
- 8. Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfil its obligations to its own participants at any time.*
- 9. (N/A)*

Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Key considerations

20.1. Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

Takasbank performs the clearing and settlement of the transactions executed in the Turkish capital markets by means of the links that it has established with Borsa İstanbul which is the exchange operator of the Turkish capital markets, with the Central Registry Agency (CRA) which is the central securities depository and accordingly conducts the custody, registration, right exercising and securities transfer transactions; and with the Central Bank of the Republic of Turkey (CBRT) which operates the national payment system, provides safekeeping services for the government domestic debt instruments and executes both money and securities transfer transactions.

The CBRT conducts an emergency test twice a year with the participation of all financial market infrastructures to which it offers service and with which it has link arrangements (including Takasbank and the CRA); and thus, it also has the ability to measure, monitor, identify and manage the potential risks that might arise from the links that it has established with the financial market infrastructures. In addition, if the financial market infrastructures that are the participants of the payment system managed by the CBRT make revisions in their own systems that might have a potential to affect the payment systems; the CBRT does not accept the implementation of such revisions until their tests are completed by the relevant financial market infrastructure.

Borsa İstanbul, CRA and Takasbank find the opportunity to measure the link-related risks by conducting an emergency test at least once a year with the participation of other market participants that are also their members. The Bank's risks originating from Borsa İstanbul and the CRA are considered under operational risk. The risks relating to the CRA and Borsa İstanbul are monitored via the Operational Risk Database and Operational Risk Loss Database; and there are no records of any loss originating from the CRA and Borsa İstanbul in the Bank's Operational Risk Loss Database.

In Turkey, Takasbank and the CRA are the sole financial market infrastructures that can be used in the clearing and settlement and safekeeping of Turkish capital market instruments; and they must operate in a linked manner. Both Takasbank and the CRA observe CPMI-IOSCO principles in their operating procedures.

In addition, those to be performed within the scope of continuity of clearing & settlement, debt closing, distribution of receivables, conditional and free virement transactions conducted by Takasbank in connection with the CRA are determined with the joint business continuity document signed between the CRA and Takasbank and updated at certain time periods.

Takasbank also works with two ICSDs resident in European Union. Takasbank Board of Directors allocates custody limits to such institutions that will be used for the safekeeping of the foreign currency-denominated securities eligible as collateral in the markets to which CCP service is provided, based on their international credit ratings. Non-cash assets safe-kept at the depository institutions resident abroad as non-cash collaterals and guarantee fund contributions of the CCP markets are protected from the liquidation and bankruptcy of the depository institution as well as the proceedings of the creditors of such depository institution in line with European Union regulations.

In the links established with the global custodians, due attention is paid to ensure that such depositories comply with the international business continuity principles. Euroclear Bank Brussels and Clearstream Banking Luxembourg that we are linked with abroad implement the business continuity policies in accordance with The Business Continuity Institute (BCI), British Standard for Business Continuity Management (BS25999), the Institute for Continuity Management (DRI); ISO 22301 and ISO 20000-1 principles. The technical link with these two institutions is continued on a redundant basis. Takasbank defines the link-related risk with respect to the depository institutions abroad in its business continuity plan and takes the necessary actions.

The global custody institutions used by Takasbank for safekeeping of foreign securities comply with CPMI IOSCO principles; and they have clear and detailed review procedures. Euroclear Bank constantly publishes their clear and detailed review reports; and these reports are regularly monitored by Takasbank. In addition, the credit ratings of the linked institutions and the developments in the relevant legislation and international principles that they are subject to are monitored regularly. Analyses are made before face-to-face meetings held at least twice a year; and the changes/ developments are discussed in such meetings and disclosures are made by the authorized officers of these institutions where necessary. Clearstream Banking Luxembourg is an ICSD having a service standard similar to that of Euroclear Bank Brussels. Therefore, Clearstream and Euroclear links are kept active as the backup of each other.

20.2. A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.

Takasbank has established links with Euroclear Bank resident in Belgium and Clearstream Banking resident in Luxembourg. Both of these institutions have also been defined by CPMI IOSCO as ICSDs (International Central Securities Depositories) (Recommendations for securities settlement systems, 2011). Since they operate within the European Union, they are also subject to the European Union Central Securities Depository Regulation (CSDR), MiFID (Markets in Financial Instruments Directive) and MiFIR (Markets in Financial Instruments Regulation) regulations. In this context, they are subject to the audit and oversight of ESMA (European Securities Market Authority) and the financial sector regulatory authorities in their own countries. Euroclear Bank is audited by FSMA (Belgian Financial Services and Markets Authority); and Clearstream Banking Luxembourg is audited by CSSF (Commission de Surveillance du Secteur Financier Luxembourg).

Since Euroclear Bank Brussels and Clearstream Banking Luxembourg are banks and they operate securities clearing and settlement systems, they are subject to the payment systems regulations and audit within the scope of the central bank audit in their own countries (Bank of Belgium, Banque central du Luxembourg).

In addition, both of these institutions work in compliance with the CPMI principles. In this context, their full compliance with the CPMI - IOSCO Principles for Financial Market Infrastructures principles is audited by the supervision and oversight authorities in their countries (FSMA, CSSF).

At the time of establishment of a link, the institution that will be linked to is subjected to a due diligence evaluation and the local and international legal framework that such institution is subject to are reviewed; in addition, the changes in the legal framework are also evaluated through annual reviews.

20.3. Not applicable for CCP activity.

20.4. Not applicable for CCP activity.

20.5. Not applicable for CCP activity.

20.6. Not applicable for CCP activity.

20.7. Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.

Takasbank does not have any link arrangement with any central counterparty institution by the date of the report.

On the other hand, article 38 of Istanbul Takas ve Saklama Bankası A.Ş. Central Counterparty Regulation is entitled as “Interoperability with other CCP institutions”; and it states that the principles and procedures regarding Takasbank’s interoperability with other CCP institutions shall be regulated by the Board.

Takasbank may, if deemed appropriate by the Board, enter into an interoperability arrangement with the CCP institutions resident at home or abroad. Interoperability may be realized in the form of peer-to-peer comprising the mutual exchange of collaterals and additional resources to be defined pro rata to the risks under special conditions by Takasbank with one or more CCPs, or in the form of a participatory link comprising the operation of Takasbank as another CCP’s member or the operation of another CCP as a member of Takasbank. For any CCP institution that becomes a member of Takasbank through a participatory link, some of the membership conditions specified in this Regulation may not be sought.

20.8. Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP’s ability to fulfil its obligations to its own participants at any time.

Takasbank does not have any link arrangement with any central counterparty institution by the date of the report.

20.9. Not applicable for CCP activity.

Takasbank Assessment Result for CPMI-IOSCO Principle 20

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank has the capacity to manage the risks associated with the financial market infrastructures with which it has a linked arrangement.

Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Key considerations

- 1. An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.*
- 2. An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.*
- 3. An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.*

Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Key considerations

21.1. An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

Takasbank closely monitors the developments related to the markets it serves and makes regular analyses about the financial markets and the sectors to which it provides service. It works in close contact with the regulatory authorities (CMB, CBRT, BRSA) in order to ensure the operability of its business rules. Similarly, it organizes regular and project-based meetings held with the members and member trainings in order to ensure that these rules meet the needs of the customers effectively. Besides, the customer satisfaction surveys held on an annual basis strengthens the continuous improvement-oriented service approach in order to ensure that the impact that the service provided creates on the counterparty is measured and the necessary enhancements are duly made.

In addition, Takasbank's business continuity vision aims to ensure the continuity of activities without being affected or with minimum effect in case of events that may occur beyond its control. The Business Continuity Management System (BCMS) established accordingly is used in an effective manner; and cooperation and communication development efforts are made with the relevant external stakeholders through the "Related Party Analysis" including all parties of the service provided. The impacts of the measures taken and improvements made with reference to the measurements related to the performance indicators are measured through three drills conducted at least once a year and the results are used as continuous improvement data.

It is believed that the CCP Risk Committee established for the markets to which CCP service is provided will enable the CCP members to contribute more to the system design.

21.2. An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

Takasbank essentially has the vision “to be a trustworthy, effective and innovative institution providing clearing & settlement, banking and central risk management services at global quality standards, as the institution of choice in international markets”. It shapes its objectives, strategies and technological infrastructure around this vision and reinforces them with an administrative system.

In this context, pursuant to the “Regulation on Corporate Governance Principles for Banks” published by the Banking Regulation and Supervision Agency (BRSA) and the “Corporate Governance Communiqué” published by the Capital Markets Board (CMB), Takasbank prepares 3-year strategic plans to set its strategies that will guide its activities as a going concern. These objectives are determined in accordance with the financial targets aiming to increase the strength and financial value of the bank, the customer targets aiming efficient growth in relation to the services provided and the customers, the process targets aiming to enhance technological infrastructure and provide effective and reliable service at a global level, and the organization/HR targets aiming to maximize the competency and performance of human resources. The actions to be taken in order to achieve the targets specified in the Strategic Plan are determined individually for each target.

The Strategic Plan is reviewed regularly (on an annual basis) and the realizations thereof are regularly monitored in order to ensure continuous and effective management of the level and performance of achievement of such objectives. The annual evaluation of the Strategic Plan is performed in detail on the basis of the actions specified for each objective and the Business Plan and the reasons of the actions that cannot be realized or that are delayed are determined.

21.3. An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

Takasbank has governance committees reporting to the Board of Directors and the General Manager in order to effectively identify the targets it has set in accordance with its vision and measure the realizations thereof. The principles regarding the establishment and operation of such committees are determined separately and they convene at regular intervals.

There is an external customer satisfaction survey conducted by our Bank every year; and the improvements to further increase the effectiveness and efficiency of the services provided by our Bank are made according to the results of the said survey. In addition to Bank satisfaction survey regularly conducted every year, briefing meetings with Bank’s members and project tests within the scope of the relevant projects are carried out with the support of Bank’s members.

Takasbank Assessment Result for CPMI-IOSCO Principle 21

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank is efficient and effective in meeting the requirements of both its participants and the markets in which it operates.

Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Key consideration

1. An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Key consideration

22.1 An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

The CBRT payment systems (EFT and ESTS) are used for the Turkish Lira payment and domestic securities transactions. For foreign currency transactions, the correspondent bank accounts are used. For FX and cross-border securities settlement transactions, SWIFT ISO 15022 messages are used. Takasbank's own systems transform the customer orders into SWIFT messages at ISO 15022 standard and these SWIFT MT messages are sent to the relevant international institutions in order to finalize the settlement and custody transactions. Similarly, the SWIFT messages received from the international institutions are routed to Takasbank systems through exactly opposite transactions.

SWIFT system is used in the communications with the global custody institutions abroad and ISO 15022 standard is used as the communication standard. In this context, Takasbank internal systems have been designed in a manner to accept the SWIFT messages, to enter such messages into the internal systems and to convert the instructions triggered in the internal systems into SWIFT messages and to dispatch them to the relevant institution abroad over SWIFT. In order to ensure security in SWIFT communications, the bank uses a SWIFT application called "Customer security framework"; Bnnk compatibility with this application is declared on the SWIFT website and this compatibility is monitored by the Internal Control and Compliance Unit.

In addition, the AML application is used for controlling sanctions lists. The Sanctions List Inquiry (AML) product allows the Bank to automatically scan our Bank's records for sanctioned persons listed in OFAC, UN, UK, EU and FATF natural and legal person sanction lists. The AML program set up in our Bank is operated over swift transaction. In the swift transaction sent, the list of those in the sanctions list is sent to the Internal Control and Compliance Unit on an individual transaction basis; and the process is conducted after the Unit staff members instantaneously approve these transactions captured by such lists or the process is moved forward in consultation with the Senior Management if they are identified in the sanctions list.

Takasbank Assessment Result for CPMI-IOSCO Principle 22

Observed <input checked="" type="checkbox"/>	Broadly Observed <input type="checkbox"/>	Partly Observed <input type="checkbox"/>	Not Observed <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
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Takasbank uses internationally accepted communication standards in the payment, clearing and settlement transactions.

Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Key considerations

- 1. An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.*
- 2. An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.*
- 3. An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.*
- 4. An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.*
- 5. An FMI should complete regularly and disclose publicly responses to the CPMI(CPSS)-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.*

Principle 23: Disclosure of rules, key procedures and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Key considerations

23.1. *An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.*

The General Regulation on the Establishment and Operating Principles of Central Clearing and Settlement Institutions, the Central Clearing and Settlement Regulation and the Central Counterparty Regulation containing the framework rules applicable for the markets and capital market instruments to which Takasbank provides central counterparty service and the market directives and procedures containing detailed explanation about the processes and methods are publicly available on Takasbank's website⁴.

⁴ <https://www.takasbank.com.tr/en/rules-and-regulations/regulations>

In addition, the user manuals, the changes and modifications related to the rules and the information forms are announced to the members via General Letters; and these documents are also available on Takasbank website⁵.

The said framework regulations and market directives are approved by the Capital Markets Board (also by the CBRT within the scope of the Equity and Debt Instruments Markets). The market procedures are prepared in a clear and comprehensive manner with the contributions of the relevant business units and legal consultancy department, by taking the provisions of the regulations and directives into account.

In addition to the routine functioning in the markets to which central counterparty service is provided, the CCP Regulation also contains the arrangements regarding the measures to be taken in case of emergencies/disasters. Article 48 of the CCP Regulation sets forth the measures that may be taken by Takasbank in case of emergencies/disasters.

The regulations and market directives cannot be amended without the approval of the Capital Markets Board; and the rationale for the amendments must be firstly explained to the Capital Markets Board.

In addition, in the external customer satisfaction surveys held every year, the participants are asked to assess whether the rules and procedures were clear and understandable or not.

The disclosures to be made to the members, other stakeholders and the public are concretely specified in article 40 of Takasbank Directive on Central Counterparty Risk Management Implementation Principles. With regard to the data to be disclosed to public, due attention is paid to the protection of trade secrets. In the disclosure of results related with stress tests, the names of members are not disclosed.

23.2. An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

Takasbank's and the members' reciprocal obligations related with the clearing and settlement system have been stipulated in article 16 of the Central Clearing and Settlement Regulation approved by the CMB. Takasbank undertakes to establish the necessary systems according to the market characteristics and build an efficient and reliable technical infrastructure in order to ensure complete execution of the clearing and settlement transactions. The members have to adapt to the system revisions to be made by Takasbank to ensure the continuity of the uninterrupted and secure operation of the system and to participate in the tests that they are invited to.

The Market Directives and procedures provide the necessary details with respect to the market operation; and in case of changes, the members are informed via General Letters and the related documents are published on the Takasbank website.

<https://www.takasbank.com.tr/en/rules-and-regulations/directives> <https://www.takasbank.com.tr/en/rules-and-regulations/procedures>

⁵ <https://www.takasbank.com.tr/en/announcements?category=general-letters>

The institutions willing to become a CCP member are further required to review the form of “Declaration required to be made by the Board of Directors on Information Processing, Risk Management, Internal Control and Internal Audit Systems” published together with the membership agreement templates on Takasbank website and containing the details about the systems that they have established under their structure; and to submit a written acceptance regarding their compliance with the specified conditions. The general principles of the Internal Credit Rating and Assessment System⁶ used in determining the CCP membership types and the risk limits to be allocated to those accepted to membership are disclosed to the public on the website.

In addition, as prepared by Takasbank based on the fourth paragraph of article 78 of the Capital Markets Law no. 6362, the subparagraph (ç) of the first paragraph of article 7 and the second paragraph of article 8 of Takasbank Central Counterparty Regulation, the Directive on Information, Risk Management, Internal Audit and Internal Control Systems of Takasbank Central Counterparty Members was approved by the Capital Markets Board on 10 March 2016 and it is disclosed to the public on Takasbank official website. The aim of the Directive is to set forth the principles and procedures regarding the information systems, risk management, internal audit and internal control activities to be established by the members deemed appropriate to receive the central counterparty service so as to manage and control the risks undertaken for their responsibilities towards Takasbank and the oversight of the adequacy of such activities in terms of the provisions of the Directive.

In addition, the membership agreements required to be signed in order to be able to execute transactions in the markets in which central counterparty service is provided clearly delineates the borders of the principles regarding the market operation and the rights and obligations of the parties. Furthermore, the pre-agreement information forms applicable for the relevant markets contain a copy of the agreement and the issues detailing Takasbank’s general transaction terms of indispensable nature; and the candidate member has to declare that it has examined these forms in a detailed manner and accepted the conditions before signing the membership agreement.

23.3. An FMI should provide all necessary and appropriate documentation and training to facilitate participants’ understanding of the FMI’s rules and procedures and the risks they face from participating in the FMI.

In addition to the membership agreements and pre-agreement information forms referred to (in 23.2) above; the regulations containing the rules applicable in the markets to which central counterparty service is provided, the market procedures and directives detailing the operating principles also give detailed information about the authority and responsibilities of the members; and these documents are available on Takasbank website. Furthermore, the revisions that will apply for the market rules or their functioning and the user manuals are announced to the members via General Letters; and member trainings are organized when deemed necessary or upon receipt of requests from the members.

The institutions willing to become a CCP member are further required to review the form of “Declaration required to be made by the Board of Directors on Information Processing, Risk Management, Internal Control and Internal Audit Systems” published together with the membership agreement templates on

⁶ [Takasbank Internal Credit Rating and Assessment System](#)

Takasbank website and containing the details about the systems that they have established under their structure; and to submit a written acceptance regarding their compliance with the specified conditions.

For its members about whom Takasbank reaches the conclusion that they have not completely understood the CCP membership conditions or have misinterpreted the membership conditions, Takasbank is entitled to review the situation and to warn its members where necessary before imposing a heavy disciplinary penalty like suspension or termination of membership. The disciplinary provisions are provided in Chapter Seven of Takasbank Central Clearing and Settlement Regulation.

23.4. An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

The fees and commissions applicable for the services provided by Takasbank are available on its website⁷. In addition, in case of a revision in such details, the members are informed through General Letters or announcements before the date the new tariff will become effective. In determining such tariffs, the necessary comparisons are made with the financial market infrastructures of similar nature, and they enter into force upon the approval of the Capital Markets Board. Therefore, it is required to disclose the reasons of the changes made in the fees and commissions to the Capital Markets Board.

Conditional transfer and global custody swift message formats and the fees tariff are provided on Bank's website and the revisions are notified to the members via general letters and the formats are also updated.

The amendments or changes made in Takasbank technology, communication procedures, fees, rules, procedures are announced to the members via general letters and they are available on the Takasbank website. In addition, the projects implemented/to be implemented during a particular year and the added value details of the projects are shared in detail in the annual report pertaining to that year. The annual reports are also published on Takasbank website.

When the Bank decides to change the fee tariff in relation to any of its services provided, Takasbank Service-Based Profitability Study is used as a reference. This study is repeated at least on a quarterly basis and the incomes and expenses related to each service are compared. This study provides an important source of data as to whether a service offered can meet the costs and expenses associated with such service or not.

23.5. An FMI should complete regularly and disclose publicly responses to the CPMI(CPSS)-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

This report issued by taking account of "CPMI-IOSCO Disclosure framework for financial market infrastructures" in order to assess observance of CPMI-IOSCO principles in the central counterparty services offered by Takasbank shall be announced by Takasbank both in Turkish and English languages over its website. The framework shall normally be updated once every two years and in case of material changes, it shall be updated without waiting for the said two-year period.

⁷ <https://www.takasbank.com.tr/en/product-and-service-prices>

All information related to Takasbank's central counterparty service is available on Takasbank website, through the following links:

- Turkish (<http://www.takasbank.com.tr/tr/Sayfalar/MKT.aspx>)
- English (<http://www.takasbank.com.tr/en/Pages/MKT.aspx>)

The disclosures to be made to the members, other stakeholders and the public are concretely specified in article 40 of Takasbank Directive on Central Counterparty Risk Management Implementation Principles. Accordingly; in order to ensure transparency in the CCP services provided by Takasbank, the following information is disclosed to the members and the public and updated periodically:

- Regarding governance arrangements;
 - Issues relating to the organization and corporate governance;
 - Audited financial statements for the latest period;
- Regarding business rules;
 - Regulations, directives, and procedures;
 - The information related with the Bank's central clearing and settlement services;
 - Principles regarding risk management, membership, and default management;
 - Assets accepted as collateral and valuation haircuts;
 - Monitoring and segregation of collaterals and properties of collateral accounts;
 - Trade margin and guarantee fund parameters;
 - Summary results for the stress tests and the backtesting;
 - Current CCP members;
 - The volume of transactions cleared daily;
 - Average margin amount required to be maintained in the market;
 - Clearing commissions and fees;
 - Technical requirements for the system communication protocols.

With regard to the data to be disclosed to public, due attention is paid to the protection of trade secrets. In the disclosure of results related with stress tests, the names of members are not disclosed. Disclosures are made both in Turkish and English languages over the Takasbank website.

In addition, any supplementary documents that the Bank considers supporting the members with regard to the functioning and mechanism of the system also publishes on the corporate website.

Takasbank Assessment Result for CPMI-IOSCO Principle 23

Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Takasbank provides sufficient information that will allow its participants to have an accurate understanding of the risks, fees and other material costs they will incur, all relevant rules, procedures regarding the members and markets have been publicly disclosed.

IV. ANNEXES

A. Summary Assessment Table for Takasbank against CPMI-IOSCO Principles

In the assessment that we made to determine CCP activities' level of observance of the core principles published by CPMI-IOSCO in April 2012, it was concluded that we 'observed' all principles. The core principle no. 11 relating to the Central Securities Depository (CSD) institutions and the core principle no. 24 relating to the Trade Repository (TR) institutions were excluded from the assessment since they were not applicable. The summary assessment table by principles is provided in Table-3.

Assessment Category	Principle/s
Observed	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
Broadly Observed	-
Partly Observed	-
Not Observed	-
Not Applicable	11, 24

Table 1- Summary Assessment Table for Takasbank within CPMI-IOSCO Principles

B.1. Sub-Principle Questions Related To The CPMI-IOSCO Core Principles For Financial Market Infrastructures

Principle 1: Legal Basis

Key Consideration 1: The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

Q.1.1.1: What are the material aspects of the FMI's activities that require a high degree of legal certainty (for example, rights and interests in financial instruments; settlement finality; netting; interoperability; immobilisation and dematerialisation of securities; arrangements for DvP, Pvp or DvD; collateral arrangements (including margin arrangements); and default procedures)?

Q.1.1.2: What are the relevant jurisdictions for each material aspect of the FMI's activities?

Q.1.1.3: How does the FMI ensure that its legal basis (that is, the legal framework and the FMI's rules, procedures and contracts) provides a high degree of legal certainty for each material aspect of the FMI's activities in all relevant jurisdictions?

- a) For an FMI that is a CSD, how does the CSD ensure that its legal basis supports the immobilisation or dematerialisation of securities and the transfer of securities by book entry?*
- b) For an FMI that is a CCP, how does the CCP ensure that its legal basis enables it to act as a CCP, including the legal basis for novation, open offer or other similar legal device? Does the CCP state whether novation, open offer or other similar legal device can be revoked or modified? If yes, in which circumstances?*
- c) For an FMI that is a TR, how does the TR ensure that its legal basis protects the records it maintains? How does the legal basis define the rights of relevant stakeholders with respect to access, confidentiality and disclosure of data?*
- d) For an FMI that has a netting arrangement, how does the FMI ensure that its legal basis supports the enforceability of that arrangement?*
- e) Where settlement finality occurs in an FMI, how does the FMI ensure that its legal basis supports the finality of transactions, including those of an insolvent participant? Does the legal basis for the external settlement mechanisms the FMI uses, such as funds transfer or securities transfer systems, also support this finality?*

Key Consideration 2: An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

Q.1.2.1: How has the FMI demonstrated that its rules, procedures and contracts are clear and understandable?

Q.1.2.2: How does the FMI ensure that its rules, procedures and contracts are consistent with relevant laws and regulations (for example, through legal opinions or analyses)? Have any inconsistencies been identified and remedied? Are the FMI's rules, procedures and contracts reviewed or assessed by external authorities or entities?

Q.1.2.3: Do the FMI's rules, procedures and contracts have to be approved before coming into effect? If so, by whom and how?

Key Consideration 3: An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

Q.1.3.1: How does the FMI articulate the legal basis for its activities to relevant authorities, participants and, where relevant, participants' customers?

Key Consideration 4: An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

Q.1.4.1: How does the FMI achieve a high level of confidence that the rules, procedures and contracts related to its operations are enforceable in all relevant jurisdictions identified in key consideration 1 (for example, through legal opinions and analyses)?

Q.1.4.2: How does the FMI achieve a high degree of certainty that its rules, procedures and contracts will not be voided, reversed or subject to stays? Are there any circumstances in which an FMI's actions under its rules, procedures or contracts could be voided, reversed or subject to stays? If so, what are those circumstances?

Q.1.4.3: Has a court in any relevant jurisdiction ever held any of the FMI's relevant activities or arrangements under its rules and procedures to be unenforceable?

Key Consideration 5: An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

Q.1.5.1: If the FMI is conducting business in multiple jurisdictions, how does the FMI identify and analyse any potential conflict-of-laws issues? When uncertainty exists regarding the enforceability of an FMI's choice of law in relevant jurisdictions, has the FMI obtained an independent legal analysis of potential conflict-of-laws issues? What potential conflict-of-laws issues has the FMI identified and analysed? How has the FMI addressed any potential conflict-of-laws issues?

Principle 2: Governance

Key Consideration 1: An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

Q.2.1.1: What are the FMI's objectives, and are they clearly identified? How does the FMI assess its performance in meeting its objectives?

Q.2.1.2: How do the FMI's objectives place a high priority on safety and efficiency? How do the FMI's objectives explicitly support financial stability and other relevant public interest considerations?

Key Consideration 2: An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

Q.2.2.1: What are the governance arrangements under which the FMI's board of directors (or equivalent) and management operate? What are the lines of responsibility and accountability within the FMI? How and where are these arrangements documented?

Q.2.2.2: For central bank-operated systems, how do governance arrangements address any possible or perceived conflicts of interest? To what extent do governance arrangements allow for a separation of the operator and oversight functions?

Q.2.2.3: How does the FMI provide accountability to owners, participants and other relevant stakeholders?

Q.2.2.4: How are the governance arrangements disclosed to owners, relevant authorities, participants and, at a more general level, the public?

Key Consideration 3: The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

Q.2.3.1: What are the roles and responsibilities of the FMI's board of directors (or equivalent), and are they clearly specified?

Q.2.3.2: What are the board's procedures for its functioning, including procedures to identify, address and manage member conflicts of interest? How these procedures are documented, and to whom are they disclosed? How frequently are they reviewed?

Q.2.3.3: Describe the board committees that have been established to facilitate the functioning of the board. What are the roles, responsibilities and composition of such committees?

Q.2.3.4: What are the procedures established to review the performance of the board as a whole and the performance of the individual board members?

Key Consideration 4: The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

Q.2.4.1: To what extent does the FMI's board have the appropriate skills and incentives to fulfil its multiple roles? How does the FMI ensure that this is the case?

Q.2.4.2: What incentives does the FMI provide to board members so that it can attract and retain members of the board with appropriate skills? How do these incentives reflect the long-term achievement of the FMI's objectives?

Q.2.4.3: Does the board include non-executive or independent board members? If so, how many?

Q.2.4.4: If the board includes independent board members, how does the FMI define an independent board member? Does the FMI disclose which board member(s) it regards as independent?

Key Consideration 5: The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

Q.2.5.1: What are the roles and responsibilities of management, and are they clearly specified?

Q.2.5.2: How are the roles and objectives of management set and evaluated?

Experience, skills and integrity

Q.2.5.3: To what extent does the FMI's management have the appropriate experience, mix of skills and the integrity necessary for the operation and risk management of the FMI? How does the FMI ensure that this is the case?

Q.2.5.4: What is the process to remove management if necessary?

Key Consideration 6: The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

Q.2.6.1: What is the risk management framework that has been established by the board? How is it documented?

Q.2.6.2: How does this framework address the FMI's risk tolerance policy, assign responsibilities and accountability for risk decisions (such as limits on risk exposures), and address decision-making in crises and emergencies?

Q.2.6.3: What is the process for determining, endorsing and reviewing the risk management framework?

Authority and independence of risk management and audit functions

Q.2.6.4: What are the roles, responsibilities, authority, reporting lines and resources of the risk management and audit functions?

Q.2.6.5: How does the board ensure that there is adequate governance surrounding the adoption and use of risk management models? How are these models and the related methodologies validated?

Key Consideration 7: The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

Q.2.7.1: How does the FMI identify and take account of the interests of the FMI's participants and other relevant stakeholders in its decision-making in relation to its design, rules, overall strategy and major decisions?

Q.2.7.2: How does the board consider the views of direct and indirect participants and other relevant stakeholders on these decisions; for example, are participants included on the risk management committee, on user committees such as a default management group or through a public consultation? How conflicts of interest between stakeholders and the FMI are identified, and how are they addressed?

Q.2.7.3: To what extent does the FMI disclose major decisions made by the board to relevant stakeholders and, where appropriate, the public?

Principle 3: Framework for the comprehensive management of risks

Key Consideration 1: An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

Q.3.1.1: What types of risk arise in or are borne by the FMI?

Q.3.1.2: What are the FMI's policies, procedures and controls to help identify, measure, monitor and manage the risks that arise in or are borne by the FMI?

Q.3.1.3: What risk management systems are used by the FMI to help identify, measure, monitor and manage its range of risks?

Q.3.1.4: How do these systems provide the capacity to aggregate exposures across the FMI and, where appropriate, other relevant parties, such as the FMI's participants and their customers?

Q.3.1.5: What is the process for developing, approving and maintaining risk management policies, procedures and systems?

Q.3.1.6: How does the FMI assess the effectiveness of risk management policies, procedures and systems?

Q.3.1.7: How frequently are the risk management policies, procedures and systems reviewed and updated by the FMI? How do these reviews take into account fluctuation in risk intensity, changing environments and market practices?

Key Consideration 2: An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.

Q.3.2.1: What information does the FMI provide to its participants and, where relevant, their customers to enable them to manage and contain the risks they pose to the FMI?

Q.3.2.2: What incentives does the FMI provide for participants and, where relevant, their customers to monitor and manage the risks they pose to the FMI?

Q.3.2.3: How does the FMI design its policies and systems so that they are effective in allowing their participants and, where relevant, their customers to manage and contain their risks?

Key Consideration 3: An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

Q.3.3.1: How does the FMI identify the material risks that it bears from and poses to other entities as a result of interdependencies? What material risks has the FMI identified?

Q.3.3.2: How are these risks measured and monitored? How frequently does the FMI review these risks?

Q.3.3.3: What risk management tools are used by the FMI to address the risks arising from interdependencies with other entities?

Q.3.3.4: How does the FMI assess the effectiveness of these risk management tools?

How does the FMI review the risk management tools it uses to address these risks? How frequently is this review conducted?

Key Consideration 4: An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

Q.3.4.1: How does the FMI identify scenarios that may potentially prevent the FMI from providing its critical operations and services? What scenarios have been identified as a result of these processes?

Q.3.4.2: How do these scenarios take into account both independent and related risks to which the FMI is exposed?

Q.3.4.3: What plans does the FMI have for its recovery or orderly wind-down?

Q.3.4.4: How do the FMI's key recovery or orderly wind-down strategies enable the FMI to continue to provide critical operations and services?

Q.3.4.5: How are the plans for the FMI's recovery and orderly wind-down reviewed and updated? How frequently are the plans reviewed and updated?

Principle 4: Credit Risk

Key Consideration 1: An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

Q.4.1.1: What is the FMI's framework for managing credit exposures, including current and potential future exposures, to its participants and arising from its payment, clearing and settlement processes?

Q.4.1.2: How frequently is the framework reviewed to reflect the changing environment, market practices and new products?

Key Consideration 2: An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

Q.4.2.1: How does the FMI identify sources of credit risk? What are the sources of credit risk that the FMI has identified?

Q.4.2.2: How does the FMI measure and monitor credit exposures? How frequently does and how frequently can the FMI recalculate these exposures? How timely is the information?

Q.4.2.3: What tools does the FMI use to control identified sources of credit risk (for example, offering an RTGS or DvP settlement mechanism, limiting net debits or intraday credit, establishing concentration limits, or marking positions to market on a daily or intraday basis)? How does the FMI measure the effectiveness of these tools?

Key Consideration 3: A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.

Q.4.3.1: How does the payment system or SSS cover its current and, where they exist, potential future exposures to each participant? What is the composition of the FMI's financial resources used to cover these exposures? How accessible are these financial resources?

Q.4.3.2: To what extent do these financial resources cover the payment system's or SSS's current and potential future exposures fully with a high degree of confidence? How frequently does the payment system or SSS evaluate the sufficiency of these financial resources?

For DNS payment systems and DNS SSSs in which there is no settlement guarantee

Q.4.3.3: If the payment system or SSS is a DNS system in which there is no settlement guarantee, do its participants face credit exposures arising from the payment, clearing and settlement processes? If there are credit exposures in the system, how does the system monitor and measure these exposures?

Q.4.3.4: If the payment system or SSS is a DNS system in which there is no settlement guarantee and has credit exposures among its participants, to what extent does the payment system's or SSS's financial resources cover, at a minimum, the default of the two participants and their affiliates that would create the largest aggregate credit exposure in the system?

Key Consideration 4: A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.

Q.4.4.1: How does the CCP cover its current and potential future exposures to each participant fully with a high degree of confidence? What is the composition of the CCP's financial resources used to cover its current and potential future exposures? How accessible are these financial resources?

Q.4.4.2: To what extent do these financial resources cover the CCP's current and potential future exposures fully with a high degree of confidence? How frequently does the CCP evaluate the sufficiency of these financial resources?

Q.4.4.3: Do any of the CCP's activities have a more-complex risk profile (such as clearing financial instruments that are characterised by discrete jump-to-default price changes or that are highly correlated with potential participant defaults)? Is the CCP systemically important in multiple jurisdictions?

Q.4.4.4: What additional financial resources does the CCP maintain to cover a wide range of potential stress scenarios that include, but are not limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure in extreme but plausible market conditions?

Q.4.4.5: If the CCP is involved in activities with a more-complex risk profile or is systemically important in multiple jurisdictions, to what extent do the additional financial resources cover, at a minimum, the default of the two participants and their affiliates that would create the largest credit exposure in the CCP in extreme but plausible market conditions?

Q.4.4.6: How frequently does the CCP evaluate the sufficiency of its additional resources?

Q.4.4.7: How does the CCP document the supporting rationale regarding its holdings of total financial resources?

Q.4.4.8: What governance arrangements are in place relating to the amount of total financial resources at the CCP?

Key Consideration 5: A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the OOP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a OOP's participants increases significantly. A full validation of a OOP's risk-management model should be performed at least annually.

Q.4.5.1: How does the CCP determine and stress-test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions? How frequently does the CCP stress-test its financial resources?

Q.4.5.2: How are stress test results communicated to appropriate decision-makers at the

CCP? How are these results used to evaluate the adequacy of and adjust the CCP's total financial resources?

Q.4.5.3: How frequently does the CCP assess the effectiveness and appropriateness of stress test assumptions and parameters? How does the CCP's stress test programme take into account various conditions, such as a sudden and significant increase in position and price volatility, position concentration, change in market liquidity, and model risk including shift of parameters?

Q.4.5.4: How does the CCP validate its risk management model? How frequently does it perform this validation? Who carries this out?

Key Consideration 6: In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

Q.4.6.1: In conducting stress testing, what scenarios does the CCP consider? What analysis supports the use of these particular scenarios? Do the scenarios include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions?

Key Consideration 7: An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

Q.4.7.1: How do the FMI's rules and procedures explicitly address any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI? How do the FMI's rules and procedures address the allocation of uncovered credit losses and in what order, including the repayment of any funds an FMI may borrow from liquidity providers?

Q.4.7.2: What are the FMI's rules and procedures on the replenishment of the financial resources that are exhausted during a stress event?

Principle 5: Collateral:

Key Consideration 1: An FMI should generally limit the assets it (routinely) accepts as collateral to those low credit, liquidity, and market risks.

Q.5.1.1: How does the FMI determine whether a specific asset can be accepted as collateral, including collateral that will be accepted on an exceptional basis? How does the FMI determine what qualifies as an exceptional basis? How frequently does the FMI adjust these determinations? How frequently does the FMI accept collateral on an exceptional basis, and does it place limits on its acceptance of such collateral?

Q.5.1.2: How does the FMI monitor the collateral that is posted so that the collateral meets the applicable acceptance criteria?

Q.5.1.3: How does the FMI identify and mitigate possible specific wrong-way risk – for example, by limiting the collateral it accepts (including collateral concentration limits)?

Key Consideration 2: An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

Q.5.2.1: How frequently does the FMI mark its collateral to market, and does it do so at least daily?

Q.5.2.2: To what extent is the FMI authorised to exercise discretion in valuing assets when market prices do not represent their true value?

Q.5.2.3: How does the FMI determine haircuts?

Q.5.2.4: How does the FMI test the sufficiency of haircuts and validate its haircut procedures, including with respect to the potential decline in the assets' value in stressed market conditions involving the liquidation of collateral? How frequently does the FMI complete this test?

Key Consideration 3: In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

Q.5.3.1: How does the FMI identify and evaluate the potential procyclicality of its haircut calibrations? How does the FMI consider reducing the need for procyclical adjustments – for example, by incorporating periods of stressed market conditions during the calibration of haircuts?

Key Consideration 4: An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

Q.5.4.1: What are the FMI's policies for identifying and avoiding concentrated holdings of certain assets in order to limit potential adverse price effects at liquidation? What factors (for example, adverse price effects or market conditions) are considered when determining these policies?

Q.5.4.2: How does the FMI review and evaluate concentration policies and practices to determine their adequacy? How frequently does the FMI review and evaluate these policies and practices?

Key Consideration 5: An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

Q.5.5.1: What are the legal, operational, market and other risks that the FMI faces by accepting cross-border collateral? How does the FMI mitigate these risks?

Q.5.5.2: How does the FMI ensure that cross-border collateral can be used in a timely manner?

Key Consideration 6: An FMI should use a collateral management system that is well-designed operationally flexible.

Q.5.6.1: What are the primary features of the FMI's collateral management system?

Q.5.6.2: How and to what extent does the FMI track the reuse of collateral and its rights to the collateral provided?

Q.5.6.3: How and to what extent does the FMI's collateral management system accommodate changes in the ongoing monitoring and management of collateral?

Q.5.6.4: To what extent is the collateral management system staffed to ensure smooth operations even during times of market stress?

Principle 6: Margin

Key Consideration 1: A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.

Q.6.1.1: What is the general framework of the CCP's margin system, particularly with respect to current and potential future exposures? If the CCP does not use a margining system, what risk management measures does it take to mitigate its risks? To what extent do these measures deliver equivalent outcomes?

Q.6.1.2: Is the margin methodology documented?

Q.6.1.3: To what extent is the detail of the CCP's margin methodology made available to participants for use in their individual risk management efforts?

Q.6.1.4: What are the determinants of the credit exposures of the CCP, with respect to the attributes of each product, portfolio and market it serves?

Q.6.1.5: To what extent are the CCP's margin requirements commensurate with the risks and particular attributes of each product, portfolio and market it serves?

Q.6.1.6: How does the CCP address the risk of a participant payment failure that would cause a shortage of required margin to the participant's position?

Q.6.1.7: How does the CCP enforce timelines for margin collections and payments? If the CCP has participants from different time zones, how does the CCP address issues posed by differences in local funding markets and operating hours of relevant payment and settlement systems?

Key Consideration 2: A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

Q.6.2.1: What are the sources of price data for the CCP's margin model? What data does the CCP use to determine initial margin?

Q.6.2.2: How does the CCP determine that the price data it uses for its margin system is timely and reliable, including prices provided by a third party where relevant?

Q.6.2.3: When prices are not readily available or reliable, how does the CCP estimate prices to calculate margin requirements?

Q.6.2.4: How does the CCP validate models used to estimate prices or margin requirements when price data are not readily available or reliable? How does the FMI ensure the independence of the validation process?

Key Consideration 3: A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the subportfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.

Q.6.3.1: What is the design of the CCP's initial margin model? Describe the model in detail, including the method used to determine potential future exposure. What is the level of coverage of the initial margin model?

Q.6.3.2: What are the assumptions of the margin model?

Q.6.3.3: How does the CCP estimate the key parameters and inputs of the margin model (such as the liquidation horizon and confidence interval)?

Q.6.3.4: How does the CCP determine an appropriate closeout period for each product? In particular, how does the CCP account for potentially increased liquidation times during stressed market conditions? What factors are considered in this analysis (for example, market liquidity, impact of a participant's default on prevailing market conditions, adverse effects of position concentration, and the CCP's hedging capability)?

Q.6.3.5: How does the CCP determine an appropriate sample period for historical data used in the margin model? What factors are considered (for example, reflection of new, current or past volatilities, or use of simulated data for new products without much history)?

Q.6.3.6: How does the CCP consider the trade-off between prompt liquidation and adverse price effects?

Q.6.3.7: How does the CCP address procyclicality in the margin methodology? In particular, does the CCP adopt margin requirements that, to the extent practical and prudent, limit the need for destabilising procyclical changes?

Q.6.3.8: How does the CCP identify and mitigate specific wrong-way risk?

Key Consideration 4: A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.

Q.6.4.1: What is the design of the CCP's variation margin model? Describe the model in detail, including the method used to measure current exposure, frequency of mark-to-market and schedule of margin collection, and intraday margin call capabilities.

Q.6.4.2: Does the CCP have the authority and operational capacity to make and complete intraday margin calls for initial and variation margin?

Key Consideration 5: In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorised to offer cross-margining, they must have appropriate safeguards and harmonized overall risk management systems.

Q.6.5.1: Does the CCP allow offsets or reductions in required margin across products that it clears or between products that it or another CCP clear? If so, is the risk of one product significantly and reliably correlated with the risk of the other product? How does the CCP offset or reduce required margin?

Q.6.5.2: How does the CCP identify and measure its potential future exposure at the product and portfolio level? How does the CCP's portfolio margining methodology account for offsets or reductions in required margin across products that it clears?

Q.6.5.3: In the case of cross-margining between two or more CCPs, how have the CCPs harmonised their approaches to risk management? What legal and operational arrangements govern the cross-margining arrangements?

Q.6.5.4: How does the CCP confirm the robustness of its portfolio and cross-margining methodologies? How does the CCP's methodology account for the degree of price dependency, and its stability in stressed market conditions?

Key Consideration 6: A CCP should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting and at least monthly, and more-frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that

reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.

Q.6.6.1: Describe in detail the backtesting methodologies and model performance, including both target confidence level and the result of overall margin coverage. How does such testing address portfolio effects within and across asset classes within the CCP and cross-margining programmes with other CCPs? How frequently is the backtesting conducted?

Q.6.6.2: Describe in detail the sensitivity analysis of model performance and overall coverage of the CCP's initial margin methodology. Does the analysis cover a wide range of parameters, assumptions, historical and hypothetical market conditions, and participant positions, including stressed conditions? How frequently is the analysis conducted?

Q.6.6.3: What are the identified potential shortcomings of the margin model based on backtesting and sensitivity analysis?

Q.6.6.4: What actions would the CCP take if the model did not perform as expected?

Q.6.6.5: How does the CCP disclose the results of its backtesting and sensitivity analysis?

Key Consideration 7: A CCP should regularly review and validate its margin system.

Q.6.7.1: How does the CCP regularly review and validate its margin system including its theoretical and empirical properties? How frequently is this done?

Q.6.7.2: How does the CCP incorporate material revisions and adjustments of the margin methodology, including parameters, into its governance arrangements?

Q.6.7.3: How and to whom does the CCP disclose both the method and the results of this review and validation?

Principle 7: Liquidity Risk

Key Consideration 1: An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

Q.7.1.1: What is the FMI's framework for managing its liquidity risks, in all relevant currencies, from its participants, settlement banks, nostro agents, custodian banks, liquidity providers and other entities?

Q.7.1.2: What are the nature and size of the FMI's liquidity needs, and the associated sources of liquidity risks, that arise in the FMI in all relevant currencies?

Q.7.1.3: How does the FMI take into account the potential aggregate liquidity risk presented by an individual entity and its affiliates that may play multiples roles with respect to the FMI?

Key Consideration 2: An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

Q.7.2.1: What operational and analytical tools does the FMI have to identify, measure and monitor settlement and funding flows?

Q.7.2.2: How does the FMI use those tools to identify, measure and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity?

Key Consideration 3: A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

Q.7.3.1: How does the payment system or SSS determine the amount of liquid resources in all relevant currencies to effect same day settlement and, where appropriate, intraday or multiday settlement of payment obligations? What potential stress scenarios (including, but not limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions) does the payment system or SSS use to make this determination?

Q.7.3.2: What is the estimated size of the liquidity shortfall in each currency that the payment system or SSS would need to cover?

Key Consideration 4: A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

Q.7.4.1: How does the CCP determine the amount of liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments and meet other payment obligations on time? What potential stress scenarios (including, but not limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions) does the CCP use to make this determination?

Q.7.4.2: What is the estimated size of the liquidity shortfall in each currency that would need to be covered, following the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions? How frequently does the CCP estimate this?

Risk profile and systemic importance in multiple jurisdictions

Q.7.4.3: Do any of the CCP's activities have a more complex risk profile (such as clearing financial instruments that are characterised by discrete jump-to-default price changes or that are highly correlated with potential participant defaults)? Is the CCP systemically important in multiple jurisdictions?

Q.7.4.4: If the CCP is involved in activities with a more complex risk profile or is systemically important in multiple jurisdictions, has the CCP considered maintaining additional resources sufficient to cover a wider range of stress scenarios that would include the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions?

Key Consideration 5: For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

Q.7.5.1: What is the size and composition of the FMI's qualifying liquid resources in each currency that is held by the FMI? In what manner and within what time frame can these liquid resources be made available to the FMI?

Q.7.5.2: What prearranged funding arrangements has the FMI established to convert its readily available collateral and investments into cash? How has the FMI established that these arrangements would be highly reliable in extreme but plausible market conditions? Has the FMI identified any potential barriers to accessing its liquid resources?

Q.7.5.3: If the FMI has access to routine credit at the central bank of issue, what is the FMI's relevant borrowing capacity for meeting its minimum liquid resource requirement in that currency?

Q.7.5.4: To what extent does the size and the availability of the FMI's qualifying liquid resources cover its identified minimum liquidity resource requirement in each currency to effect settlement of payment obligations on time?

Key Consideration 6: An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

Q.7.6.1: What is the size and composition of any supplemental liquid resources available to the FMI?

Availability of supplemental liquid resources

Q.7.6.2: How and on what basis has the FMI determined that these assets are likely to be saleable or acceptable as collateral to obtain the relevant currency, even if this cannot be reliably prearranged or guaranteed in extreme market conditions?

Q.7.6.3: What proportion of these supplemental assets qualifies as potential collateral at the relevant central bank?

Q.7.6.4: In what circumstances would the FMI use its supplemental liquid resources in advance of, or in addition to, using its qualifying liquid resources?

Q.7.6.5: To what extent does the size and availability of the FMI's supplemental liquid resources, in conjunction with its qualifying liquid resources, cover the relevant liquidity needs identified through the FMI's stress test programme for determining the adequacy of its liquidity resources (see key consideration 9)?

Key Consideration 7: An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

Q.7.7.1: Does the FMI use a liquidity provider to meet its minimum required qualifying liquidity resources? Who are the FMI's liquidity providers? How and on what basis has the FMI determined that each of these liquidity providers has sufficient information to understand and to manage their associated liquidity risk in each relevant currency on an ongoing basis, including in stressed conditions? Reliability of liquidity providers

Q.7.7.2: How has the FMI determined that each of its liquidity providers has the capacity to perform on its commitment in each relevant currency on an ongoing basis?

Q.7.7.3: How does the FMI take into account a liquidity provider's potential access to credit at the central bank of issue?

Q.7.7.4: How does the FMI regularly test the timeliness and reliability of its procedures for accessing its liquid resources at a liquidity provider?

Key Consideration 8: An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

Q.7.8.1: To what extent does the FMI currently have, or is the FMI eligible to obtain, access to accounts, payment services and securities services at each relevant central bank that could be used to conduct its payments and settlements and to manage liquidity risks in each relevant currency?

Q.7.8.2: To what extent does the FMI use each of these services at each relevant central bank to conduct its payments and settlements and to manage liquidity risks in each relevant currency?

Q.7.8.3: If the FMI employs services other than those provided by the relevant central banks, to what extent has the FMI analysed the potential to enhance the management of liquidity risk by expanding its use of central bank services?

Q.7.8.4: What, if any, practical or other considerations to expanding its use of relevant central bank services have been identified by the FMI?

Key Consideration 9: An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

Q.7.9.1: How does the FMI use stress testing to determine the amount and test the sufficiency of its liquid resources in each currency? How frequently does the FMI stress-test its liquid resources?

Q.7.9.2: What is the process for reporting on an ongoing basis the results of the FMI's liquidity stress tests to appropriate decision-makers at the FMI, for the purpose of supporting their timely evaluation and adjustment of the size and composition of the FMI's liquidity resources and liquidity risk management framework?

Q.7.9.3: What scenarios are used in the stress tests, and to what extent do they take into account a combination of peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions?

Q.7.9.4: To what extent do the scenarios and stress tests take into account the FMI's particular payment and settlement structure (for example, real-time gross or deferred net; with or without a settlement guarantee; DVP model 1, 2 or 3 for SSSs), and the liquidity risk that is borne directly by the FMI, by its participants, or both?

Q.7.9.5: To what extent do the scenarios and stress tests take into account the nature and size of the liquidity needs, and the associated sources of liquidity risks, that arise in the FMI to settle its payment obligations on time, including the potential that individual entities and their affiliates may play multiples roles with respect to the FMI?

Q.7.9.6: How frequently does the FMI assess the effectiveness and appropriateness of stress test assumptions and parameters? How does the FMI's stress test programme take into account various conditions, such as a sudden and significant increase in position and price volatility, position concentration, change in market liquidity, and model risk including shift of parameters?

Q.7.9.7: How does the FMI validate its risk management model? How frequently does it perform this validation?

Q.7.9.8: Where and to what extent does the FMI document its supporting rationale for, and its governance arrangements relating to, the amount and form of its total liquid resources?

Key Consideration 10: An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

Q.7.10.1: How do the FMI's rules and procedures enable it to settle payment obligations on time following any individual or combined default among its participants?

Q.7.10.2: How do the FMI's rules and procedures address unforeseen and potentially uncovered liquidity shortfalls and avoid unwinding, revoking or delaying the same day settlement of payment obligations?

Q.7.10.3: How do the FMI's rules and procedures allow for the replenishment of any liquidity resources employed during a stress event?

Principle 8: Settlement Finality

Key Consideration 1: An FMI's rules and procedures should clearly define the point at which settlement is final.

Q.8.1.1: At what point is the settlement of a payment, transfer instruction or other obligation final, meaning irrevocable and unconditional? Is the point of settlement finality defined and documented? How and to whom is this information disclosed?

Q.8.1.2: How does the FMI's legal framework and rules, including the applicable insolvency law(s), acknowledge the discharge of a payment, transfer instruction or other obligation between the FMI and its participants, or between participants?

Q.8.1.3: How does the FMI demonstrate that there is a high degree of legal certainty that finality will be achieved in all relevant jurisdictions (for example, by obtaining a well-reasoned legal opinion)?

Q.8.1.4: How does the FMI ensure settlement finality in the case of linkages with other FMIs?

a) *For an SSS, how is consistency of finality achieved between the SSS and, if relevant, the LVPS where*

the cash leg is settled?

- b) *For a CCP for cash products, what is the relation between the finality of obligations in the CCP and the finality of the settlement of the CCP claims and obligations in other systems, depending on the rules of the relevant CSD/SSS and payment system?*

Key Consideration 2: An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

Q.8.2.1: Is the FMI designed to complete final settlement on the value date (or same day settlement)? How does the FMI ensure that final settlement occurs no later than the end of the intended value date?

Q.8.2.2: Has the FMI ever experienced deferral of final settlement to the next business day that was not contemplated by its rules, procedures or contracts? If so, under what circumstances? If deferral was a result of the FMI's actions, what steps have been taken to prevent a similar situation in the future?

Q.8.2.3: Does the FMI provide intraday or real-time final settlement? If so, how? How are participants informed of the final settlement?

Q.8.2.4: If settlement occurs through multiple-batch processing, what is the frequency of the batches and within what time frame do they operate? What happens if a participant does not have enough funds or securities at the settlement time? Are transactions entered in the next batch? If so, what is the status of those transactions and when would they become final?

Q.8.2.5: If settlement does not occur intraday or in real time, how has the LVPS or SSS considered the introduction of either of these modalities?

Key Consideration 3: An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

Q.8.3.1: How does the FMI define the point at which unsettled payments, transfer instructions or other obligations may not be revoked by a participant? How does the FMI prohibit the unilateral revocation of accepted and unsettled payments, transfer instructions or obligations after this time?

Q.8.3.2: Under what circumstances can an instruction or obligation accepted by the system for settlement still be revoked (for example, queued obligations)? How can an unsettled payment or transfer instruction be revoked? Who can revoke unsettled payment or transfer instructions?

Q.8.3.3: Under what conditions does the FMI allow exceptions and extensions to the revocation deadline?

Q.8.3.4: Where does the FMI define this information? How and to whom is this information disclosed?

Principle 9: Money Settlements

Key Consideration 1: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

Q.9.1.1: How does the FMI conduct money settlements? If the FMI conducts settlement in multiple currencies, how does the FMI conduct money settlement in each currency?

Q.9.1.2: If the FMI does not settle in central bank money, why is it not used?

Key Consideration 2: If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

Q.9.2.1: If central bank money is not used, how does the FMI assess the credit and liquidity risks of the settlement asset used for money settlement?

Q.9.2.2: If the FMI settles in commercial bank money, how does the FMI select its settlement banks? What are the specific selection criteria the FMI uses?

Key Consideration 3: If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

Q.9.3.1: How does the FMI monitor the settlement banks' adherence to criteria it uses for selection? For example, how does the FMI evaluate the banks' regulation, supervision, creditworthiness, capitalisation, access to liquidity and operational reliability?

Q.9.3.2: How does the FMI monitor, manage and limit its credit and liquidity risks arising from the commercial settlement banks? How does the FMI monitor and manage the concentration of credit and liquidity exposures to these banks?

Q.9.3.3: How does the FMI assess its potential losses and liquidity pressures as well as those of its participants if there is a failure of its largest settlement bank?

Key Consideration 4: If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

Q.9.4.1: If an FMI conducts money settlements on its own books, how does it minimise and strictly control its credit and liquidity risks?

Key Consideration 5: An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

Q.9.5.1: Do the FMI's legal agreements with its settlement banks state when transfers occur, that transfers are final when effected, and that funds received are transferable?

Q.9.5.2: Are funds received transferable by the end of the day at the latest? If not, why? Are they transferable intraday? If not, why?

Principle 10: Physical Deliveries

Key Consideration 1: An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

Q.10.1.1: Which asset classes does the FMI accept for physical delivery?

Q.10.1.2: How does the FMI define its obligations and responsibilities with respect to the delivery of physical instruments or commodities? How are these responsibilities defined and documented? To whom are these documents disclosed?

Q.10.1.3: How does the FMI engage with its participants to ensure they have an understanding of their obligations and the procedures for effecting physical delivery?

Key Consideration 2: An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

Q.10.2.1: How does the FMI identify the risks and costs associated with storage and delivery of physical instruments or commodities? What risks and costs has the FMI identified?

Q.10.2.2: What processes, procedures and controls does the FMI have to monitor and manage any identified risks and costs associated with storage and delivery of physical instruments or commodities?

Q.10.2.3: If an FMI can match participants for delivery and receipt, under what circumstances can it do so, and what are the associated rules and procedures? Are the legal obligations for delivery clearly expressed in the rules and associated agreements?

Q.10.2.4: How does the FMI monitor its participants' delivery preferences and, to the extent practicable, ensure that its participants have the necessary systems and resources to be able to fulfil their physical delivery obligations?

Principle 11: Central securities depositories

Key Consideration 1: A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorized creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains.

Q.11.1.1: How are the rights of securities issuers and holders safeguarded by the rules, procedures and controls of the CSD?

Q.11.1.2: How do the CSD's rules, procedures and controls ensure that the securities it holds on behalf of participants are appropriately accounted for on its books and protected from risks associated with the other services the CSD may provide?

Q.11.1.3: How does the CSD ensure that it has robust accounting practices? Do audits review whether there are sufficient securities to satisfy customer rights? How frequently are end-to-end audits conducted to examine the procedures and internal controls used in the safekeeping of securities?

Prevention of the unauthorised creation or deletion of securities

Q.11.1.4: What are the CSD's internal procedures to authorise the creation and deletion of securities? What are the CSD's internal controls to prevent the unauthorised creation and deletion of securities?

Periodic reconciliation of securities issues

Q.11.1.5: Does the CSD conduct periodic and at least daily reconciliation of the totals of securities issues in the CSD for each issuer (or its issuing agent)? How does the CSD ensure that the total number of securities recorded in the CSD for a particular issue is equal to the amount of securities of that issue held on the CSD's books?

Q.11.1.6: If the CSD is not the official registrar of the issues held on its books, how does the CSD reconcile its records with official registrar?

Key Consideration 2: A CSD should prohibit overdrafts and debit balances in securities accounts.

Q.11.2.1: How does the CSD prevent overdrafts and debit balances in securities accounts?

Key Consideration 3: A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilise or dematerialise securities.

Q.11.3.1: Are securities issued or maintained in a dematerialised form? What percentage of securities is dematerialised, and what percentage of the total volume of transactions applies to these securities?

Q.11.3.2: If securities are issued as a physical certificate, is it possible to immobilise them and allow their holding and transfer in a book-entry system? What percentage of securities is immobilised, and what percentage of the total volume of transactions applies to immobilised securities?

Q.11.3.3: What incentives, if any, does the CSD provide to immobilise or dematerialise securities?

Key Consideration 4: A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework.

Q.11.4.1: How do the CSD's rules and procedures protect assets against custody risk, including the risk of loss because of the CSD's negligence, misuse of assets, fraud, poor administration, inadequate recordkeeping or failure to protect participants' interests in their securities?

Q.11.4.2: How has the CSD determined that those rules and procedures are consistent with the legal framework?

Q.11.4.3: What other methods, if any, does the CSD employ to protect its participants against misappropriation, destruction and theft of securities (for example, insurance or other compensation schemes)?

Key Consideration 5: A CSD should employ a robust system that ensures segregation between the CSD's own assets and the securities of its participants and segregation among the securities of participants. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a participant's customers on the participant's books and facilitate the transfer of customer holdings.

Q.11.5.1: What segregation arrangements are in place at the CSD? How does the CSD ensure segregation between its own assets and the securities of its participants? How does the CSD ensure segregation among the securities of participants?

Q.11.5.2: Where supported by the legal framework, how does the CSD support the operational segregation of securities belonging to participants' customers from the participants' book? How does the CSD facilitate the transfer from these customers' accounts to another participant?

Key Consideration 6: A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.

Q.11.6.1: Does the CSD provide services other than central safekeeping and administration of securities and settlement? If so, what services?

Q.11.6.2: If the CSD provides services other than central safekeeping and administration of securities and settlement, how does it identify the risks associated with those activities, including potential credit and liquidity risks? How does it measure, monitor and manage these risks, including legally separating services other than safekeeping and administration of securities where necessary?

Principle 12: Exchange-of-value settlement systems

Key Consideration 1: An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

Q.12.1.1: How do the FMI's legal, contractual, technical and risk management frameworks ensure that the final settlement of relevant financial instruments eliminates principal risk? What procedures ensure that the final settlement of one obligation occurs if and only if the final settlement of a linked obligation also occurs?

Q.12.1.2: How are the linked obligations settled – on a gross basis (trade by trade) or on a net basis?

Q.12.1.3: Is the finality of settlement of linked obligations simultaneous? If not, what is the timing of finality for both obligations? Is the length of time between the blocking and final settlement of both obligations minimised? Are blocked assets protected from a claim by a third party?

Q.12.1.4: In the case of a CCP, does the CCP rely on the DvP or PvP services provided by another FMI, such as an SSS or payment system? If so, how would the CCP characterise the level of its reliance on such services? What contractual relationship does the CCP have with the SSS or payment system to ensure that final settlement of one obligation occurs only when the final settlement of any linked obligations occurs?

Principle 13: Participant-default rules and procedures

Key Consideration 1: An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

Q.13.1.1: Do the FMI's rules and procedures clearly define an event of default (both a financial and an operational default of a participant) and the method for identifying a default? How are these events defined?

Q.13.1.2: How do the FMI's rules and procedures address the following key aspects of a participant default:

- a) the actions that the FMI can take when a default is declared;*
- b) the extent to which the actions are automatic or discretionary;*
- c) changes to normal settlement practices;*
- d) the management of transactions at different stages of processing;*
- e) the expected treatment of proprietary and customer transactions and accounts;*
- f) the probable sequencing of actions;*
- g) the roles, obligations and responsibilities of the various parties, including non-defaulting participants; and*
- h) the existence of other mechanisms that may be activated to contain the impact of a default?*

Q.13.1.3: How do the FMI's rules and procedures allow the FMI to promptly use any financial resources that it maintains for covering losses and containing liquidity pressures arising from default, including liquidity facilities?

Q.13.1.4: How do the FMI's rules and procedures address the order in which the financial resources can be used?

Q.13.1.5: How do the FMI's rules and procedures address the replenishment of resources following a default?

Key Consideration 2: An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

Q.13.2.1: Does the FMI's management have internal plans that clearly delineate the roles and responsibilities for addressing a default? What are these plans?

Q.13.2.2: What type of communication procedures does the FMI have in order to reach in a timely manner all relevant stakeholders, including regulators, supervisors and overseers?

Q.13.2.3: How frequently are the internal plans to address a default reviewed? What is the governance arrangement around these plans?

Key Consideration 3: An FMI should publicly disclose key aspects of its default rules and procedures.

Q.13.3.1: How are the key aspects of the FMI's participant default rules and procedures made publicly available? How do they address:

- a) the circumstances in which action may be taken;*
- b) who may take those actions;*
- c) the scope of the actions which may be taken, including the treatment of both proprietary and customer positions, funds and assets;*
- d) the mechanisms to address an FMI's obligations to non-defaulting participants; and*
- e) where direct relationships exist with participants' customers, the mechanisms to help address the defaulting participant's obligations to its customers?*

Key Consideration 4: An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

Q.13.4.1: How does the FMI engage with its participants and other relevant stakeholders in the testing and review of its participant default procedures? How frequently does it conduct such tests and reviews? How are these tests results used? To what extent are the results shared with the board, risk committee and relevant authorities?

Q.13.4.2: What range of potential participant default scenarios and procedures do these tests cover? To what extent does the FMI test the implementation of the resolution regime for its participants?

Principle 14: Segregation and portability

Key Consideration 1: A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.

Q.14.1.1: What segregation arrangements does the CCP have in place to effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant?

Q.14.1.2: What are the CCP's portability arrangements?

Q.14.1.3: If the CCP serves a cash market and does not provide segregation arrangements, how does the CCP achieve protection of customers' assets? Has the CCP evaluated whether the applicable legal or regulatory framework achieves the same degree of protection and efficiency for customers that would otherwise be achieved by segregation and portability arrangements?

Q.14.1.4: If the CCP offers additional protection to customers to protect their positions and collateral against the concurrent default of the participant and a fellow customer, how does the CCP ensure that such protection is effective?

Q.14.1.5: What evidence is there that the legal basis provides a high degree of assurance that it will support the CCP's arrangements to protect and transfer the positions and collateral of a participant's customers?

Q.14.1.6: What analysis has the CCP conducted regarding the enforceability of its customer segregation and portability arrangements, including with respect to any foreign or remote participants? In particular, which foreign laws has the CCP determined to be relevant to its ability to segregate or transfer customer positions and collateral? How have any identified issues been addressed?

Key Consideration 2: A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.

Q.14.2.1: How does the CCP segregate a participant's customers' positions and related collateral from the participant's positions and collateral? What type of account structure (individual or omnibus) does the CCP use for the positions and related collateral of participants' customers? What is the rationale for this choice?

Q.14.2.2: If the CCP (or its custodians) holds collateral supporting customers' positions, what does this collateral cover (for example, initial margin or variation margin requirements)?

Q.14.2.3: Does the CCP rely on the participant's records containing the sub-accounting for individual customers to ascertain each customer's interest? If so, how does the CCP ensure that it has access to this information? Is customer margin obtained by the CCP from its participants collected on a gross or net basis? To what extent is a customer's collateral exposed to "fellow customer risk"?

Key Consideration 3: A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.

Q.14.3.1: How do the CCP's portability arrangements make it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants?

Q.14.3.2: How does the CCP obtain the consent of the participant(s) to which positions and collateral are to be ported? Are the consent procedures set out in the CCP's rules, policies or procedures? If so, please describe them. If there are any exceptions, how are they disclosed?

Key Consideration 4: A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.

Q.14.4.1: How does the CCP disclose its segregation and portability arrangements? Does the disclosure include whether a participant's customers' collateral is protected on an individual or omnibus basis?

Q.14.4.2: Where and how are the risks, costs and uncertainties associated with the CCP's segregation and portability arrangements identified and disclosed? How does the CCP disclose any constraints (such as legal or operational) that may impair the CCP's ability to fully segregate or port a participant's customers' positions and collateral?

Principle 15: General business risk

Key Consideration 1: An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

Q.15.1.1: How does the FMI identify its general business risks? What general business risks has the FMI identified?

Q.15.1.2: How does the FMI monitor and manage its general business risks on an ongoing basis? Does the FMI's business risk assessment consider the potential effects on its cash flow and (in the case of a privately operated FMI) capital?

Key Consideration 2: An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

Q.15.2.1: Does the FMI hold liquid net assets funded by equity so that it can continue operations and services as a going concern if it incurs general business losses?

Q.15.2.2: How does the FMI calculate the amount of liquid net assets funded by equity to cover its general business risks? How does the FMI determine the length of time and associated operating costs of achieving a recovery or orderly wind-down of critical operations and services?

Key Consideration 3: An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

Q.15.3.1: Has the FMI developed a plan to achieve a recovery or orderly wind-down, as appropriate? If so, what does this plan take into consideration (for example, the operational, technological and legal requirements for participants to establish and move to an alternative arrangement)?

Resources

Q.15.3.2: What amount of liquid net assets funded by equity is the FMI holding for purposes of implementing this plan? How does the FMI determine whether this amount is sufficient for such implementation? Is this amount at a minimum equal to six months of the FMI's current operating expenses?

Q.15.3.3: How are the resources designated to cover business risks and losses separated from resources designated to cover participant defaults or other risks covered under the financial resources principles?

Q.15.3.4: Does the FMI include equity held under international risk-based capital standards to cover general business risks?

Key Consideration 4: Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

Q.15.4.1: What is the composition of the FMI's liquid net assets funded by equity? How will the FMI convert these assets as needed into cash at little or no loss of value in adverse market conditions?

Q.15.4.2: How does the FMI regularly assess the quality and liquidity of its liquid net assets funded by equity to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions?

Key Consideration 5: An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

Q.15.5.1: Has the FMI developed a plan to raise additional equity? What are the main features of the FMI's plan to raise additional equity should its equity fall close to or fall below the amount needed?

Q.15.5.2: How frequently is the plan to raise additional equity reviewed and updated?

Q.15.5.3: What is the role of the FMI's board (or equivalent) in reviewing and approving the FMI's plan to raise additional equity if needed?

Principle 16: Custody and investment risks

Key Consideration 1: An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

Q.16.1.1: If the FMI uses custodians, how does the FMI select its custodians? What are the specific selection criteria the FMI uses, including supervision and regulation of these entities? How does the FMI monitor the custodians' adherence to these criteria?

Q.16.1.2: How does the FMI verify that these entities have robust accounting practices, safekeeping procedures, and internal controls that fully protect its and its participants' assets?

Key Consideration 2: An FMI should have prompt access to its assets and the assets provided by participants, when required.

Q.16.2.1: How has the FMI established that it has a sound legal basis to support enforcement of its interest or ownership rights in assets held in custody?

Q.16.2.2: How does the FMI ensure that it has prompt access to its assets, including securities that are held with a custodian in another time zone or legal jurisdiction, in the event of participant default?

Key Consideration 3: An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

Q.16.3.1: How does the FMI evaluate and understand its exposures to its custodian banks? In managing those exposures, how does it take into account the full scope of its relationship with each custodian bank? For instance, does the FMI use multiple custodians for the safekeeping of its assets to diversify exposure to any single custodian? How does the FMI monitor concentration of risk exposures to its custodian banks?

Key Consideration 4: An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be

claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

Q.16.4.1: How does the FMI ensure that its investment strategy is consistent with its overall risk management strategy? How and to whom does the FMI disclose its investment strategy?

Q.16.4.2: How does the FMI ensure on an ongoing basis that its investments are secured by, or are claims on, high-quality obligors?

Q.16.4.3: How does the FMI consider its overall exposure to an obligor in choosing investments? What investments are subject to limits to avoid concentration of credit risk exposures?

Q.16.4.4: Does the FMI invest participant assets in the participants' own securities or those of its affiliates?

Q.16.4.5: How does the FMI ensure that its investments allow for quick liquidation with little, if any, adverse price effect?

Principle 17: Operational risk

Key Consideration 1: An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

Q.17.1.1: What are the FMI's policies and processes for identifying the plausible sources of operational risks? How do the FMI's processes identify plausible sources of operational risks, whether these risks arise from internal sources (for example, the arrangements of the system itself, including human resources), from the FMI's participants or from external sources?

Q.17.1.2: What sources of operational risks has the FMI identified? What single points of failure in its operations has the FMI identified?

Q.17.1.3: How does the FMI monitor and manage the identified operational risks? Where are these systems, policies, procedures and controls documented?

Q.17.1.4: What policies, processes and controls does the FMI employ that are designed to ensure that operational procedures are implemented appropriately? To what extent do the FMI's systems, policies, processes and controls take into consideration relevant international, national and industry-level operational risk management standards?

Q.17.1.5: What are the FMI's human resources policies to hire, train and retain qualified personnel, and how do such policies mitigate the effects of high rates of personnel turnover or key-person risk? How do the FMI's human resources and risk management policies address fraud prevention?

Q.17.1.6: How do the FMI's change management and project management policies and processes mitigate the risks that changes and major projects inadvertently affect the smooth functioning of the system?

Key Consideration 2: An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

Q.17.2.1: How has the board of directors defined the key roles and responsibilities for operational risk management?

Q.17.2.2: Does the FMI's board explicitly review and endorse the FMI's operational risk management framework? How frequently does the board review and endorse the FMI's operational risk management framework?

Review, audit and testing

Q.17.2.3: How does the FMI review, audit and test its systems, policies, procedures and controls, including its operational risk management arrangements with participants? How frequently does the FMI conduct these reviews, audits and tests with participants?

Q.17.2.4: To what extent, where relevant, is the FMI's operational risk management framework subject to external audit?

Key Consideration 3: An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

Q.17.3.1: What are the FMI's operational reliability objectives, both qualitative and quantitative? Where and how are they documented?

Q.17.3.2: How do these objectives ensure a high degree of operational reliability?

Q.17.3.3: What are the policies in place that are designed to achieve the FMI's operational reliability objectives to ensure that the FMI takes appropriate action as needed?

Key Consideration 4: An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

Q.17.4.1: How does the FMI review, audit and test the scalability and adequacy of its capacity to handle, at a minimum, projected stress volumes? How frequently does the FMI conduct these reviews, audits and tests?

Q.17.4.2: How are situations where operational capacity is neared or exceeded addressed?

Key Consideration 5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

Q.17.5.1: What are the FMI's policies and processes, including change management and project management policies and processes, for addressing the plausible sources of physical vulnerabilities and threats on an ongoing basis?

Q.17.5.2: Do the FMI's policies, processes, controls and testing appropriately take into consideration relevant international, national and industry-level standards for physical security?

Q.17.5.3: What are the FMI's policies and processes, including change management and project management policies and processes, for addressing the plausible sources of information security vulnerabilities and threats on an ongoing basis?

Q.17.5.4: Do the FMI's policies, processes, controls and testing appropriately take into consideration relevant international, national and industry-level standards for information security?

Key Consideration 6: An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

Q.17.6.1: How and to what extent does the FMI's business continuity plan reflect objectives, policies and procedures that allow for the rapid recovery and timely resumption of critical operations following a wide-scale or major disruption?

Q.17.6.2: How and to what extent is the FMI's business continuity plan designed to enable critical IT systems to resume operations within two hours following disruptive events, and to enable the FMI to facilitate or complete settlement by the end of the day even in extreme circumstances?

Q.17.6.3: How is the contingency plan designed to ensure that the status of all transactions can be identified in a timely manner, at the time of the disruption; and if there is a possibility of data loss, what are the procedures to deal with such loss (for example, reconciliation with participants or third parties)?

Q.17.6.4: How do the FMI's crisis management procedures address the need for effective communications internally and with key external stakeholders and authorities?

Q.17.6.5: How does the FMI's business continuity plan incorporate the use of a secondary site (including ensuring that the secondary site has sufficient resources, capabilities, functionalities and appropriate staffing arrangements)? To what extent is the secondary site located a sufficient geographic distance from the primary site such that it has a distinct risk profile?

Q.17.6.6: Has the FMI considered alternative arrangements (such as manual, paper-based procedures or other alternatives) to allow the processing of time-critical transactions in extreme circumstances?

Q.17.6.7: How are the FMI's business continuity and contingency arrangements reviewed and tested, including with respect to scenarios related to wide-scale and major disruptions? How frequently are these arrangements reviewed and tested?

Q.17.6.8: How does the review and testing of the FMI's business continuity and contingency arrangements involve the FMI's participants, critical service providers and linked FMIs as relevant? How frequently are the FMI's participants, critical service providers and linked FMIs involved in the review and testing?

Key Consideration 7: An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

Q.17.7.1: What risks has the FMI identified to its operations arising from its key participants, other FMIs, and service and utility providers? How and to what extent does the FMI monitor and manage these risks?

Q.17.7.2: If the FMI has outsourced services critical to its operations, how and to what extent does the FMI ensure that the operations of a critical service provider meet the same reliability and contingency requirements they would need to meet if they were provided internally? Risks posed to other FMIs

Q.17.7.3: How and to what extent does the FMI identify, monitor and mitigate the risks it may pose to another FMI?

Q.17.7.4: To what extent does the FMI coordinate its business continuity arrangements with those of other interdependent FMIs?

Principle 18: Access and participation requirements

Key Consideration 1: An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

Q.18.1.1: What are the FMI's criteria and requirements for participation (such as operational, financial and legal requirements)?

Q.18.1.2: How do these criteria and requirements allow for fair and open access to the FMI's services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements?

Q.18.1.3: For a TR, how do the terms of access for use of its services help ensure that competition and innovation in post-trade processing are not impaired? How are these terms designed to support interconnectivity with other FMIs and service providers, where requested?

Key Consideration 2: An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

Q.18.2.1: How are the participation requirements for the FMI justified in terms of the safety and efficiency of the FMI and its role in the markets it serves, and tailored to and commensurate with the FMI's specific risks?

Q.18.2.2: Are there participation requirements that are not risk-based but required by law or regulation? If so, what are these requirements?

Q.18.2.3: Are all classes of participants subject to the same access criteria? If not, what is the rationale for the different criteria (for example, size or type of activity, additional requirements for participants that act on behalf of third parties, and additional requirements for participants that are non-regulated entities)?

Q.18.2.4: How are the access restrictions and requirements reviewed to ensure that they have the least restrictive access that circumstances permit, consistent with maintaining acceptable risk controls? How frequently is this review conducted?

Q.18.2.5: How are participation criteria, including restrictions in participation, publicly disclosed?

Key Consideration 3: An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

Q.18.3.1: How does the FMI monitor its participants' ongoing compliance with the access criteria? How are the FMI's policies designed to ensure that the information it uses to monitor compliance with participation criteria is timely and accurate?

Q.18.3.2: What are the FMI's policies for conducting enhanced surveillance of, or imposing additional controls on, a participant whose risk profile deteriorates?

Q.18.3.3: What are the FMI's procedures for managing the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements?

Q.18.3.4: How are the FMI's procedures for managing the suspension and orderly exit of a participant disclosed to the public?

Principle 19: Tiered participation arrangements

Key Consideration 1: An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

Q.19.1.1: Does the FMI have any tiered participation arrangements? If so, describe these arrangements.

Q.19.1.2: How does the FMI gather basic information about indirect participation? Which information is collected and how frequently is it updated?

Q.19.1.3: How does the FMI evaluate its risks arising from these arrangements?

Q.19.1.4: What material risks to the FMI arising from tiered participation arrangements has the FMI identified? How has it mitigated these risks?

Key Consideration 2: An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

Q.19.2.1: How does the FMI identify material dependencies between direct and indirect participants that might affect the FMI?

Key Consideration 3: An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

Q.19.3.1: Has the FMI identified (a) the proportion of activity that each direct participant conducts on behalf of indirect participants in relation to the direct participants' capacity, (b) direct participants that act on behalf of a material number of indirect participants, (c) indirect participants responsible for a significant proportion of turnover in the system, and (d) indirect participants whose transaction volumes or values are large relative to the capacity of the direct participant through which they access the FMI to manage risks arising from these transactions?

Q.19.3.2: What risks to the FMI arise, and how does the FMI manage these risks arising from key indirect participants?

Key Consideration 4: An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

Q.19.4.1: What are the FMI's policies for reviewing its rules and procedures in order to mitigate risks to the FMI arising from tiered participation? How frequently is this review conducted?

Q.19.4.2: What criteria does the FMI use to determine when mitigating actions are required? How does the FMI monitor and mitigate its risks?

Principle 20: FMI links

Key Consideration 1: Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

Q.20.1.1: What process is used to identify potential sources of risk (such as, legal, credit, liquidity, custody and operational risks) arising from prospective links? How does this affect the FMI's decision whether to establish the link?

Q.20.1.2: What links have been established with other FMIs? How does the FMI identify, monitor and manage the risks arising from an established link on an ongoing basis?

Q.20.1.3: How does the FMI ensure that link arrangements are designed so that it is able to remain observant of the other principles? How frequently is this analysis conducted?

Key Consideration 2: A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.

Q.20.2.1: In which jurisdictions has the FMI established links? What are the relevant legal frameworks supporting the established links?

Q.20.2.2: How does the FMI ensure that its links have a well-founded legal basis that support its design and provide it with adequate protection in all relevant jurisdictions? How does the FMI ensure that such protections are maintained over time?

Key Consideration 3: Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high-quality collateral and be subject to limits.

Q.20.3.1: What processes are in place to measure, monitor and manage credit and liquidity risks arising from any established links?

Q.20.3.2: If a CSD extends credit to a linked CSD, what processes exist to ensure that credit extensions to the linked CSD are fully covered by high-quality collateral and that credit limits are appropriate?

Key Consideration 4: Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.

Q.20.4.1: Are provisional transfers of securities allowed across the link? If so, what arrangements make provisional transfers necessary, and is the retransfer of these securities prohibited until the first transfer is final?

Key Consideration 5: An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.

Q.20.5.1: For any established link, how has the investor CSD determined that the rights of its participants have a high level of protection?

Q.20.5.2: How frequently is reconciliation of holdings conducted by the entities holding the securities in custody?

Q.20.5.3: How does the investor CSD provide a high-level of protection for the rights of its participants (including segregation and portability arrangements and asset protection provisions for omnibus accounts)?

Key Consideration 6: An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.

Q.20.6.1: If the CSD uses an intermediary to operate a link, what are the criteria used by the CSD to select the intermediary or intermediaries? Are these criteria risk-based?

Q.20.6.2: What are the respective liabilities of the two linked CSDs and the intermediaries?

Q.20.6.3: What processes exist to measure, monitor and manage the risks arising from use of the intermediary?

Key Consideration 7: Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.

Q.20.7.1: Prior to establishing any links, what analysis was undertaken by the CCP to identify and assess the spillover effects of a linked CCP's default?

Q.20.7.2: How does the CCP manage any identified spillover effects of a linked CCP's default?

Collective link arrangements (three or more CCPs)

Q.20.7.3: Prior to establishing any links, what analysis was conducted by the CCP to identify and assess the potential spillover effects of a link arrangement involving three or more CCPs?

Q.20.7.4: In the case of collective link arrangements, what processes are in place for the CCP to identify, assess and manage risks arising from the collective link arrangement? In the case of links between CCPs, is there a clear definition of the respective rights and obligations of the different CCPs?

Key Consideration 8: Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfil its obligations to its own participants at any time.

Q.20.8.1: What processes are in place to measure, monitor and manage inter-CCP exposures?

Q.20.8.2: How does the CCP ensure, on an ongoing basis, that it can cover its current exposure fully?

Q.20.8.3: How does the CCP ensure that it covers its potential future exposure with a high degree of confidence, without reducing its ability to fulfil its own obligations?

Q.20.8.4: What arrangements do the linked CCPs have in place to manage the risks arising from the link (such as a separate default fund, increased margin requirements or contributions to each other's default funds)?

Q.20.8.5: If the CCPs contribute to each other's default funds, how is it ensured that the contribution to another CCP's default fund does not affect the ability of the CCP to fulfil its obligations to its own participants at any time?

Q.20.8.6: How do the linked CCPs ensure that participants are informed about their exposures to the potential sharing of uncovered losses and uncovered liquidity shortfalls from the link arrangement?

Key Consideration 9: A TR should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.

Q.20.9.1: How does the TR ensure the scalability and reliability of its IT and related resources to take into account the additional operational risks associated with a link to another FMI? How frequently does the TR validate the adequacy of its scalability and reliability?

Principle 21: Efficiency and effectiveness

Key Consideration 1: An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

Q.21.1.1: How does the FMI determine whether its design (including its clearing and settlement arrangement, its operating structure, its delivery systems and technologies, and its individual services and products) is taking into account the needs of its participants and the markets it serves?

Q.21.1.2: How does the FMI determine whether it is meeting the requirements and needs of its participants and other users and continues to meet those requirements as they change (for example, through the use of feedback mechanisms)?

Key Consideration 2: An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

Q.21.2.1: What are the FMI's goals and objectives as far as the effectiveness of its operations is concerned?

Q.21.2.2: How does the FMI ensure that it has clearly defined goals and objectives that are measurable and achievable?

Q.21.2.3: To what extent have the goals and objectives been achieved? What mechanisms does the FMI have to measure and assess this?

Key Consideration 3: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

Q.21.3.1: What processes and metrics does the FMI use to evaluate its efficiency and effectiveness?

Q.21.3.2: How frequently does the FMI evaluate its efficiency and effectiveness?

Principle 22: Communication procedures and standards

Key Consideration 1: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

Q.22.1.1: Does the FMI use an internationally accepted communications procedure and, if so, which one(s)? If not, how does the FMI accommodate internationally accepted communication procedures?

Q.22.1.2: If the FMI engages in cross-border operations, how do the FMI's operational procedures, processes and systems use or otherwise accommodate internationally accepted communication procedures for cross-border operations?

Q.22.1.3: Does the FMI use an internationally accepted communications standard and, if so, which one(s)? If not, how does the FMI accommodate internationally accepted communication standards?

Q.22.1.4: If the FMI engages in cross-border operations, how do the FMI's operational procedures, processes and systems use or otherwise accommodate internationally accepted communication standards for cross-border operations?

Q.22.1.5: If no international standard is used, how does the FMI accommodate systems that translate or convert message format and data from international standards into the domestic equivalent and vice versa?

Principle 23: Disclosure of rules, key procedures, and market data

Key Consideration 1: An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

Q.23.1.1: What documents comprise the FMI's rules and procedures? How are these documents disclosed to participants?

Q.23.1.2: How does the FMI determine that its rules and procedures are clear and comprehensive?

Disclosure

Q.23.1.3: What information do the FMI's rules and procedures contain on the procedures it will follow in non-routine, though foreseeable, events?

Q.23.1.4: How and to whom does the FMI disclose the processes it follows for changing its rules and procedures?

Q.23.1.5: How does the FMI disclose relevant rules and key procedures to the public?

Key Consideration 2: An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

Q.23.2.1: What documents comprise information about the system's design and operations? How and to whom does the FMI disclose the system's design and operations?

Q.23.2.2: How and to whom does the FMI disclose the degree of discretion it can exercise over key decisions that directly affect the operation of the system?

Q.23.2.3: What information does the FMI provide to its participants about their rights, obligations and risks incurred through participation in the FMI?

Key Consideration 3: An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.

Q.23.3.1: How does the FMI facilitate its participants' understanding of the FMI's rules, procedures and the risks associated with participating?

Q.23.3.2: Is there evidence that the means described above enable participants' understanding of the FMI's rules, procedures and the risks they face from participating in the FMI?

Q.23.3.3: In the event that the FMI identifies a participant whose behaviour demonstrates a lack of understanding of the FMI's rules, procedures and the risks of participation, what remedial actions are taken by the FMI?

Key Consideration 4: An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

Q.23.4.1: Does the FMI publicly disclose its fees at the level of its individual services and policies on any available discounts? How is this information disclosed?

Q.23.4.2: How does the FMI notify participants and the public, on a timely basis, of changes to services and fees?

Q.23.4.3: Does the FMI provide a description of its priced services? Do these descriptions allow for comparison across similar FMIs?

Q.23.4.4: Does the FMI disclose information on its technology and communication procedures, or any other factors that affect the costs of operating the FMI?

Key Consideration 5: An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

Q.23.5.1: When did the FMI last complete the CPSS-IOSCO Disclosure framework for financial market infrastructures? How frequently is it updated? Is it updated following material changes to the FMI and its environment and, at a minimum, every two years?

Q.23.5.2: What quantitative information does the FMI disclose to the public? How often is this information updated?

Q.23.5.3: What other information does the FMI disclose to the public?

Q.23.5.4: How does the FMI disclose this information to the public? In which language(s) are the disclosures provided?

Principle 24. Disclosure of market data by trade repositories

Key Consideration 1: A TR should provide data in line with regulatory and industry expectations to relevant authorities and the public, respectively, that is comprehensive and at a level of detail sufficient to enhance market transparency and support other public policy objectives.

Q.24.1.1: What data are made available by the TR to the relevant authorities and to the public?

Q.24.1.2: How does the TR ensure that its disclosures of data effectively meet the needs of the relevant authorities and the public?

Key Consideration 2: A TR should have effective processes and procedures to provide data to relevant authorities in a timely and appropriate manner to enable them to meet their respective regulatory mandates and legal responsibilities.

Q.24.2.1: What processes and procedures does the TR use to provide data to relevant authorities in a timely and appropriate manner to enable them to meet their respective regulatory mandates and legal responsibilities?

Q.24.2.2: How does the TR ensure that this provision of data to relevant authorities is supported from a legal, procedural, operational and technological perspective?

Key Consideration 3: A TR should have robust information systems that provide accurate current and historical data. Data should be provided in a timely manner and in a format that permits it to be easily analysed.

Q.24.3.1: How does the TR ensure that data remain accurate?

Q.24.3.2: How does the TR ensure that data and other relevant information are provided in a format that is generally accessible, comparable and easily analysed?