

Taiwan Stock Exchange
Principles for Financial Market Infrastructure
Disclosure Report
(CCP&SSS)

Responding institution: Taiwan Stock Exchange Corporation

Jurisdiction(s) in which the FMI operates: Taiwan

Authority(ies) regulating, supervising or overseeing the FMI: the Securities and Futures Bureau of the Financial Supervisory Committee

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This disclosure can also be found at <http://www.twse.com.tw/>

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I. Executive summary

The Taiwan Stock Exchange (TWSE) is responsible for completing clearing and settlement of the trading in its market. In addition to the provision of the trading market for listed products and management of the market, TWSE has two other major functions: a Central Counterparty (CCP) providing clearing services and settlement guarantee, and a Securities Settlement System (SSS) ensuring transfer and delivery of funds and securities in settlement. TWSE provides the above services across various products, such as stocks, exchange traded funds (ETFs), beneficiary securities, warrants, TDRs, and bonds that are traded on TWSE.

TWSE plays an important role in providing a financial trading platform in Taiwan's capital market. This disclosure document explains how TWSE is aligned with and observes the Principles for Financial Market Infrastructure (PFMI) developed by the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commission (CPSS-IOSCO).

Overview of TWSE

Legal foundation and regulatory framework

TWSE's clearing and settlement framework has solid legal foundations and sound corporate governance structure. TWSE provides legal certainty in every important activity. Besides enacting relevant provisions in the Securities and Exchange Act, TWSE provides clear and comprehensive rules, in addition to procedures and contracts of clearing and settlement in its role as a CCP and SSS. The consistency of legal rules has been effectively achieved through necessary approvals or reviews by the regulatory body as well as prior consultation with stakeholders.

TWSE's regulatory body is the Securities and Futures Bureau (SFB) of the Financial Supervisory Commission (FSC). SFB is responsible for planning and executing the supervision and management of securities and futures markets. FSC is the highest supervisory body of Taiwan's financial market.

As a CCP and SSS, TWSE has prioritized safety and efficiency. TWSE is a corporation led by its Board, of which TWSE's Chairman and President are also members. One third of TWSE's Board of Directors has been assigned by the SFB as a supervision measure. Additionally, TWSE has also enhanced its internal control by establishing an Internal Audit Office which reports directly to the Board of Directors. Both external and internal supervision form a robust corporate governance structure to support the stability of the financial system and promote the public interest of the related parties. The corporate governance structure has also been disclosed in the annual report.

TWSE's Clearing and Settlement Overview

TWSE implements multilateral net settlement on a daily basis. Securities firms settle their daily net-long or net-short positions with TWSE. The settlement cycle is T+2. TWSE produces the receivable and payable net amounts of securities and funds between securities firms and TWSE. The unsettled position cannot be deferred to the next day. Securities firms have to complete securities settlement before 10:00 am and funds settlement before 11:00 am. All the securities firms are well informed of the deadlines and able to follow them. Once the funds and securities settlement are completed, they are irrevocable. TWSE penalizes the securities firms who cannot follow the settlement timeframe without any acceptable explanation.

In the settlement process, as an SSS, TWSE entrusts the Taiwan Depository and Clearing Corporation (TDCC) to deal with the receipt and transfer of securities. The funds-transfer is completed via the Central Bank of the ROC Electronic Interbank Funds Transfer and Settlement System (CIFTS). TWSE establishes the Fund and Securities Transfer System and manages the settlement process by sending instructions to TDCC and the Central Bank to process the delivery of securities and funds.

Securities firms failing to deliver securities to TDCC before 10:00 am on the settlement day can apply to TWSE to borrow securities before 10:00 am of T+2, by reporting reasons such as erroneous trades, investors' default, or delayed settlement (failed trade) of overseas investors. If the securities firms fail to make the above reporting, TWSE will automatically initiate securities borrowing after 10:00 am to cover a securities shortfall of the

securities firms. In both cases, securities firms have to deposit collateral with TWSE for the securities borrowed; TWSE stipulates clear rules for acceptable collateral, collateral haircuts, and calculates collateral value by mark-to-market. The current operations of the settlement-driven Securities Borrowing System meet the needs of the market.

TWSE has stipulated requirements and procedures to handle the default of securities firms. The procedures are workable as they are the result of lessons learned from past experience. TWSE conducts reviews as necessary to ensure procedures and requirements are up to date and practicable.

Risk Management

In order to ensure a well-functioning securities market and to minimize systemic risk, TWSE actively manages all its key risks in its capacity as a CCP and SSS such as credit, liquidity, custodial, operational and general business risks. TWSE's risk management is highly incorporated with the implementation of TWSE's internal control system, under which every department follows the guidelines and conducts examinations of the possible risks arising from different business operations. TWSE's Internal Audit Office reports the results of the above examinations to the Board every month and adopts many risk-prevention systems. First, TWSE conducts regular audits of securities firms to prevent credit and liquidity risks. Second, TWSE holds a daily cross-departmental default-prevention meeting to prevent default risks caused by both investors and securities firms. Third, TWSE has designed a solid financial safeguard system, which is composed of a Clearing Fund and Compensation Reserve, to prevent liquidity and general business risk. Fourth, TWSE has established a Business Continuity Management System (BCMS) and organized a BCMS committee to reduce operational risks.

■ Credit risk

TWSE endeavors to prevent credit risks caused by securities firms, and has undertaken several important measures as follows.

1. Require securities firms to contribute to a Clearing Fund

Every securities firm shall contribute to a Clearing Fund managed by TWSE. The clearing fund contribution of the securities firms is calculated by considering several factors such as the number of branches, business licenses, and market ratio in the previous year in terms of the sum of the net-long and net-short.

To ensure that the contributions of each securities firm is sufficient to cover the risk it might pose to the market, TWSE has implemented a 'Monthly Tracking Mechanism', which requires that the contribution of each securities firm shall not fall under 80% of its average daily VaR in the previous month.

2. Conduct regular risk management measures on securities firms

(1) Risks from operations

TWSE exerts strict financial requirements and conducts general audits on securities firms. TWSE's Intermediaries Service Department is responsible for managing securities firms' credit exposures and requires all the securities firms to follow the financials and rules, such as maintaining a certain asset-to-debt ratio and capital adequacy ratio (ex.150%). If a securities firm's capital adequacy ratio is lower than a certain threshold, or its trading orders exceed twenty times that of its available net funds, its trading multiples can be lowered by TWSE. (Trading multiples means the multiples allowed by securities firms in a single day to place trading orders that exceeds its net funds available for use.)

Other than the general audits, TWSE also implements an early warning system, which is based on general risk and special risk indicators, to keep track of the business and financial risks of securities firms. TWSE implements special audits on the securities firms selected through the early warning system and may reduce their trading multiples as a further step. Any securities firm that violates securities regulations will be reported to TWSE's monthly Enforcement Action Review Conference and further sanctions on the staff might be exerted. These measures are effective in controlling securities firms' credit risks.

(2) Risks from unsettled positions

Further, TWSE calculates VaR value of securities companies everyday, which is based on the net-long and net-short trading position of an individual securities firm on T day and T-1 day. The VaR value is the foundation for the monthly review of the amount to be contributed to the Clearing Fund by the individual securities firm.

(3) Risks from clients

■ Control the settlement risks and default risks caused by clients

For monitoring settlement risks which investors might pose to the securities firms, TWSE tracks the net-long position of each securities firm on T day to see whether such a position exceeds available funds for use by the securities firm. If the amount reaches the threshold, TWSE will require the securities firm to provide a list of the top ten clients with net-long positions. TWSE also monitors daily the size of an individual investor's default, and if it reaches a certain level, TWSE will report this to either TWSE's management or the Taiwan Securities Association to take further measures.

■ Hold a cross-departmental daily meeting to prevent default

A cross-departmental 'Prevention of Large Default Meeting' takes place every afternoon of the trading day. It aims to track any possible settlement risk of individual investors who have exceeded their net-long positions over the allowed trading quota permitted by the securities firms. If the result is not acceptable, TWSE will penalize the securities firms and all relevant persons accordingly, or file a report to the regulatory body.

■ Label stocks under disposition measures to caution investors

To alert investors not to buy a stock which is over-volatile or has an irregular trading pattern, TWSE publicly lists the names of these stocks as 'Stock Under Disposition Measures', on which pre-delivery of funds or securities would be imposed before any trading order can occur.

3. Enhance TWSE's ability to face credit risk exposures

In the daily settlement, TWSE adopts a 'Funds receipt prior to payment'

principle, which means that securities firms shall fulfill their settlement obligations prior to TWSE's payment. TWSE does not use its own funds for advancing any payment to securities firms. 'Funds receipt prior to payment' has buffered TWSE from risks caused by the securities firms.

Moreover, TWSE has established a huge Clearing Fund (NT\$6.4 billion) which is sufficient to cover the credit risk caused by the default of a securities firm. TWSE also has set up a Compensation Reserve (NT\$5.4 bn) as an additional financial resource. The deposit requirements of the Clearing Fund and Compensation Reserve are clearly stipulated in the regulations. The significant financial resources of NT\$ 11.8bn far outnumber the average daily VaR value of all the securities companies combined which is around NT\$2 bn to NT\$3 bn.

■ **Liquidity risk**

TWSE's liquidity risks arise from the fund shortage in the default of the securities firms. In order to maintain sufficient liquid resources to effect settlement, every measure taken in preventing credit risks is also applicable in preventing liquidity risks. Although TWSE has built its daily fund transfer system upon the Central Bank's Interbank Funds Transfer System (CIFS), TWSE has not arranged intraday financing from the Central Bank for daily settlement. The CIFS system provides a safe fund-transfer environment for TWSE to handle the liquidity risk.

To ensure that all the financial resources coming from both the securities firms and TWSE are readily available in the form of cash, TWSE maintains financial resources in the form of time deposits, bonds and short-term notes. In addition, TWSE has signed contracts of NT\$12.8bn with five banks to obtain secured lines of credit.

■ **General business risk**

General business risks include losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses. TWSE adopts various internal control systems to manage general business risks by incorporating risk management into the internal control system in every department. To hold sufficient liquid net assets to cover potential general business losses, all the current assets, including the Compensation Reserve held by TWSE are highly-realizable

in the market. The size of those assets is quite large and deemed sufficient to ensure a recovery of any orderly winding-down of critical operations and services.

■ **Custody and investment risks**

TWSE takes responsibility for safeguarding its own assets and securities firms' deposited assets (ex. Clearing Fund), which are kept in separate accounts and are only allowed to be deposited in limited forms, such as time deposits, bonds, and short-term notes. TWSE minimizes loss risk by adopting temperate investment strategies, which follow TWSE's Utilization of Capital Guidelines and are approved by TWSE's Board. This strategy avoids additional risks arising from investment.

■ **Operational risk**

TWSE has established a sound risk management framework to control operational risk and built an internal control system, which follows the requirements in Regulations Governing the Establishment of Internal Control Systems by Service Enterprises in Securities and Futures Markets. This system contains the elements of identifying operational risk. To ensure that TWSE implements internal control in every business department, TWSE's Internal Audit Office conducts regular monthly audits. Besides risk identification, TWSE also created a Business Continuity Management System (BCMS) to assure operational continuity in extreme conditions. The BCMS rehearsal is held once every year. TWSE's BCMS committee, chaired by TWSE's President, examines BCMS at least once every year.

TWSE has not stipulated any rules or procedures with respect to the deliveries of physical instruments or commodities, nor provides any service by linking two settlement obligations to eliminate principal risks.

■ **Other relevant practices**

Access and participation requirements

TWSE's market participants are securities firms who have signed the 'Criteria Governing Handling of Stock Affairs by Public Companies' contract with TWSE. There are different minimum paid-in capital requirements and any securities firm which meets the requirements may sign the above contract and become a clearing participant to settle with

TWSE.

In Taiwan, every securities firm must settle their own trading position with TWSE. TWSE does not have any tiered participation arrangements.

Segregation and Portability

The concern of account segregation and portability has not become an issue in Taiwan. When an investor starts trading listed securities, he/she has to open a depository account in TDCC with his/her legal name and identification, the same as registered with the securities firm. Any movement of securities in the depository account by the investor in one securities firm can only go to the depository account(s) with the same identity in other securities firms. Therefore the securities in an investor's accounts are not comingled with the securities firms' accounts. Regarding a fund transfer, an investor has to open his own bank account in the bank designated by the securities firm. This account is for clearing fund payment and receipt between securities firms and investors. Under the above account structure, the funds and securities owned by the investors can be protected should a securities firm happen to default.

II. Summary of major changes since the last update of the disclosure

This is TWSE's first disclosure document published pursuant to the CPSS-IOSCO Disclosure Framework for Financial Market Infrastructures dated to September 2018.

III. General background of TWSE

General description of TWSE and the markets it serves

TWSE plays the role of Central Counterparty (CCP) providing clearing services and settlement guarantee, and acts as Securities Settlement System (SSS) ensuring transfer and delivery of funds and securities in settlement. As a CCP, TWSE integrates clearing and settlement services for many products, including securities, warrants, and exchange-traded funds (ETFs), beneficiary securities, warrants and TDRs.

NT\$bn

2017 (Jan-Dec)	Trading Value	Trading Volume
Stocks	23972.2	593.6

ETFs	1231.7	61.8
Beneficiary Securities	4.2	0.3
Warrants	584.4	561.9
TDRs	6.1	1.2

Source: Taiwan Stock Exchange, Corporate Planning and Strategy Department

Currently TWSE only provides clearing and settlement services in the cash market. The average daily trading value of Taiwan's securities market, from year 2012 to 2017, was around NT\$ 70bn to NT\$130bn. Although the total market size has been fluctuated, the clearing and settlement system functions properly and no defaults have occurred during the past 20 years.

General Organization of TWSE

TWSE implements its corporate governance practices by Articles of Incorporation, which is in accordance with the requirements of Taiwan's Company Act. TWSE's Chairman represents TWSE, and its President implements strategy and manages all day-to-day operations. Under the President, there are three senior executive vice presidents in charge of different departments. Managerial selection has to be approved by TWSE's Board.

TWSE's Board is comprised of 15 directors and 3 supervisors. Regarding the selection of TWSE's board members, based on paragraph 2 of Article 126 of the Securities Exchange Act, at least one-third of the board members are appointed by the regulatory body to represent the public interest. In addition, some of the board members are selected from the securities firms themselves, with the Board being diversified through market participants' contributions. All directors and supervisors must avoid conflicts of interests and abide by all the relevant rules in the Company Act.

Since the Board takes the responsibility of approving TWSE's major policies, appointment of high-level management, and all the IPO cases for listing, the Board is deemed as the highest management body of TWSE. In every Board meeting, TWSE's President makes oral reports to the Board about the business progress. The Internal Audit Office directly reports to the Board, which forms an effective internal supervision system. TWSE is

also under the supervision of the regulatory body. Therefore TWSE is able to achieve the aims of safety, efficiency, financial stability and the public interest.

Legal and Regulatory Framework

The legal foundation of TWSE's clearing and settlement service is built upon the Securities and Exchange Act and TWSE's Operating Rules. TWSE'S regulatory body is the Securities and Futures Bureau (SFB) under the Financial Supervisory Commission (FSC). SFB is responsible for planning and executing supervision and management of securities and futures' market. FSC is the highest supervisory body of Taiwan's financial market.

System Design and Operations

Please refer to the above section of 'TWSE's Clearing and Settlement Overview'.

IV. Principle-by-principle summary narrative disclosure

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.

Summary Narrative

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.

Material aspects and relevant jurisdictions

Taiwan Stock Exchange (TWSE), the CCP in Taiwan's securities market, is responsible for clearing and settlement of the trading in TWSE's market. All the major aspects in the process of clearing and settlement have clear legal foundation. Clearing and settlement operations and service provided by TWSE are all within the boundary of Taiwan's jurisdiction.

Legal basis for each material aspect

The legal foundation of TWSE's clearing and settlement can be found in the following acts or regulations;

■ **Settlement Guarantee**

Article 153 of The Securities and Exchange Act

■ **Multilateral Clearing**

Article 104 of Operating Rules of the Taiwan Stock Exchange Corporation

■ **Financial Resources for Handling Default**

Articles 3, 9 of Taiwan Stock Exchange Corporation Rules for Administration of the Joint Responsibility System Clearing and Settlement Fund

Articles 2, 5, 9 of Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund

Article 10 of Regulations Governing Securities Firm

Articles 3, 6 of Taiwan Stock Exchange Corporation Rules for Administration of the Clearing and Settlement Fund of Securities Firms

Articles 19, 20 of Regulations Governing Stock Exchanges

■ **Default Procedures**

Taiwan Stock Exchange Corporation Procedures for Handling Default on Settlement Obligations by Securities Firms.

The above information has been disclosed in English and Chinese formats on the website of <http://www.selaw.com.tw>.

Key consideration 2: An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

TWSE's rules, procedures and contracts of clearing and settlement are clear, understandable and consistent with relevant laws and regulation. In addition to the internal review process, most of them have to be submitted to the regulatory body (Securities and Futures Bureau under the Financial Supervisory Commission) for review and approval, or

even have to be consulted with the relevant stakeholders in order to achieve clarity and consistency with higher level regulation.

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.

In addition to the review and approval by the regulatory body, or the consultation with the stakeholders, TWSE always publicizes detailed document to explain the relevant backdrop, reasons and legal basis for its activities as well as hosting educational programs, seminars, to market participants and issuing news release. TWSE also provides a user-friendly company website for investors in Mandarin and English.

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

TWSE does not provide any clearing and settlement services in other jurisdictions.

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.

TWSE does not provide any clearing and settlement services in other jurisdictions.

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.

Summary Narrative

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.

TWSE has prioritized 'security and efficiency' in the corporate business plan, placing emphasis on security, efficiency and discipline of

settlement to protect the interests of securities firms and investors. To further enhance settlement security, TWSE has deposited 5% of its securities transaction charges in the Investors Protect Fund, which aims to compensate investors' loss incurred from the default of securities firms. Further, TWSE has appropriated NT\$ 3 billion in the Clearing Fund to reimburse the loss coming from liquidating the position of defaulted securities firms.

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.

Governance arrangements

High-level management

The TWSE **Chairman** represents the company and also chairs the Board. The President, head of the management, shall follow the decisions made by the Board and take charge of the ensuing implementation. Three senior executive vice presidents are under the President, responsible for supervising operations of different departments.

The composition of the Board

TWSE's Board is comprised of 15 directors and 3 supervisors, whose terms of office shall not exceed three years. He/or she is eligible for re-election. According to regulation, at least one third of TWSE's directors and supervisors shall be assigned by the regulatory body among professionals relevant to the securities market. As for the other directors and supervisors, they are elected by shareholders.

Board meetings and responsibility of supervisors

The meeting of the Board, convened by the Chairman, possesses the resolution power on major business events. The supervisors shall oversee the execution of business operations and may investigate business and financial conditions of the company as well as examine the accounting books and documents from time to time. TWSE's Board shall convene a regular meeting of shareholders within six months after the close of each fiscal year.

The responsibility of internal audit

In addition to the supervisors, TWSE has also set up an Internal Audit Office to implement internal examination on every department. It reports to the Board every month, which constitutes internal supervision in addition to the external supervision goes along with the external supervision provided by the regulatory body. Therefore TWSE's corporate governance is sufficient to support the financial system's stability and other objectives of relevant stakeholders.

Disclosure of governance arrangements

TWSE's corporate governance has been disclosed in its annual reports and the TWSE's organizational charters which specify the election rules for the Chairman, the President, the senior vice executive presidents, and each department head.

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.

Roles and responsibilities of the Board

The Article of Incorporation of TWSE has clear requirement about the roles and responsibilities of the Board of Directors.

Although a wide range of TWSE's important events shall be ratified by the regulatory body, such as the annual business plan, annual budget, and capital expenditures, many issues only need to be approved by the TWSE Board of Directors. This includes long-term corporate development plan, listing, delisting, contract signing with securities firms and dealers, trading suspension, termination or recovery, the election of executive presidents, and other management teams, and selection of corporate accountants. (Article 21 and 22 of TWSE's Article of Incorporation).

TWSE Board meetings are convened and chaired by the Chairman. Resolutions at a Board meeting shall, unless otherwise provided for in

the Company Act, be adopted by a majority vote of the directors present, who represent more than one-half of the total directors. Whenever the Chairman is absent from the Board for any reason, the chairmen is allowed to appoint one director to act as the chair of the meeting (Operation Procedure of the Meeting of the Board of Directors).

Conflicts of Interest

As for conflicts of interests between the directors, they shall bear the obligation of accounting for their behaviors which may lead to competitive relationships with a company in which they serve as directors. Approval shall be sought by Directors in the shareholders meeting if he or she wants to start a business similar to or in the same category of the company's major business, either for personal needs or for other reasons. According to Article 206II of the Company Act, a director who has a personal interest in any matter under discussion at a Board meeting shall explain to the Board meeting the essential contents of the personal interest.

Review of performance

The shareholders meeting shall be convened by the Board once every year, and it shall be within six months before the end of each fiscal year. Shareholders may raise their opinions towards the company's operations in the shareholders meeting (Article 11 of TWSE's Articles of Incorporation).

To further evaluate the performance of the Board, the Board of Directors shall prepare business reports, financial statements, surplus earning distribution or loss off-setting proposals. The above statements and records shall be forwarded to supervisors for their auditing not later than the 30th day prior to the meeting date of an annual general meeting of shareholders. This procedure is deemed to be an examination of the performance evaluation of the Board (Article 228 of Company Act).

Key consideration 4: The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).

Criteria of selecting directors and supervisors

Currently TWSE has five directors and one supervisor appointed by the regulatory body. At least one-third of the TWSE directors and supervisors shall be appointed by the regulatory body. For the rest of nine directors and two supervisors were elected by the shareholders. The new election of directors and supervisors is based on certain principles, such as directors shall be a professional in the field of accounting, finance, or law.

Terms of directors and supervisors

As for the terms of office of both directors and supervisors, both shall not exceed three years; re-election is permissible. Directors with good performance have the chance to be re-elected. Since TWSE enjoys a solid reputation in Taiwan, it provides incentives for the members of Board of Directors to achieve good performance in their terms.

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.

Roles and responsibilities of management

The President is responsible for implementing TWSE's strategy and managing its day-to-day operations within the limits and policies approved by the Board. The Board has approval rights over the many issues, including middle-to-long term business development plans, assignment of department managers, listing and delisting permission, and other important issues listed in Article 22 of Article of Incorporation of TWSE.

Based on the 'rules of allocating responsibilities among different management levels', the head manager of every department shall make business plans, work schedules, and monitor the progress of implementing the ratified business.

Experience, skills and integrity

TWSE presidential candidates (or senior executive vice presidents) are

named by the Chairman and submitted to the Board for further approvals. The selection of the top management level is based on an overall assessment of the candidates' position, experience, and performance.

The selection of TWSE's head managers shall also be approved by the Board. All the head managerial candidates shall not be involved in any situation listed in Article 53 of the Securities and Exchange Act (such as bankruptcy) and shall have one of the following qualifications (Article 39 of the Governing Rules of the Stock Exchange).

- Hold a master or higher degree, have held a management position in either a business department of a state-run or private-owned enterprise, financial institution, or a teaching position as an adjunct instructor for more than one year.
- Graduated from a university or college, or have held either a securities or financial institution management position in a business department of a state-run or private-owned enterprise for above three years.
- Held a management position in either a securities or financial institution in a business department of a state-run or private-owned enterprise for more than five years.

Some departments have special qualification requirements for their department head managers, such as a Chartered Public Accountant (CPA) designation which is required for the head of the Finance Department.

The performance of each TWSE department head manager is rated by the President and sent for approval by the Chairman. The President's performance and that of the employees in the Internal Audit Office shall be rated by the Chairman.

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.

Risk management framework

TWSE has established the Internal Audit Office which directly reports to the Board of Directors. This Office is responsible for supervising the implementation of the internal control system, and assisting the Board of Directors and management in evaluating the effectiveness and efficiency of every business operation. The Internal Audit Office may also provide policy recommendations regarding the risk management improvement and the process of governance for achieving the company's development goals. In addition, TWSE's Board authorizes the President to take the responsibility of convening the Business Continuity Management System (BCMS) Committee.

The Internal Audit Office conducts internal audit and follow-up reports, and makes reporting to the Board every month. The BCMS committee meets once every year, and examines procedures and makes necessary modifications as needed.

Authority and independence of risk management and audit functions

Internal control system is required in service industry

TWSE is a service enterprise in the securities market, and therefore it follows the 'Regulations Governing the Establishment of Internal Control Systems by Service Enterprises in Securities and Futures Markets' to establish an internal control system. TWSE shall follow every internal audit procedure, audit item, schedule and methodology stipulated in the above Regulation. If TWSE does not follow the Regulation, the regulatory body may set a deadline for compliance. Under certain occasions, the regulatory body may require any service enterprise to entrust a CPA to examine the internal control system in its business, and submit the audit reports to the regulatory body.

TWSE's Internal Audit Office reports the auditing results of every department to the Board monthly. The internal auditors are able to request relevant details, make necessary investigations and queries to any TWSE departmental employee when conducting an internal audit. Their inspection requests cannot be rejected by any TWSE department.

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.

Identification and consideration of stakeholder interests

To ensure every policy and new initiative can be successfully implemented, TWSE has generally taken the interest of market participants (securities firms) and other related parties into account before launching any new policy. Through inviting representatives from the Taiwan Securities Association, Investors Association and other related self-regulatory organizations for discussion, TWSE has incorporated their input to ensure the feasibility of every new initiative. Other than the above measures, TWSE's Board consists of the directors from securities firms. Those representatives provide insight about the rights and interests undertaken by direct market participants. Before the launching of important policies and new initiatives, the dual approvals from TWSE's Board and the regulatory body are required.

Disclosure

TWSE notifies related interest parties of important decisions via press releases, public announcements, or formal letters.

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.

Summary Narrative

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.

Risks that arise in or are borne by the FMI

The risks TWSE faces can be categorized as follows.

- Credit Risk (risks of the trading counterparty not fulfilling its settlement duty, which might cause financial loss to TWSE)
- Liquidity Risk (risks of TWSE not being able to cash in holding assets or acquire enough capital for the purpose of meeting market liquidity needs and completing settlement in extreme market conditions)
- General Business Risk (risks caused from poor execution of business strategies, negative cash flows, or unexpected and excessively large operating expenses)
- Operation Risk (risks caused by internal operations, mistakes made by employees or systems, or other risks causing direct or indirect loss from external events)
- Custody and Investment Risk (risks arising from inappropriate custody methods and investment loss)
- Legal Risk (risks of legal compliance, the conclusion, revision and demise of a contract, and any direct or indirect loss which is caused by a change of the rules)
- Risks from significant disasters (risks arising from accidents or natural disasters which lead to direct and indirect loss)
- Other Risk (risks arising from internal management)

Risk management policies, procedures and systems

TWSE has established a sound risk management mechanism to integrate risk management into the decision making process of each department's business plan. Each department is expected to discern measure, supervise, prevent, and control risks to an acceptable level.

TWSE's risk management policies are implemented along with TWSE's internal control system; its guidelines are followed by every department and examinations are conducted of the possible risks arising from different business operations. TWSE's Internal Audit Office reports the modifications of internal control procedures to the Board every month. To manage all the key risks, TWSE has adopted the following four

systems to quench the risks.

TWSE's risk management policies can be summarized as follows.

■ **Conduct regular examination by the Intermediaries Service Department**

This department examines a securities firm's financial situation by checking its financial reports, or executing due diligence if necessary. If the financial conditions of a securities firm fall to a certain level, TWSE may lower the trading multiples of that firm. This measure is for controlling securities firms' credit risks and liquidity risks.

■ **Convene a daily cross-departmental meeting to prevent securities market's default**

Risk indicators are designed by TWSE's different departments, such as Trading, Surveillance, Intermediaries Service, Domestic Listing, and Foreign Listing. Each department supervises the risk of securities firms or investors who engage in abnormal trading on that day and reports to the daily cross-departmental meeting to decide on whether further measures of supervision shall be taken.

■ **Require securities firms to deposit their portion to Clearing Fund**

TWSE requires every securities firm to deposit to the Clearing Fund. This measure is important in managing credit and liquidity risk.

■ **Establish Business Continuity Management System (BCMS)**

To avoid operational risks caused by sudden market disruption, TWSE has established BCMS to manage unexpected situations and continue smooth market operations. BCMS rehearsal is held at least once a year, and is supervised by the BCMS committee, chaired by TWSE's President.

Review of risk management policies, procedures, and systems

TWSE's risk management policies have been built upon our internal control systems. The Internal Audit Office compiles the results of examinations from every department and reports to TWSE's Board once

in a month. The review of risk management policies are undertaken by TWSE's different departments. Every department has to examine the adequacy of its risk management internal control procedures periodically.

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.

Disciplinary and corrective measures

To manage and contain the risks to securities firms and their clients, TWSE has adopted the following measures.

Risk management tools aimed at securities firms

■ Lower the trading multiples for securities firms under high risk status

TWSE has established different thresholds for lowering trading multiples where the net worth of a securities firm is less than its paid-in capital (Article 28-1 of TWSE's Operating Rules). Further, securities firms shall evaluate a customer's investment ability prior to accepting an order for trading for the sake of risk management (Article 34 and 35 of Regulations Governing Securities Firms) .

■ Risk evaluations, ratings and an early warning system

TWSE's Intermediaries Service Department conducts risk evaluations for securities firms annually. For those who are deemed as having a good performance, TWSE is more likely to approve their applications for new initiatives. TWSE will also remind securities firms of their business risk according to the four-level ratings on securities firms (Procedures of Monitoring Securities Firms' Operation). Other than the risk evaluations, TWSE also implements an early warning system, which is based on general risk and special risk indicators, to keep track of the business and financial risk of securities companies. TWSE implements special audits on the securities firms selected through the early-warning system.

■ Encourage securities firms to establish internal control system

TWSE encourages securities firms to establish an internal control system to monitor/manage theirs and their clients' risk. This shall

include details of internal auditing, which shall be passed by their Boards. The internal control system shall consist of risk evaluation and elements of control and supervision, which are designed to identify the internal risks in the company (Articles 2, 5, 7 of Regulations Governing the Establishment of Internal Control Systems by Service Enterprises in Securities and Futures Markets).

Risk management tools aimed at clients

The following measures have been implemented by TWSE.

■ Encourage investors to report unlawful activities in the securities market

TWSE has initiated TWSE Rules Governing Awards for Reporting Unlawful Activities in the Securities Market to encourage investors to report unlawful activities discovered in the securities market so as to maintain market order and protect investors' interests.

■ Require securities firm to disclose the investment quota of its clients

When an investor's trading value exceeds a certain threshold, TWSE will ask the securities firm to disclose the investment quota of the investor under observation and to remind securities firms to pay attention to their clients' trading position and relevant 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.

Material Risk

As TWSE is the CCP and SSS in its own market, it periodically reviews the possible risk embedded in the market operation with the other FMIs (Taiwan Depository Clearing Corporation [TDCC]), the settlement banks of securities firms, and makes necessary precautionary plans to deal with any unexpected events in the daily operations. TWSE has endeavored to lower that risk by enacting relevant measures in TWSE's Business Continuity Plan.

Risk management tools

To manage and control the operational risks of connecting with TDCC,

TWSE has signed a cooperation memorandum with GreTai securities market, Taiwan's Future Exchange and TDCC. The four parties have achieved agreements in the following three areas.

■ **Report information mutually and actively**

If any party discovers important political and economic events, or cases involving a large default amount, trading glitch or interruption, or any abnormal trading behavior which might endanger market security, the party shall report to the other three parties immediately.

■ **Request on providing confidential information**

Whenever any party receives a request for information from another party, the responding party shall provide obtainable information within the range of the cooperation memorandum agreement.

■ **Operate a cross-market risk management team to supervise abnormal trading conditions**

TWSE has established a cross-market team to deal with severe unforeseen incidents in securities and futures markets. This team has been established to handle communication and coordination during such conditions.

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.

Scenarios that may prevent TWSE from providing critical operations and services

To discern whether TWSE is well-prepared to provide key operations and services in an emergency and abnormal condition which might threaten the securities market's normal operation, TWSE has established a Business Continuity Management System (BCMS) and

organized a committee for operating it. Under the guidance of the BCMS committee, every department has to begin recovery procedures immediately, so as to implement major critical functions and operations before predetermined deadlines.

Recovery or orderly wind-down plans

Based on the BCMS, TWSE has established a manageable recovery plan. The BCMS plan can be divided into three stages: normal, crisis handling, and recovery.

■ Normal stage

Every department shall practice periodically and examine relevant documents if necessary.

■ Crisis-handling Stage

To reduce immediate losses during a crisis, TWSE has set up a crisis-team, chaired by a senior executive vice president. The team shall evaluate the entire condition and determine a strategy to ensure that crisis resolution can be properly processed.

■ Recovery Stage

To ensure key activities operate consistently and recover immediately, TWSE's President chairs the BCMS committee meeting and every department head must be present in that meeting. The Internal Audit Office is responsible for supervising the meeting.

The above BCMS plan is reviewed by the BCMS committee periodically throughout the year. Revisions are done as needed.

Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposure 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 largest participants and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one participant and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions.

Summary Narrative

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.

Measures taken to manage credit risks from securities firms

TWSE faces credit exposure posed by securities firms. To manage the credit risk, TWSE has taken several measures as follows.

1.Require securities firms to contribute to the Clearing Fund

Every securities firm which settles with TWSE has to contribute to the Clearing Fund. The calculating method of the Clearing Fund includes fixed part and variable part.

■ **Fixed Part:**

Each brokerage firm shall contribute NT\$3.5mn, with an extra NT\$0.5mn for each additional branch. Each securities dealer shall contribute NT\$5mn to the Clearing Fund.

■ **Variable Part:**

This is the balance after the fixed part is subtracted from NT\$3.4bn. The balance then is distributed among all the securities firms pro rata on the basis of the size of their net-long or net-short amount of the previous year.

To ensure that the contribution deposited by each securities firm is sufficient to cover its risk, TWSE has designed a ‘Monthly Tracking Mechanism’, which requires that the contribution of each securities firm shall not fall under 80% of its average daily VaR of the previous month.

With this mechanism, the risks arising from the securities firms' unsettled position have been covered. Therefore TWSE decides not to require margins for the unsettled positions.

2. Conduct regular risk management measures on securities firms

■ Risks from operations

TWSE exerts strict financial requirements and conducts general audits on securities firms. TWSE's Intermediaries Service Department is responsible for managing securities firms' credit exposures and requires all the securities firms to maintain good financials. Whenever the examined securities firms' financials deteriorate to a certain extent that meet the conditions listed in Article 3 of Rules for Securities Firms' Special Audit Report, TWSE will send employees to conduct a special audit report. TWSE requires securities firms to maintain a certain asset-to-debt ratio and capital adequacy ratio (ex. 150%). If a securities broker's capital adequacy ratio is lower than 100%, or a securities firm's trading orders exceed twenty times of its net funds available for use, its trading multiples can be lowered by TWSE (Article 28, 28-1 of Operating Rules of the Taiwan Stock Exchange Corporation).

Other than the general audits, TWSE also implements an early warning system, which is based on general risk and special risk indicators, to keep track of the business and financial risk of securities firms. TWSE implements special audits on the securities firms selected through the early warning system and may reduce their trading multiples as a further step. For any securities firm who violates securities regulations, it is reported to TWSE's monthly Enforcement Action Review Conference and further sanctions on the staff might be exerted. These measures are effective in controlling securities firms' credit risks.

■ Risks from unsettled positions

Further, TWSE calculates the VaR value of securities companies everyday, which is based on the net-long and net-short trading position of individual securities firm on T day and T-1 day. The VaR value is the foundation for the monthly review of the amount to be contributed to the Clearing Fund by the individual securities firm.

■ Risks from clients

■ Control the settlement risks and default risks caused by clients

To prevent settlement risks caused by clients, TWSE checks whether the net-long positions of each securities broker in the trading day exceed its funds available for use. If the amount reaches the threshold, TWSE requires the securities firm to provide a list of the top ten clients with net-long positions in order to keep track of possible settlement risks arising from the clients. In the meantime, TWSE also monitors the size of individual investors' default daily. If any investors' default amount reaches certain levels, TWSE will report it to either TWSE's management or the Taiwan Securities Association for further measures.

■ Hold a cross-departmental daily meeting to prevent default

A cross-departmental 'prevention of large default meeting' is held in the afternoon of every trading day. It aims to find individual investors who have net-long positions exceeding a certain amount. TWSE checks whether the trading quota of those investors, permitted by the securities firms, can cover the net-long position or not. If the result is not acceptable, TWSE will penalize the securities firms and all relevant persons accordingly, or file a report to the regulatory body.

■ Label stocks under disposition measures to caution investors

To alert investors not to buy stocks with over-volatile or irregular trading status, TWSE publicly lists the names of these stocks as 'Stock Under Disposition Measures', on which pre-delivery of funds or securities would be imposed before any trading order can occur.

3.Enhance TWSE's ability to face credit risk exposures

In the daily settlement, during the process of receiving funds and securities payment, TWSE adopts a 'funds receipt prior to payment' principle, which means that securities firms shall fulfill their settlement obligations prior to TWSE's payment. Under normal daily settlement, TWSE never uses its own funds for advancing any payment to securities firms. 'Funds receipt prior to payment' has buffered TWSE from risks caused by the securities firms.

Moreover, TWSE set up a Clearing Fund (NT\$6.4 billion) sufficient to cover the credit risk caused by the default of securities firms. TWSE also established a Compensation Reserve (NT\$5.4 bn) as an additional financial resource to cover any defaults in the market. The deposit requirements of the Clearing Fund and Compensation Reserve are clearly stipulated in the regulations. The significant financial resources of NT\$ 11.8bn outnumbers the average daily VaR value of all the securities firms combined which is around NT\$2 bn to NT\$3 bn. Therefore TWSE has not conducted any stress tests to estimate credit risks caused by the securities firms.

Review of the framework for managing credit exposures

With the above three dimensions, TWSE's risk management framework is solid. The frequent examinations are non-periodic, since the framework has been revised and enhanced gradually, and operating smoothly with the maturity of the market.

The framework has been reviewed and enriched in parallel with the progress of the market regularly, and has become sound and mature, working effectively.

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.

TWSE has identified its credit exposures as coming from default by securities firms or the clients of securities firms.

Measures of identifying and monitoring credit risks from securities firms

TWSE identifies sources of credit risk by evaluating its counterparties. Several measures are taken as follows.

■ Review securities firms' financial reports

TWSE reviews the indicators of financial reports submitted by securities firms monthly and reports to the regulatory body if any securities firm is judged to be in serious condition or in financial deficit.

■ **Calculate securities firms' VaR value**

TWSE calculates securities firms' VaR value daily, and checks whether the net-long positions of each securities broker in the trading day exceed its funds available for use. If the amount reaches the threshold established by TWSE, the broker is required to provide the top ten clients with net-long positions in order to keep track of possible settlement risks arising from the clients.

■ **Hold a cross-departmental daily meeting**

A cross-departmental 'prevention of large default meeting' is held in the afternoon of every trading day. It aims to find individual investors who have net-long positions exceeding a certain amount. TWSE checks whether the trading quota of those investors, permitted by the securities firms, can cover the net-long position or not. If the result is not acceptable, TWSE will penalize the securities firms and all relevant persons accordingly, or file a report to the regulatory body (Article 6 of Taiwan Stock Exchange Corporation Operational Rules for Audits of Securities Firms) .

■ **Label stocks under disposition measures to caution investors**

To alert investors not to buy stocks with over-volatile or irregular trading status, TWSE publicly lists the names of these stocks as 'stock under disposition measures', on which pre-delivery of funds or securities would be imposed before any trading order can occur. (Article 2-6 of Taiwan Stock Exchange Corporation Directions for Announcement or Notice of Attention to Trading Information and Dispositions)

TWSE has implemented the aforementioned measures since 1998, the year of the last recorded case of a default by a securities broker. Since then, no defaults have occurred.

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.

Coverage of exposures to each participant

TWSE has Clearing Funds and Compensation Reserves at its disposal in the case of default or loss of financial resources as the case may be caused by market participants(Article 7 of Criteria Governing Handling of Stock Affairs by Public Companies) . The scale and size of these funds and relevant legal provisions that apply are as follows.

■ Clearing Fund

In the event that any securities firm is unable to carry out settlement obligations, another securities firm appointed by TWSE shall bear responsibility of completing settlement. TWSE will first use the Clearing Fund to cover the loss caused by the defaulted securities firms. If the Clearing Fund is insufficient, TWSE will then use the Compensation Reserve, and thereafter seek compensation from the defaulted securities firm.

The priority usage of the Clearing Fund is the amount contributed by the defaulted securities firm, the First Special Clearing Fund (NT\$ 2 bn) contributed by TWSE, then the Clearing Fund contributed by the other non-defaulted securities firms and the Second Special Clearing Fund(NT\$ 1bn) used pro-rata as a pool (Article 7 of Criteria Governing Handling of Stock Affairs by Public Companies, and Article 9 of Taiwan Stock Exchange Corporation Rules for Administration of the Joint Responsibility System Clearing and Settlement Fund) .

■ Compensation Reserve

TWSE sets aside a Compensation Reserve out of the fees charged to securities transactions to act as a secondary resource. The Compensation Reserve shall be deposited in a special account, and kept in the form of government bonds, bank deposits, or other methods with the approval of the FSC (Articles 19 and 20 of Regulations Governing

Stock Exchanges, Article 36 of TWSE's Charters of Incorporations).

■ **Additional deposit to the Clearing Fund**

If any conditions listed in Article 2 or 9 of Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund, by which securities firms are influenced by the court order execution or default or the whole market condition is extreme, securities firms have to make additional deposits to TWSE after the resolution by the Special Management Committee of the Clearing Fund.

In addition, a securities firm has to make a supplemental contribution to the Clearing Fund if its contribution to the Clearing Fund is lower than 80% of its average daily VaR value of the previous month. On the other hand, a securities firm may get a refund from the Clearing Fund if its contribution to the Clearing Fund is higher than 80% of its average daily VaR of the previous month or the required amount, of which the refunding amount is the difference.

For DNS payment systems and DNS SSSs in which there is no settlement guarantee

Inapplicable for TWSE.

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.

Coverage of current and potential future exposures to each participant

TWSE has at its disposal the Clearing Fund (NT\$ 3.4bn from securities firms and NT\$3bn from TWSE), and the Compensation Reserve (around NT\$5.4 bn). Since the daily average VaR of all securities firms floats between NT\$2bn and NT\$ 3bn, the financial resources at TWSE's disposal are deemed sufficient to cover current and future risk exposures. TWSE does regular reviews to examine whether the above resources are sufficient.

Risk profile and systemic importance in multiple jurisdictions

TWSE does not run clearing and settlement services for high-risk financial instruments; neither does TWSE run any cross-border clearing and settlement services.

Additional financial resources

TWSE may, upon a resolution by the Special Management Committee of the Clearing Fund (the "Committee"), require a securities firm to make an additional deposit to the Fund if necessary (Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund).

TWSE also signed several contracts of NT\$12.8bn with five banks to obtain lines of credit. With these contracts, TWSE may get credit lines from the banks when the Clearing Fund and the Compensation Reserve are not sufficient.

Supporting rationale and governance arrangements

The rationale behind the Clearing Fund and the Compensation Reserve is that the securities firms and TWSE have to cooperate to build a market with the least risk if possible. The responsibility of preventing risk shall be undertaken not only by TWSE, but also by the securities

firms. Therefore each securities firm is required to make contributions to the Clearing Fund. TWSE, as the operator of the stock market, shall bear more responsibility than the securities firms and have a more important role (Article 153 of Securities Transaction Act) .Therefore, the First Special Clearing Fund of TWSE (NT\$2 bn.) ranks second in the priority usage. The arrangement of ranking 3rd in the priority usage stresses the co-responsibility of TWSE and securities companies in the prevention of possible securities firms' default.

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 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.

Stress Testing

TWSE does not conduct any plans for stress tests to estimate credit and liquidity risks. The reason is because TWSE only provides clearing and settlement in the cash market, not in the derivative market. Moreover, the stock trading has a high and low fluctuation price limit range of 7% (+7% or-7%), setting a limit to the movement of stock prices, which limits the risks.

Another reason for not having stress tests is TWSE has significant

financial resources of NT11.8 bn (NT\$6.4 bn for the Clearing Fund and NT5.4 bn for the Compensation Reserve). It is larger than the average daily VaR value of all the securities companies which is around between NT\$2 bn. and NT\$3 bn.

Review and validation

TWSE calculates Var value for each securities firm every day, and compares the VaR value with the Clearing Fund contribution of each securities firm so as to see whether the contributed portion is sufficient to cover the Var value. Further, TWSE compares the net-long position of each securities firm with its funds available for use to track its liquidity risk. Roughly every securities firm's net-long position is less than its funds available for use.

For evaluating the effectiveness of the model calculating VaR value, TWSE has conducted back-tests to test the validity of VaR value model.

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.

Inapplicable

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.

Allocation of credit losses

TWSE has set a priority usage for the Clearing Fund in handling the default of securities firms (please see the former information). If the loss exceeds the Clearing Fund, the mechanism of an additional contribution by the securities firms will be initiated under the decision of the Fund Committee and the approval of the regulatory body (Article 9 of Taiwan Stock Exchange Corporation Rules for Administration of the Joint Responsibility System Clearing and Settlement Fund, Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund) .

Replenishment of financial resources

The Clearing Fund replenishment is as follows.

■ **Supplemental contributions by securities firms' to the Clearing Fund**

If necessary, TWSE may require a securities firm to make a supplemental contribution within a prescribed time limit if its contributed funds are utilized for any reason. If the firm fails to make the deposit within the time limit, TWSE will thereupon halt its market trading (Article 5 of Taiwan Stock Exchange Corporation Rules for Administration of the Clearing and Settlement Fund of Securities Firms).

■ **Additional contributions**

Refer to Key Consideration 3 Additional Deposit to the Clearing Fund.

■ **Compensation of TWSE's Clearing Fund**

TWSE will replenish the Second Special Clearing Fund (NT\$ 1 bn) if depleted.

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.

Summary Narrative

Key consideration 1: An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

Acceptable Collateral

TWSE accepts the following as collateral in the settlement-driven Securities Borrowing System (Article 55-1 of Taiwan Stock Exchange Corporation Securities Borrowing and Lending Rules):

- bank guarantees;
- government bonds in the form of book-entry; and
- cash

Key consideration 2: An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

Valuation practices

TWSE recalculates the collateral values by marked-to-market every day, using the closing price of the securities in the previous trading day.

Haircutting practices

The haircut of government bonds in the form of book-entry is valued at 90% percent of the face value. The haircut rate is not examined regularly (Article 55-3 of Taiwan Stock Exchange Corporation Securities Borrowing and Lending Rules) .

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.

N.A.

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.

N.A.

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.

N.A.

Key consideration 6: An FMI should use a collateral management system that is well-designed and operationally flexible.

Collateral management system design

TWSE receives collateral in the form of cash from securities firms which are unable to complete their securities settlement obligations on T+2 day at 10:00 am. Those securities firms would enter into TWSE's settlement-driven Securities Borrowing System to borrow securities for completing the daily settlement obligations. TWSE charges collateral at the price of 114% of the borrowed securities' closing price on the first day after the trade date (T+1) and marks to market every day (Article 51 of Taiwan Stock Exchange Corporation Securities Borrowing and Lending Rules) .

Operational flexibility

As mentioned above, TWSE's collateral management is based on the settlement-driven Securities Borrowing System. If the borrowers cannot return the securities the next day, TWSE's Borrowing System will initiate automatic borrowing for the borrower and the value of collateral payables will be calculated daily (Article 55 of Taiwan Stock Exchange Corporation Securities Borrowing and Lending Rules) .

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.

Summary Narrative

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.

Description of margin methodology

TWSE only provides settlement service in the cash market. As TWSE sets a high and low fluctuation price limit range of 7% (+7% or -7%) to the trading of listed securities, and the method used to manage the credit risk and liquidity risk of securities companies works well, therefore the margin system is not implemented.

Credit exposures

N.A.

Operational components

N.A.

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.

Sources of price data

N.A.

Estimation of prices.

N.A.

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 destabilizing, procyclical changes.

Initial margin model

N.A.

Closeout and sample periods

N.A.

Procyclicality and specific wrong-way risk

N.A.

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.

N.A.

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 harmonised overall risk management systems.

Portfolio margining

N.A.

Cross-margining

N.A.

Robustness of methodologies

N.A.

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.

Backtesting and sensitivity analysis

Backtests are only done to test the validity of the VaR value model.

Margin model performance

N.A.

Key consideration 7: A CCP should regularly review and validate its margin system

N.A.

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.

Summary Narrative

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.

TWSE's liquidity risks arise from the capital shortage in defaults caused by securities firms. In order to maintain sufficient liquid resources to effect settlement, every measure taken in preventing credit risks is also

applicable in preventing liquidity risks (Principle 4 Key Consideration 1). Other than those measures, the use of the Central Bank's Interbank Funds Transfer System is crucial in confining liquidity risk.

TWSE has built its daily fund transfer system (called Fund and Securities Transfer Platform) upon the CBC Interbank Funds transfer System(CIFS).TWSE has used the Fund and Securities Transfer System to monitor the settlement and fund receipt from securities firms, as well as sending instructions to CIFS for fund payment. The reliance on the Central Bank, instead of commercial banks, as the payment system is very practical to enhance TWSE's management of liquidity risk.

To ensure that all the financial resources contributed both by the securities firms and TWSE are readily available and convertible into cash, TWSE maintains the financial resources in a safe and easy-to-cash way, such as time deposits, short-term notes, and bonds. In addition, TWSE has signed several secured lines of contracts of NT\$12.8bn with five banks.

TWSE only uses NT dollars for clearing and settlement currently. Liquidity risks in other currencies do not occur.

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.

TWSE uses its Fund and Securities Transfer Platform link with the CIFS system of the Central Bank. Through the platform, TWSE's staff is able to obtain immediate information of fund arrival from net-long securities firms. After confirming the fund receipt, TWSE's staff notifies the Central Bank to transfer funds to the net-sell securities firms on the settlement day. This platform provides TWSE an effective operational tool to monitor the settlement and funding flows on an ongoing and timely basis.

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.

TWSE adopts a 'Receipt prior to payment' principle to ensure that there are sufficient liquid resources for completing settlement.

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.

Sufficient liquid resources

TWSE does not provide liquid resources in any relevant currencies for settlement purposes. TWSE does not design any stress test nor require margins for risk management as stated in Key Consideration 5 of Principle 4.

Risk profile and systemic importance in multiple jurisdictions

TWSE does not provide any clearing activities in multiple jurisdictions. No complicated risk scenario is involved. Therefore TWSE does not face the need to measure liquidity risks arising from defaults by market participants in multiple jurisdictions.

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.

Size and composition of qualifying liquid resources

The qualifying liquid resources can be divided into two parts.

- Clearing Funds at the size of NT\$ 6.4bn.
- Compensation Reserve at the size of NT\$5.4bn.
- Secured lines of credit at the size of NT\$12.8bn with five banks.

Availability and coverage of qualifying liquid resources

The Clearing Fund and the Compensation Reserve are kept by TWSE and are ready for use whenever there is a need.

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.

Size and composition of supplemental liquid resources

TWSE has signed contracts for secured lines of credit valued at NT\$12.8bn with five banks. Those contracts can be deemed as supplemental financial resources.

Availability of supplemental liquid resources

TWSE shall provide collateral for using the abovementioned supplemental liquid resources. Two possible financial resources can be used as collateral.

■ Clearing Fund and Compensation Reserve as collateral

TWSE may use the Clearing Fund of NT\$3.4bn; the First and Second Specialized Clearing Fund of NT\$3bn, plus the Compensation Reserve of NT\$5.4bn are collateral to the banks to obtain the secured lines of credit.

■ TWSE's self-owned funds as collateral

After deducting the aforementioned amounts from the total credit line of NT\$12.8bn, TWSE allocates its own funds (time deposits, or bonds) of as the pledge to obtain credit lines from banks. The amount of NT\$1bn can also be deemed as a supplementary liquid resources for TWSE.

The supplementary liquid resources are secured lines of credit signed with banks. Banks shall provide these resources whenever there is a need. These contracts are renewed annually.

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.

Use of liquidity providers

TWSE has arranged with several commercial banks to provide financing for fund settlement in case a securities firm defaults. These arrangements have been signed in the form of written contracts and can

be legally engaged as needed.

Reliability of liquidity providers

The financing arrangements have been signed in the form of written contracts and can be highly trusted.

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.

Even TWSE uses the Electronic Interbank Funds Transfer and Settlement System (CIFTS) of the Central Bank to process settlement of funds, yet TWSE has not arranged to get financing from the Central Bank, instead, it is arranged via commercial banks. The liquidity problems of securities incurred from the shortage of securities in the settlement day on the part of securities firms are resolved through the settlement-driven Securities Borrowing System which is supervised by TWSE and operated by TDCC.

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.

Stress test program

TWSE does not have any plans to conduct stress tests to estimate credit and liquidity risks. The reason is because TWSE only provides clearing and settlement in the cash market, not in the derivative market. Moreover, the stock trading has a high and low fluctuation price limit range of 7% (+7% or,-7%), setting a limit to the movement of stock prices.

Another reason for not having stress tests is TWSE has significant financial resources of NT\$11.8 bn (NT\$6.4 bn for Clearing Fund and NT\$5.4 bn for Compensation Reserve). It far outnumbers the average daily VaR value of all the securities companies combined which is between NT\$2 bn to NT\$3 bn.

Stress test scenarios

N.A.

Review and validation

N.A.

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.

Same day settlement

TWSE has stipulated a procedure to settle its payment obligation on time during a default. Based on TWSE's internal regulations named 'Procedures for Handling Default on Settlement Obligations by Securities Firms', TWSE, the defaulter, and the appointed securities firms shall follow the above-mentioned procedures to complete the

relevant procedures of closing the defaulters' business, including delivery and deposit, withdrawal, stock transfers, and fund transfers on the same day. The appointed securities firms are obliged to assist the defaulters' clients in transferring their settlement funds to their accounts in settlement banks to complete the settlement process. The procedures have listed all relevant details for defaulters and appointed securities firms.

Replenishment of liquidity resources

Methods of replenishing the Clearing Fund and Compensation Reserve are as follows.

■ Clearing Fund

If any portion of the Clearing Fund which was deposited by a securities firm is used, but the firm fails to make a supplemental deposit as required, TWSE shall notify the firm to make the supplemental deposit within a prescribed time limit. This notification can be deemed as the replenishment of the Clearing Fund. Other than that, to ensure that the securities firm's deposited Clearing Fund contribution is sufficient, with the approval of TWSE's Clearing Fund Committee, TWSE may also require the firm to make additional deposits if the firm meets any of the special circumstances listed in Article 2 of TWSE's Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund. These circumstances are mostly related to deterioration of the firm's financial and audit conditions.

As for the Clearing Fund deposited by TWSE, the Second Special Clearing Fund (NT\$1bn) will be replenished by TWSE.

■ Compensation Reserve

If the Compensation Reserve is used, the regulatory body (SFB) has the authority to adjust the method of depositing the reserve based on Article 154 of the Securities and Exchange Act. Currently TWSE deposits 5% of the securities transaction fee to the Compensation Reserve 15 days after the end of each quarter and has done so since 2010. Currently SFB has not set any maximum limit to this contributed amount yet, so this Reserve will continue to expand every year.

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.

Summary Narrative

Key consideration 1: An FMI's rules and procedures should clearly define the point at which settlement is final.

Points of settlement finality

The settlement timeframe is clearly stipulated in TWSE's Operation Rules. The settlement time of securities and funds for investors, and securities for securities firms is 10:00 am T+2, and the settlement time of funds for securities firms is 11:00 am T+2. The delivery of securities and money is final (Article 104 of TWSE's Operation Rules) .

Finality in the case of links

When TWSE receives settlement funds from securities firms, it will send instructions to TDCC to deliver securities to the securities firms which have completed settlement. The instructions sent by TWSE are final and irrevocable.

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.

Final settlement on the value date

The settlement time is 10:00 am on T+2 for securities settlement, and 11:00 am on T+2 for funds. The securities firms and the investors will receive the securities and/or money on T+2 once the settlement obligations are completed (Article 104 of TWSE's Operating Rules) .

Intraday or real-time final settlement

The settlement time is 10:00 am on T+2 for securities settlement, and 11:00 am on T+2 for funds. The securities firms and the investors will receive the securities and/or money on T+2 when they complete their settlement obligation.

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.

In TWSE's markets, all the settlements are irrevocable.

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.

Summary Narrative

Key consideration 1: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

Fund settlement via Central Bank

TWSE uses the Central Bank money to conduct fund settlement. TWSE has a settlement account in the Central Bank's Interbank Transfer System (CIFS system), and the securities firms have to deposit the settlement funds to that settlement account via the service of their assigned settlement banks. TWSE issues instruction to the CIFS system to transfer the funds to those securities firms which have funds to be received in the settlement day.

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.

Inapplicable.

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.

Inapplicable. TWSE's fund settlement is processed with the Central Bank money, not the commercial bank money. The reason is similar to Key Consideration 1.

Key consideration 4: If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

Inapplicable.

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.

TWSE and the settlement banks which provide funds transfer services to the securities firms are all approved participants in the CIFS system of the Central Bank. They have to follow the strict requirement thereof. The transfer via the CIFS is final and all transfers have to be completed before day-end. Generally, settlement of funds shall be completed before 11:00 am of the settlement day.

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.

Summary Narrative

Key consideration 1: An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

The listed securities are all dematerialized, and the securities settlement is through book-entry operated by TDCC (the securities central depository).

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.

Inapplicable.

Principle 11: Central securities depositories

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimize and manage the risks associated with the safekeeping and transfer of securities.

A CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry.

Inapplicable to CCP or SSS.

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.

Summary Narrative

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.

TWSE has not built up any exchange-of-value securities systems.

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.

Summary Narrative

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.

Participant default rules and procedures

If a securities firm fails to carry out settlement within the timeframe specified in Article 104 of TWSE's Operating Rules, or fails to pay cash collateral required for securities borrowing, it will be deemed as not completing settlement obligations (Article 111(2) of TWSE's Operating Rules).

The crisis-handling procedure of default

If any securities firm announces a default or any material event which might lead to default, TWSE will follow internal procedures of handling securities firms' insolvency and establish an interim committee to deal with the default. This committee, chaired by TWSE's President, is comprised of all TWSE department heads. Any final decisions made by the committee will be reported to the regulatory body. TWSE will also examine the financial situation of the defaulting securities firms and help it transfer the unsettled positions to the designated securities firms and relevant clients' accounts to complete the settlement procedure.

The matters to be undertaken by the defaulter and the designated securities firms are stipulated in TWSE's 'Procedures for Handling Default on Settlement Obligations by Securities Firms'. All the securities firms shall follow the procedures when making announcements, and transferring unsettled securities to the designated securities firms, in order to lower the impact on investors.

Use of financial resources

TWSE has set up the Clearing Fund and Compensation Reserve to meet the needs of liquidity and share the loss coming from the handling of a securities companies' default. The Clearing Fund is NT\$ 6.4 billion and the Compensation Reserve is NT\$ 5.4 billion.

The Clearing Fund committee may be convened to require the securities firms to replenish the Clearing Funds after reaching consensus and receiving approval from the regulatory body.

The above information has been posted on TWSE's website and is explained in the educational seminars for securities firms regularly (Article 9 of Joint Liability Clearing Fund).

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.

TWSE has stipulated 'Procedures for Handling Default on Settlement Obligations by Securities Firms' as an internal procedure to handle the default of a securities firm. This procedure has been reviewed when necessary, and rehearsals thereof have been practiced frequently.

Key consideration 3: An FMI should publicly disclose key aspects of its default rules and procedures.

The procedures and requirements concerning the handling of default of securities firms have been disclosed on TWSE's website.

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.

The procedures and requirements concerning the handling of the default of securities firms are the result of lessons learned from the handling of past defaults of securities firms. The reviews of the aforementioned requirements and procedures are engaged if necessary in the cases such as the change of relevant material requirements.

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.

Summary Narrative

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.

Customer protection from participant default

■ Segregated accounts for fund and securities settlement

When an investor starts trading listed securities, he/she has to open his/her own bank account in the bank designated by the securities firm. This account is for paying and receiving of settlement money between securities firms and investors. Further, he/she has to open a TDCC depository account in his/her legal name with proper ID under the name of the securities firm. Any securities movement of investors' depository account in one securities firm can only go to the depository accounts with the same identity in other securities firms. The money and securities owned by the investors can be protected under these arrangements whenever securities firms happen to default.

Regarding clients' settlement fund, securities firms shall open settlement accounts in banks for payment and receipt of the settlement funds to and from the clients. This account cannot be used for other purposes and enjoys special protection under the Securities Investor and Futures Trader Protection Act.

Customer protection from participant and fellow customer default

N.A.

Legal basis

According to Article 37 of the Securities Investor and Futures Trader Protection Act, a securities firm shall keep separate and independent from its own assets the dedicated accounts it opens in accordance with acts and regulations for the deposit of customer money and the assets it receives as a result of accepting customer orders. The aforementioned rule has provided a solid legal foundation for TWSE to protect domestic clients' position and collateral. The Act also applies to

foreign customers who trade in Taiwan.

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.

The account arrangements on the part of investors in money and securities mentioned can enable the identification of securities firms' positions readily.

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.

Under the above arrangements, the money and securities in the bank and TDCC accounts are fully protected and can be transferred when new accounts are opened with designated securities firm because the original securities firm defaulted. The portability of the accounts can be highly ensured.

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.

The aforementioned arrangements have been disclosed in the rules as follows:

Segregation:

Article 37 of Securities Investor and Futures Trader Protection Act
Articles 6-10 of Regulations Governing Book-Entry Operations for Centrally Deposited Securities

Portability:

Article 153 of Securities and Transaction Act

Article 2 of Taiwan Stock Exchange Corporation Procedures for Handling Default on Settlement Obligations by Securities Firms

Article 7 of Criteria Governing Handling of Stock Affairs by Public Companies

To date, TWSE does not have any constraints (legal or operational) that may impair TWSE's ability to fully segregate or move/transfer a participant's customers' positions and collateral.

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.

Summary Narrative

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.

TWSE adopts the following two management and control systems to identify, monitor, and manage general business risks.

- TWSE has established an Internal Audit Office, which directly reports to the Board. This Office conducts monthly operational audits for every department to control the operational risks of the company.
- TWSE has established a Business Continuous Management System (BCMS) to maintain the key activities and start recovery procedures, so that the normal operation can be continued before the expected deadlines.

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.

TWSE's net worth of shares consists of share capital and legal reserve. The growth rate of share capital has increased to around 2.5% in recent years. The legal reserve has set aside 10% from the after-tax profit, and the special reserve has set aside 30%-50% from the after-tax profit. TWSE deposits to the Compensation Reserve according to the Securities and Exchange Act to cover the risk of securities firms' defaults. The Compensation Reserve can only be deposited in a special account in the form of bonds or bank savings. It shall not be used in a manner other than those specified below without the approval of the regulatory body (Article 20 of Regulations Governing Stock Exchanges).

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.

Recover or Orderly Wind-down Plan

TWSE is both a stock exchange and a clearing institution. Both functions are approved by the regulatory body. TWSE's main task is to develop and to maintain the trading order of the securities market. Since TWSE is the major licensed CCP in the securities market, and TWSE's establishment and wind-down is closely supervised by the regulatory body, the necessity of establishing recovery and orderly wind-down plans is low.

Resources

The total operating cost of 2017 was NT\$3.9bn. After deducting depreciation and amortization, the operating cost of year 2017 was estimated to be NT\$ 3.6bn. Up to the end of Dec 2017, the current net assets (including Compensation Reserve) were NT\$ 19.3 bn, which is deemed as sufficient to cover general business risks.

The Compensation Reserve is especially prepared for compensating the settlement risks arising from market default, and the Compensation Reserve shall be deposited based on Article 154 of the Securities and Exchange Act.

TWSE deposits to the Compensation Reserve 5% of the securities transaction fee 15 days after the end of each quarter and has done so since 2010. TWSE's deposit to the Compensation Reserve has contributed to the diminishing of credit 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.

Assets with high liquidity

TWSE's current assets are saved in the form of time deposits, bonds with an above A- rating, or short-term notes in financial institutions with good credit ratings. TWSE has signed credit lines, which can be used for meeting urgent capital needs should securities firms' default or natural disasters occur, with several banks for the total amount of NT\$12.8bn. All the financial assets held by TWSE are tradable in the capital market, and the assets are also easily redeemed at a fair price in the market.

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.

TWSE does not have any plans for raising additional equity. The

TWSE Finance Department will re-evaluate the necessity of raising additional equity from earnings after the annual report is released. The plans for raising additional equity shall be approved by the regulatory body and then approved by TWSE's Board and at the shareholders' meeting. Proceeding through all the approvals, the equity-raising plan can be implemented.

Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimize 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.

Summary Narrative

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.

Custody policy on TWSE's assets

Assets held by TWSE are kept in the correspondent banks. The aim of TWSE's asset custody is to achieve safety and liquidity, whereas gaining revenue is the second priority. To ensure that TWSE follows the above principle, TWSE's Board has passed the Utilization of Capital Guidelines, which clearly states the screening standards of TWSE's investment targets, the examination standards of the investment performance, and the internal control procedures of protecting the assets. In addition, TWSE's assets shall be counted by internal auditors and external accountants periodically and on special occasions.

Custody policy on market participants' assets

Regarding the custody of securities firms' assets, the Clearing Fund portions deposited by securities firms shall be maintained in a special account in TWSE. The Clearing Fund deposited by securities firms is allowed to purchase only bonds, time deposits, short-term notes or other investing methods approved by the regulatory body. Interest will be returned to securities firms after deducting relevant expenses and taxes collected from the Clearing Fund.

Since TWSE follows the Utilization of Capital Guidelines strictly, and is closely supervised by the Internal Audit Office and the Board, TWSE is capable of protecting its own assets and securities firms' assets.

Key consideration 2: An FMI should have prompt access to its assets and the assets provided by participants, when required.

TWSE strictly follows the Utilization of Capital Guidelines to safeguard its own and securities firms' assets. To ensure that TWSE has prompt access to its assets, TWSE holds the securities firms' assets in the form of bonds, time deposits, short-term notes, or cash. Therefore the assets are accessible anytime.

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.

TWSE has not chosen any specific custodian bank for safekeeping its assets to diversify exposure to any single one. Instead, TWSE has saved its assets in around 20 corresponding banks. The assets with high-liquidity are saved in highly credit-rated financial institutions.

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.

Investment Strategy

TWSE's investment strategy is consistent with its overall risk management strategy and has been fully disclosed to its participants. For example, TWSE follows the Utilization of Capital Guidelines, which is approved by the Board in devising investment strategies. In addition, TWSE set up an 'Investment Group' to decide investment strategies. The Group consults with the 'investment consulting committee', which is comprised of external financial experts and scholars. All the investment results have to be disclosed in the annual report for public awareness.

To ensure consistently that TWSE's investment is secured by

high-quality institutions, the Utilization of Capital Guidelines sets up strict screening standards for investment targets. TWSE is not allowed to invest in any financial products with credit ratings lower than TWA-rated by Taiwan Ratings. The above standards can be deemed to ensure that all investments are secured by high-quality institutions.

Risk characteristic of investments

To avoid concentration of credit risk exposures, TWSE follows the Utilization of Capital Guidelines to make investment strategies, such as setting maximum limits for single investment and single trading counterparty. TWSE has kept no investments of market participants.

In order to ensure that investments allow for quick liquidation, TWSE mostly invests in fixed-income assets such as time deposits, bonds, and short-term notes. All the investments made by TWSE are easy to liquidate in the market at fair prices.

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 fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Summary Narrative

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.

Identification of operational risk

■ Risk Management Policy and Crisis Management Guidelines

TWSE has established three systems to identify operational risks at different frequencies.

➤ Internal Control System: As stated in Principle 3, TWSE's risk

management policies are implemented along with TWSE's internal control system. TWSE's management may identify the operational risks by frequent internal audits conducted by the Internal Audit Office. If any department discovers discrepancies between the internal control procedures and the real operational risks, the department may submit modifications of the internal control procedures to the Internal Audit Office, which reports the modifications to the Board every month. TWSE's operational risks can be identified by this channel.

- **Business Continuity Management System:** To identify operational risks under extreme conditions, TWSE has stipulated Business Continuity Management System Guidelines. The BCMS rehearsal has to be held at least once a year, and the operational risks can be identified via this channel as well.
- **Emergency and Crisis Handling System:** TWSE has stipulated 'TWSE Handbook of Handling Emergency and Crisis (HHEC)' to identify and handle the operational risks in emergent conditions and crisis. Following the Handbook, TWSE management is able to identify, measure, supervise, prevent, and control operational risk in emergent occasions. The Handbook is modified by the Corporate Planning and Strategy Department once a year.

Management of operational risk

TWSE has monitored and managed the operational risks by adhering to 'TWSE's Business Continuity Management System Guidelines' and 'TWSE's Handbook of Handling Emergency and Crisis', which were approved by TWSE's President. All the risk management systems, policies, procedures and controls are stated in the above documents.

Policies, processes and controls

■ Internal Audit Policy

To ensure that the operational procedures are implemented appropriately, TWSE has set up an Internal Audit Office to conduct monthly internal audits for every department. TWSE's internal auditors follow 'Regulations Governing Establishment of Internal Control Systems by Public Companies', which were made according

to the international standards published by the Institute of Internal Auditors.

■ Human Resource Policy

TWSE's Administration Department has enacted various policies for hiring and training employees. To prevent employees from divulging confidential information outside of the company, TWSE reserves the right to have different levels of administrative discipline based on the Human Resource Management Regulations. In addition, TWSE's employees are not allowed to reap improper benefits from listed companies, IPO applicants, securities firms, and information companies by abusing the power of any position. Employees who violate the rules may get fired. Those who have retired or left TWSE, are not allowed access to TWSE's Internal Information 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.

Role, responsibilities and framework

TWSE's Board has authorized the President to approve BCMS guidelines and HHEC procedures, therefore the Board does not take the responsibility of evaluating the operational risks. However, TWSE's Board receives reports from TWSE's Internal Audit Office, the unit that supervises and evaluates operational risk management, every month. The Board members may also give the management suggestions to improve the risk management framework.

Review, audit and testing

TWSE's Internal Auditing Office takes the role of reviewing, auditing and testing BCMS. If there are any modifications to the internal control system, the internal auditor will report it to the Board every quarter. The BCMS review is sent to the Board, the independent supervisor, and the regulatory body once a year, Therefore this reporting is 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.

The key TWSE objective is to operate a safe and efficient clearing facility for the securities market. To ensure a high degree of operational reliability in settlement, TWSE requires the System Planning Department to maintain the stability of the computer system, reducing the risk of not being able to produce settlement reports in time. The Business Continuity Management System and Internal Audit System are also parts of the mechanism to maintain operational reliability. To ensure that TWSE takes appropriate action to achieve operational reliability, staff members who are responsible for clearing and settlement are obliged to follow the Internal Operational Manuals to implement every step on the daily receipt and payment of funds and securities, and all the other risk management procedures.

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.

To ensure safety in the market trading, TWSE's trading system is upgraded every five years. The adaptation of TWSE's trading-system capacity shall follow the Capacity Management Procedures. TWSE's Computer Operations Department routinely analyzes the system's current capacity according to the abnormal operation's quarterly reports in order to estimate the potential capacity in the future. The capacity plans are renewed every year, so as to ensure that the plans suit the current demand.

Key consideration 5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

Physical Security

TWSE has passed several international standards, such as ISO 9000 (quality policy), ISO 27001 (safety policy), and ISO 2000 (information service). The relevant identification, supervision and measurement of physical security have been based on the above international standards. In the event of any change of management, TWSE follows

the internal policy along with TWSE's Change of Management Procedure and other manuals on changing the physical infrastructures.

Information Security

To address the potential sources of information security vulnerabilities and threats, TWSE has invited British Standards Institution (BSI) to audit the information systems' compliance on several Certifications, such as ISO 27001, ISO 9001 and ISO 20000, twice a year. This audit can ensure that TWSE's information security has been maintained at the levels in conformity with the Certifications.

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.

Objectives of Business Continuity Plan (BCP)

The BCP objectives are to maintain the continuous operation of key activities in the market, and to start the recovery procedures, so as to recover normal operations within two hours.

Design of Business Continuity Plan

TWSE follows ISO 22301 standards to establish a Business Continuity Management System (BCMS). To maintain the continuing operations of trading and a fast system recovery, TWSE has established two back-up systems. Therefore TWSE is able to resume operations within two hours following disruptive events.

Disruption of Settlement Operations

For the settlement operations, if any system disruption occurs during the operation, TWSE requires the staff members who are responsible for daily settlement to resume settlement by using other means. Staff may use phones to confirm that securities firms have completed their

obligations and then notify TDCC to pay the securities. For the funds settlement, TWSE's staff may directly go to the Central Bank to process the fund transfer when the Fund and Securities Transfer System is disrupted.

Whenever interruption happens, TWSE's crisis management procedures require TWSE to report to the regulatory body and other stakeholders. TWSE's committee for running BCMS will select key activities to report to the regulatory body about the crisis management. TWSE will also make announcements to the media to disclose risk management progress to the public.

Disruption of critical IT system

TWSE established a Business Continuity Management System for the IT system according to ISO 22301. To ensure that the IT system can resume operations within two hours following disruptive events, TWSE has designed the following back-up mechanism.

1. Primary site: Our trading platform uses a non-stop and fault-tolerant system. When an anomaly is detected in the primary process, the backup process will take over on a real-time basis.
2. First backup site: The first backup site uses the hot standby mode for the host, network, application system and database, and it can be activated in 40 minutes.
3. Second backup site: A delay-synchronizing mode for the application system and database is used by the second backup site, and it can be activated the next business day.

The above three sites will back-up TWSE's IT operation whenever TWSE faces system disruption under any occasions.

Secondary Site

TWSE has established two secondary sites for the back-up. One is located in the Xin Yi District in Taipei, and the other is located in Taichung, around 200 kilometers away from the main site. These two sites are equipped with sufficient resources, so that they are able to back up the operations in critical times. The choice of the secondary site has taken geographic safety distance into consideration.

Review and testing

TWSE's BCMS is reviewed and tested at least once a year. For the BCMS test of TWSE's major business departments, TWSE's top management, independent supervisors, and representatives from the regulatory body will participate in the drill test. For the BCMS test of TWSE's computer departments, TWSE will invite securities firms, information vendors, TDCC and Chunghwa Telecom to join or observe the test together.

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.

Risks to the FMI's own operations

FMI has identified risks arising from securities firms, other FMIs and service and utility providers separately. TWSE has adopted different means to monitor and manage these risks as follows.

■ Risks from securities firms

TWSE conducts routine and special audits on securities firms by the staff in the Intermediaries Service Department, so as to adjust the trading multiples for problematic securities firms, therefore the risks from securities firms could be minimized.

■ Risks from other FMIs

Regarding risks arising from other FMIs, TWSE entrusts TDCC for securities settlement. Since TDCC is intensely supervised by the regulatory body, and TWSE's Chairman is also a director of TDCC's Board, the risks arising from TDCC can be detected.

■ Risks from service and utility providers

To avoid the service and utility providers' operational mistakes from affecting daily settlement, TWSE has established clear guidelines for service providers. Service providers have to follow their signed contracts with TWSE for routine maintenance.

Risks posed to other FMIs

TWSE entrusts the daily securities settlement function to TDCC and

the risks exposed to TDCC have been clearly identified. TWSE does not have any links with other FMIs, therefore no risks posed to other FMIs can be identified.

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.

Summary Narrative

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.

Participation criteria and requirements

TWSE's market participants are securities firms who have signed 'Criteria Governing Handling of Stock Affairs by Public Companies' (called 'trading contract' below) with TWSE. There are different minimum paid-in capital requirements for securities underwriters, securities brokers or securities dealers, which are clearly stated in 'Standards Governing the Establishment of Securities Firms'. Any securities firms meeting the requirements may sign the trading contract with TWSE; after which the securities firms are eligible to run trading and clearing business in the equity market.

Access to trade repositories

TWSE has not established any trade repositories. FSC, the regulatory body, has assigned this business to the Gretai Securities Market.

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.

Justification and rationale of participation criteria

The participation criteria, relevant rules, and requirements have taken safety, efficiency and risk into operation. As TWSE has been operating

for more than 50 years, the systems thereof have been soundly developed, and they are still reviewed to meet the possible new needs of the market participants (securities firms).

Least restrictive access

N.A. The reason is as above.

Disclosure of criteria

The ‘Standards Governing the Establishment of Securities Firms’ and ‘Criteria Governing Handling of Stock Affairs by Public Companies’ are the relevant regulations regarding the market participation (securities firms). Both are available in the <http://www.selaw.com.tw/> for public reference.

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.

Monitoring compliance

TWSE supervises securities firms periodically and non-periodically if necessary, and the areas to be examined include the amount of net worth which is lower than paid-in capital and the securities firms’ capital adequacy ratio. TWSE will also use examination results to determine the trading multiples of the securities firms. Securities firms report this to TWSE every month (Article 28-1 of TWSE’s Operating Rules).

Suspension and orderly exit

As for the situation that securities firms terminate their trading contracts with TWSE, mostly due to winding-down or revocation of licenses, TWSE has promulgated relevant rules for them to complete an orderly exit.

Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Summary Narrative

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.

Tiered participation arrangements

TWSE has not adopted a clearing member system. No tiered participation is available.

Risks to the FMI

Inapplicable.

Key consideration 2: An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

Inapplicable.

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.

Inapplicable.

Key consideration 4: An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

Inapplicable.

Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Summary Narrative

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.

TWSE's link with TDCC

TWSE has an operation link with TDCC. The aim of the link is to entrust TDCC to do the securities settlement. TDCC is highly supervised by the regulatory body and has to follow strict requirements stipulated by the government. The link arrangements between TDCC and TWSE have not generated any impact on the observance of the other principles.

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.

The link between TWSE and TDCC has been well built and is within the jurisdictions of Taiwan. TWSE has not set up any links outside the jurisdiction of TWSE.

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.

TDCC has set up a sound risk managing system and is highly regulated by the regulatory body.(Please refer to its disclosure in this respect.)

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.

Inapplicable.

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.

Inapplicable.

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.

Inapplicable.

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.

Linked CCP default

Inapplicable. TWSE has not entered into any links with other CCPs.

Collective link arrangements(three or more CCPs)

Inapplicable.

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.

Exposures and coverage of exposures

Inapplicable.

Management of risks

Inapplicable.

Information provided to participants

Inapplicable.

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.

Inapplicable.

Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Summary Narrative

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.

Approaches of receiving opinions from market participants

Before launching any new clearing arrangements, TWSE has to consult with industry professionals from the Taiwan Securities Association, which reflect the voices from securities firms. Very often TWSE uses questionnaires to collect opinions and suggestions from market participants. In addition, TWSE entrusts the Securities and Futures Institute to conduct surveys on service satisfaction from securities firms annually.

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.

Achieving the goals for CCP

TWSE aims to provide a clearing and settlement platform with high efficiency, low risk and low cost. To ensure that it has clearly defined the above goals, several measures have been taken,

- TWSE holds educational seminars periodically for securities firms throughout the year to receive feedback from them.
- Securities firms may also express their proposals via other channels easily, such as through representatives in the monthly Clearing Fund Meeting, or through the committee of Taiwan Securities Association to make recommendations to TWSE.

To measure and assess that TWSE has achieved efficiency and effectiveness, TWSE examines the annual objectives to assure targets have been reached.

Key consideration 3: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

To evaluate TWSE's efficiency and effectiveness, TWSE examines annually whether relevant operations correspond to the standards of

high efficiency, low costs and low risks. TWSE also holds periodic educational seminars every year to collect suggestions from securities firms.

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.

Summary Narrative

Key consideration 1: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

Currently, TWSE has not adopted internationally accepted communication procedures and standards. The information transfer format between TWSE and the Central Bank has been provided by the Central Bank. The current communication format between TWSE and the Central Bank already matches the current needs.

Communication procedures

TWSE uses an internationally accepted communication procedure such as ISO 15022 communication MT 564 format, to announce corporate actions news of listed companies. However, TWSE has not yet discovered any demands for the need to adopt international communication procedures in the field of clearing and settlement.

Communication Standards

TWSE has adopted Financial Information Exchange (FIX) communication standards in its trading operation. TWSE has not to date discovered any demand necessitating the adoption of international communication standards in the trading field.

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.

Summary Narrative

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.

Rules and procedures

Rules and procedures that relate to clearing and settlement are stipulated in several rules as follows;

- TWSE Operating Rules
- Taiwan Stock Exchange Corporation Rules for Administration of the Clearing and Settlement Fund of Securities Firms
- Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund
- Taiwan Stock Exchange Corporation Regulations Governing Brokerage Contracts of Securities Brokers.

These above regulations are disclosed in <http://www.selaw.com.tw/>. To fully disclose these rules, TWSE holds educational seminars to market participants regularly, so that clearing rules and procedures are clear and comprehensive to all the market participants.

Disclosure

The above regulations are disclosed on the public website named www.selaw.com.tw. Any modification of the regulations will be announced to the market participants by TWSE, either on the public website or via educational seminars, in order to completely convey the revision 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.

TWSE keeps the market participants informed of their rights and obligations in the process and clearing and settlement which are clearly stipulated in the relevant requirements and have full disclosure.

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.

TWSE hosts educational seminars for securities firms' staff frequently. Many explanatory documents are posted on TWSE's website. TWSE also provides contact information for the public.

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.

TWSE announces the calculating methods of transaction fees to the public. The transaction fee rate is determined by TWSE and the Securities Association, and is approved by the regulatory body. Any adjustment or variation of the fee rate has to be approved by the regulatory body. Once the rate has been adjusted, TWSE will notify securities firms by public announcement immediately.

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.

TWSE completed CPSS-IOSCO Disclosure Framework for Financial Market Infrastructures in August 2014. TWSE plans to renew the disclosure report once every two years for updated information.

TWSE discloses quantitative information such as daily, monthly, and

yearly trading amount, average trading amount, average price index and others; hundreds of statistics are available on TWSE's website.

As for the disclosure interface, TWSE posts website information in Chinese, English and Japanese. Disclosed information includes commodities details, regulations, trading and clearing information, and other important statistics.

Principle 24: Disclosure of market data by trade repositories
A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.
(Inapplicable to CCPs and SSSs)

V. List of publicly available resources

Legal Rules and Regulations

1. Securities and Exchange Act
2. Operating Rules of the Taiwan Stock Exchange Corporation
3. Criteria Governing Handling of Stock Affairs by Public Companies
4. Risk Management Best-Practice Principles for Securities Firms
5. Taiwan Stock Exchange Corporation Rules for Administration of the Clearing and Settlement Fund of Securities Firms
6. Taiwan Stock Exchange Corporation Securities Borrowing and Lending Rules
7. Taiwan Stock Exchange Corporation Directions for Announcement or Notice of Attention to Trading Information and Dispositions
8. Regulations Governing the Establishment of Internal Control Systems by Service Enterprises in Securities and Futures Markets
9. Taiwan Stock Exchange Corporation Rules for Administration of the Joint Responsibility System Clearing and Settlement Fund
10. Taiwan Stock Exchange Corporation Regulations Governing Brokerage Contracts of Securities Brokers
11. Taiwan Stock Exchange Corporation Rules for Administration of Additional Deposits by Securities Firms to the Clearing and Settlement Fund
12. Taiwan Stock Exchange Corporation Rules for Administration of the Clearing and Settlement Fund of Securities Firms
13. Regulations Governing Securities Firms
14. Standards Governing the Establishment of Securities Firms