

**Thailand: Financial Sector Assessment Program—Detailed Assessment of  
Observance of Thailand Securities Depository (TSD) of the CPSS/IOSCO  
Recommendations for Securities Settlement Systems**

This Detailed Assessment of Observance of Thailand Securities Depository (TSD) of the CPSS/IOSCO Recommendations for Securities Settlement Systems for Thailand was prepared by a staff team of the International Monetary Fund as background documentation to the Financial Sector Assessment Program with the member country. It is based on the information available at the time it was completed in April 2008. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of Thailand or the Executive Board of the IMF.

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FINANCIAL SECTOR ASSESSMENT PROGRAM

# THAILAND

DETAILED ASSESSMENT OF OBSERVANCE

# THAILAND SECURITIES DEPOSITORY (TSD) OF THE CPSS/IOSCO RECOMMENDATIONS FOR SECURITIES SETTLEMENT SYSTEMS

APRIL 2008

INTERNATIONAL MONETARY FUND  
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VICE PRESIDENCY

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**GLOSSARY**

ATS	Automatic Transfer System for Securities Settlement
BOT	Bank of Thailand
CCP	Central Counterparty
CPSS	Committee of Payment and Settlement Systems
CSD	Central Securities Depository
DVP	Delivery versus Payment
FASB	Financial Accounting Standards Board
GPF	Government Pension Fund
IAS	International Accounting Standards
ICAAT	Institute of Certified Accountants and Auditors of Thailand
IOSCO	International Organization of Securities Commission
MOC	Ministry of Commerce
MOU	Memorandum of Understanding
OTC	Over-the-Counter
RTGS	Real Time Gross Settlement System
RSSS	Recommendations for Securities Settlement System
SCB	Siam Commercial Bank
SEA	Securities and Exchange Act
SEC	Securities and Exchange Commission
SET	Stock Exchange of Thailand
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TSD	Thailand Securities Depositories

**Table 1. Detailed Assessment of Observance of Thailand Securities Depositories (TSD) of the Committee of Payment and Settlement Systems (CPSS)-International Organization of Securities Commission (IOSCO) Recommendations for Securities Settlement Systems (RSSS)<sup>1</sup>**

Recommendation 1.	Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdiction.
Description	<p><b>Accessibility of the regulatory framework</b></p> <p>The laws, regulations, rules and procedures governing the operations and activities of TSD are public and accessible to participants. In particular, participants receive comprehensive documentation covering the rules, requirements, procedures and instructions of TSD. This documentation is available on request and is accessible on the TSD website. The public authorities' regulations are also available to the general public on the websites of the Ministry of Commerce (MOC), the Securities and Exchange Commission (SEC) and the Bank of Thailand (BOT).</p> <p><b>Legal basis</b></p> <p>The securities clearing and settlement activities in Thailand are governed and regulated by specifically issued laws and regulations and by provisions in other legislations and regulations. The main laws and regulations are:</p> <ul style="list-style-type: none"> <li>- The Civil and Commercial Code: (e.g., provisions governing juristic acts, obligations, contracts);</li> <li>- The Securities and Exchange Act B.E. 2535 (SEA) (Sections 50–55, 199, 224–228);</li> <li>- The Public Limited Company Act B.E. 2535;</li> <li>- The notifications, rules, and regulations issued by the Stock Exchange of Thailand (SET), and the TSD;</li> <li>- The agreement between members and the TSD as a central securities depository (CSD) and a clearinghouse;</li> <li>- BAHTNET Rules and Regulations B.E. 2549; and</li> <li>- The Bankruptcy Act B.E. 2483.</li> </ul> <p><i>(a) Enforceability of transactions</i></p> <p>The contractual arrangements between TSD and its participants are fully enforceable under the Civil and Commercial Code. In particular, each participant signs a contract with the TSD, which binds the participant to the TSD Regulations. TSD Regulations can be enforced through a legal action.</p> <p><i>(b) Customer assets protection</i></p> <p>The law and regulation requires a clear segregation and application of the customers assets from those of the intermediaries. At the level of the CSD, an intermediary is obliged to separate between its securities holdings and customers' holdings. TSD is also required to separate between its own securities holdings and the assets of its</p>

<sup>1</sup> The main assessor was Elias Kazarian, Senior Financial Sector Expert, IMF.

participants.

In addition, entities acting as custodians such as banks, investment firms and other financial intermediaries are legally obliged to have an internal accounting system that allows the identification of the holdings of their customers at anytime.

*(c) Immobilization and dematerialization of securities*

In accordance with Sections 225–228 of the SEA, immobilization in the TSD system has been arranged through the transfer of securities by book entry. The transfer of securities by book entry shall be deemed to be the delivery of securities which constitutes the legal basis for the validity of securities transfer under Section 199 and Section 51 of the SEA. Moreover, securities transferred into the name of the TSD shall be presumed to be securities held by the TSD on behalf of its members or for any customers of its members.

However, there is no explicit legislation for the dematerialization of securities.

*(d) Netting arrangements*

TSD assumes the role of central counterparty (CCP) for multilateral netting procedure that takes place before the settlement is executed. This netting arrangement is enforceable under Sections 341–348 of the Civil and Commercial Code and Section 102 of the Bankruptcy Act B.E. 2483. However, since Section 102 of the Bankruptcy Act allows netting of obligations only if the cause of indebtedness incurred before the date of the receivership order, the TSD may not net its obligations against the obligations of the insolvent participant which arise on that date.

*(e) Securities lending arrangements*

Securities lending and collateralization arrangements are based on the outright transfer of securities. The SEC rule requires the transfer of the legal title in securities borrowed from the lender to the borrower, and the legal title in collateral is transferred from the borrower to the lender.

*(f) Finality of settlement*

TSD rule clearly states the timing of finality and the way finality is achieved. The transfer of funds is enforced by the BOT regulation.

Furthermore, there is no explicit legal protection for settlement finality. It can be challenged by a court decision. In accordance with Section 115 of the Bankruptcy Act, the court is empowered to reverse the debtor's transfer of assets during the three months prior to an application to adjudicate him as bankrupt and thereafter if the court finds that the debtor transfers such assets with the intention to give undue preference to a creditor. Thus, if the court orders receivership of a clearing house member or a settlement bank, the court may cancel the transfer of funds and securities made during that period if the official receiver is able to prove that the transfer has been made by the debtor with the intention to cause other creditors a disadvantage.

	<p><i>(g) Delivery versus payment (DVP)</i></p> <p>TSD rule clearly states that all securities transactions must be settled on a DVP basis.</p> <p><b>Challenges by a court</b></p> <p>No court case has yet occurred.</p> <p><b>Enforceability of rules and regulations in the event of a bankruptcy</b></p> <p>There is no explicit legal protection of the netting procedures as well as the settlement finality when insolvency is involved. Consequently, it cannot be ruled out that transactions settled in TSD will be protected against a court decision in the event a participant becomes insolvent.</p> <p><b>Cross-border participation</b></p> <p>There is no cross-border participation in TSD.</p> <p><b>Conflict of law issues</b></p> <p>Not applicable</p>
Assessment	<b>Broadly observed</b>
Comments	For the observance of this recommendation, it is recommended to implement adequate legal measures that ensure the netting arrangement is legally protected even in the event of the insolvency of a participant.
Recommendation 2.	Confirmation of trades between market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.
Description	<p><i>Direct participants</i></p> <p>- Regulated markets (e.g., equities, government and private bonds) For transactions traded on regulated markets, trade confirmation and matching is required prior to the settlement. Trade confirmation between direct participants take place on trade date.</p> <p>- Over-the-counter (OTC) markets For OTC transaction, 90 percent of trade is confirmed on T+0.</p> <p><i>Indirect participants</i></p> <p>Trade confirmations between direct and indirect market participants are not mandatory. However, for settlement of equities and bonds, trade confirmation between direct and indirect participants takes place between T+0 and T+3. As a general practice, direct participants will issue confirmation document within T+1. If either of them does not confirm the settlement instructions, the TSD will settle such</p>

	transactions through direct market participants directly. For settlement of bonds traded via the trading system confirmation between direct and indirect participants takes place between T+0 and T+3.
Assessment	<b>Observed</b>
Comments	
Recommendation 3.	Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be assessed.
Description	<p><i>Settlement cycles</i></p> <p>Trade transactions are settled on a rolling basis in the regulated market. The settlement cycles are as follows:</p> <ul style="list-style-type: none"> <li>- Equities: T+3.</li> <li>- Government and corporate bonds: T+2.</li> </ul> <p>OTC trades: negotiable between the involved counterparties, but the majority of these transactions are settled on T+2.</p> <p><i>Failed trades and facilities to smooth the settlement process</i></p> <p>For the year 2006, the number of failed settlements was very small. There were 1,120 failed transactions on T+3, or 0.0037 percent of trading transactions or 0.0456 percent of netting transactions. In terms of value of trades, settlement failure amounted to B 3,991 million, or 0.1 percent of trading value or 0.5750 percent of net settlement value.</p> <p>For the first three months of 2007, after the Government Pension Fund (GPF) became the lender of last resort for the system, the proportion of failed trades has lowered to 0.02 percent of trading value or 0.14 percent of netting value.</p> <p><i>Incentives to settle in due time</i></p> <p>TSD rules require clearing members who fail to settle their obligations on the contractual date to contribute to the clearing fund in a greater amount than those who can settle on the contractual date.</p> <p><i>Closing of open positions</i></p> <p>The open positions are required to be closed out through securities borrowing and lending facility on T+3. If they cannot be closed by that time, a buy-in method on T+4 (one day after regular settlement date) is used, in which closing prices of the previous day plus five spreads or current best bid are used as buy-in prices, whichever is higher. If such security is not available for buy-in, the buy-in bids are allowed to linger on for up to four days with an addition of two spreads on the previous buy-in price or closing price of the previous day or current best bid, whichever is higher (until T+7). After that, if there is no offer, the defaulting member has to settle in cash together with some penalty fees.</p>

	<p><i>Monitoring of fails</i></p> <p>There are two steps for mitigating risks of fails.</p> <p>(1) The TSD uses settlement cap to monitor the ability to settle trades of each member. Settlement cap is defined as the maximum pending settlement value for 3 days, which has to be no more than 8 times of net capital level as required by the SEC. If the member has exposure higher than the limit, the TSD will call collateral in cash for the exceeding limit.</p> <p>(2) The TSD applies early warning system to predict possibility of members' causing damage to the system. The system calculates the loss probability of each member by using value-at-risk method. If any member has the loss probability more than 5 percent of confidence interval, such member is required to place collateral with the TSD. Another warning tool is called financial surveillance system which applies statistical tool to predict the financial status of members so that the TSD can assess their future financial status at the earlier stage.</p> <p><i>Analysis of shorter settlement cycles</i></p> <p>A study on the feasibility of a shorter settlement cycle known as "STP Business Case Study" has been analyzed. However, the study did not evaluate the cost and benefit of the shorter cycle. The conclusion was that the straight-through processing would help reduce manual interventions and bring about shorter settlement cycle, which can result in a decrease in operational risk by approximately 15 percent.</p>
Assessment	<b>Observed</b>
Comments	
Recommendation 4.	The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.
Description	<p>TSD acts as central counterparty for equities transactions matched at the SET. It interposes itself between the buyer and seller and guarantee that all of the obligations will be honored.</p> <p>At present, there is no CCP for bonds transactions. No cost benefit analysis has been carrying aimed at assessing whether CCP should be introduced for bonds transactions.</p> <p><i>Netting arrangements</i></p> <p>The netting arrangements are carried out on a novation basis. TSD interposes itself between clearing members. This netting arrangement is enforceable under Sections 341–348 of the Civil and Commercial Code and Section 102 of the Bankruptcy Act B.E. 2483. However, since Section 102 of the Bankruptcy Act allows netting of obligations only if the cause of indebtedness incurred before the date of the receivership order, the TSD may not net its obligations against the obligations of the insolvent participant which arise on that date.</p>
Assessment	<b>Broadly observed</b>
Comments	This recommendation deals only with the cost-benefit analysis of introducing CCP.

	<p>At present, there is a CCP for equities but not for government bonds. For the observance of this recommendation, a cost-benefit analysis should be carried out aimed at assessing whether CCP should be introduced for debt instruments transactions.</p> <p>The risk management procedures, efficiency, access, transparency, etc. are covered by the CPSS/IOSCO Recommendations for CCP.</p> <p>As an immediate measure, the CCP activities should be direct subject to the regulation and supervision of the SEC.</p> <p>The SEC is encouraged to assess the CCP function of TSD against the CPSS/IOSCO Recommendations for CCP.</p>
Recommendation 5.	<p>Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.</p>
Description	<p><i>Institutional framework</i></p> <p>Securities lending operations in Thailand are supported by comprehensive legislative and regulatory frameworks, and accounting and tax systems. In particular, Anyone, except the TSD, who intends to conduct the lending business shall apply for a license. Besides, a Royal Decree regarding tax issues in relation to the SBL transactions has been announced.</p> <p>The Institute of Certified Accountants and Auditors of Thailand (ICAAT) has issued an accounting guideline for the recording and disclosure of information on the securities lending transactions since August 2003. Such guideline is preliminarily based on two related International Accounting Standards (IAS) set by IAS No. 39) and the U.S. Financial Accounting Standards Board (FASB No.140).</p> <p>The securities lending transaction and collateral are exempted from tax exemption. There is also a clear guideline for tax treatment on benefits arising from the securities lending transactions.</p> <p><i>Automated securities lending facilities</i></p> <p>TSD has recently established a centralized securities lending facility to expedite settlement. This facility is automated and activated in case of a securities shortage. TSD assumes the role of a principal when providing securities lending. The borrowers are general members of the TSD, which are brokers. The lenders are depository members of the TSD, including institutional investors, mutual funds, private funds and GPF. The GPF has agreed to be a lender of last resort from February 1, 2007.</p> <p><i>Supervision of the risk involved in securities lending</i></p> <p>The SEC regulates and supervises securities borrowing and lending activities. A license from the SEC is required in order to provide these services. The SEC</p>

	<p>performs onsite examination of borrowing and lending functions undertaken by intermediaries. An applicant should maintain capital and reserve as required by law, having efficient policies and measures for risk management and control that are approved by the SEC, and having efficient borrowing and lending operating system. Furthermore, policy measures with respect to risk management procedures are stated in the SEC notification. For instance, intermediaries providing securities lending and borrowing facility have to analyze counterparty risk and obtain collateral from the borrowers. They must also have internal control and risk management system, which is approved by the board of directors.</p>
Assessment	<b>Observed</b>
Comments	<p>Nonresident investors are not allowed to borrow securities through commercial banks which act as intermediaries/ custodians. Furthermore, nonresident investors must place only foreign currency as collateral when acting as securities lender. However, according to some custodians, the offshore securities lending between nonresidents in Thailand securities is very active and substantial. It is worthwhile to reflect over these restrictions as the participation of nonresident would contribute to the development of the securities lending market and the liquidity in the capital market.</p>
Recommendation 6.	Securities should be immobilized or dematerialized and transferred by book entry in CSD to the greatest extent possible.
Description	<p><i>Dematerialization and immobilization</i></p> <p>The legal basis in Thailand supports the issuance of securities in a physical form. There is no legal framework for dematerialization. Transfer of securities can be by book entry or physical and securities holders can choose between these two forms. Around 74 percent of listed securities and 70 percent of government bonds are immobilized. TSD has encouraged the issuer to immobilize listed securities so as to reduce the number of certificates and increase the transfer by book entry.</p> <p><i>Transfer of title</i></p> <p>TSD operates an indirect account holding system. Securities are kept under the name of TSD, which acts as a nominee and the transfer of ownership occurs when the securities are transferred among participants in the books of TSD, which notifies by electronic message the intermediaries that the transfer has been registered in the relevant accounts held by TSD. As soon as the intermediaries receive this notification, intermediaries shall make the necessary entries in their accounts.</p> <p>For government bonds, the BOT acts as the registrar while the TSD acts as the CSD. Any transfer of securities in the CSD will have no effect on the registration system at the BOT. On the closing date of the company's register, the TSD shall notify the registrar the accounts of all deposited securities and the name list of holders of such securities existed prior to the closing date.</p>
Assessment	<b>Observed</b>
Comments	<p>A relatively high share of securities is still transferred in a physical form. This increases the level of risk and settlement costs and reduces efficiency.</p> <p>Immobilization and, in particular, dematerialization of securities and their transfer by</p>

	<p>book entry would significantly reduce the costs of settlement and custody. By reducing cost and improving efficiency, book entry settlement supports the development of the capital markets in Thailand. For this reason, the SEC together with the BOT should explore the possibility to develop a regulatory framework for dematerialized securities.</p>
Recommendation 7.	<p>Securities settlement systems should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.</p>
Description	<p><i>Legal framework</i></p> <p>The DVP settlement is clearly set out in the TSD regulations. In practice and in TSD regulation, members are required to deliver securities or make payment in the amount shown in the netting report. If not, the TSD will suspend the transfer of securities in the securities depository account of the defaulting members or the payment for securities which the defaulting members are entitled to receive.</p> <p><i>Technical framework</i></p> <p>The TSD system is based on two DVP modalities: Real Time Gross Settlement (RTGS), and Net Settlement, where both the cash and securities are netted.</p> <p>Both RTGS and Net Settlement functionalities are based on DVP mechanism, where the settlement of the cash and securities is executed simultaneously. The settlement of securities takes place by book entry on the securities accounts held by participants at TSD and the settlement of cash is carried out in central bank money through a real time link to the BAHTNET system (RTGS Payment system) operated by BOT.</p> <p>The system has one net settlement batch which is executed at 2:15 p.m. The RTGS system is available throughout the day between 8:00am and 5:00 p.m.</p> <p>The RTGS system settles bonds transactions. The RTGS system processes the transactions according to the following procedures:</p> <ol style="list-style-type: none"> <li>a) it checks the availability of the seller's securities account and, if the outcome is positive, places an accounting block equal to the negotiated quantity, until receiving notification that the cash settlement from BOT is completed;</li> <li>b) if the seller's securities account has insufficient availability, the TSD will not send payment instruction to the BOT.</li> <li>c) If there is insufficient availability in the account with BOT, the transaction is routed to the queuing system. If the transaction is cancelled from BATHNET system, the RTGS system deletes the transaction and removes the block previously put on the seller's securities account.</li> </ol>
Assessment	<b>Observed</b>
Comments	
Recommendation 8.	<p>Final settlement on a DVP basis should occur no later than the end of the settlement day. Intra-day or real-time finality should be provided where necessary to reduce risks.</p>
Description	<p><i>Intraday finality</i></p> <p>TSD provides real time finality and intraday finality. In fact, the RTGS allows real</p>

	<p>time finality after the execution of DVP settlement. For the net batch, finality is achieved at 2:00 p.m. For transactions received after this time and when there is a need for the same day delivery, settlement is carried out by the RTGS system.</p> <p>Monetary policy operations are settled by the RTGS system and finality is achieved through out the day on a real time basis.</p> <p>All settlement and book-entry transfer procedures offer real-time or intra-day finality. The intra-day and real time finality are at the complete disposal of each participant and can be used by both trading parties and the CCP in order to manage their risks efficiently or to facilitate the smooth functioning of markets.</p> <p><i>Revocation of unsettled transaction</i></p> <p>The TSD does not allow the unilateral revocation of unsettled transfer instructions late in the settlement day.</p>
Assessment	<b>Observed</b>
Comments	
Recommendation 9.	CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.
Description	<p><i>Measures to ensure settlement</i></p> <p>TSD offers two types of settlement, RTGS and central counterparty (CCP). The RTGS facility is a real time settlement process where trade is settled with immediate finality. In the event that the participant does not have the securities or the cash the settlement will not take place unless the participant is eligible for securities lending and/or intraday credit from BOT. As mentioned under Recommendation 5, TSD operates securities lending facility.</p> <p>As a CCP, TSD interposes itself as counterparty between the seller and buyer. It ensures timely settlement by using the credit line from settlement bank to handle the default of payment, and borrowing process and then buy-in process to handle the default of listed securities. Moreover, the clearing fund and reserve fund from the SET are also provided when necessary. Furthermore, TSD can call for collateral fully when the member's exposure exceeds the limit (Settlement cap in excess of eight times net capital). The outstanding balances of each member are marked to market daily. TSD limits the credit extension of each member to not more than eight times of each member's net capital value. As a CCP, TSD has access to liquidity resources to ensure timely settlement.</p> <p>TSD evaluates the probability of multiple failures by conducting stress testing on a quarterly basis to ensure the settlement completion. A stress test is run by assuming 99 percent confidence level; maximum loss is caused by failure of 14 members; volatility of SET index is at 2.65. The result shows that possible maximum loss equals to B 1,860 million at the daily trading volume of B 74,000 million and the clearing fund can cover multiple failures during the most volatile period.</p>

	<p><i>Overdraft or debit balances</i></p> <p>TSD permits debit balances in equities. However, the amount has been very small, i.e., 0.1 percent of trading value or 0.57 percent of netting value or 0.05 percent of netting transactions in 2006. The TSD has tried to minimize debit balances of equities by increasing the use of securities lending facility. Since February 2007, the amount of debit balance has declined to 0.02 percent of trading value or 0.14 percent of netting value as of February 28, 2007.</p>
Assessment	<b>Non-observed</b>
Comments	<p>For the observance of this recommendation TSD should abolish debit balances in securities.</p> <p>In addition, the CCP and CSD functions are integrated within TSD. The role of the CCP is to assume the principal risk, while that of the CSD is to avoid credit and liquidity risks. The CSD has a central function in the capital market as it is the ultimate settlement entity. In order to protect the CSD from any contagious risk inherited in CCP activities, it should be considered to separating the CCP function from the CSD function, by setting up a distinct legal entity that provides CCP services.</p>
Recommendation 10.	Assets used to settle the cash leg of securities transactions between CSD members should carry little or no credit risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of a settlement bank.
Description	<p><i>Multi-tiered structure</i></p> <p>Cash settlement in TSD is based on a multi-tiered structure. Banks that have access to BOT account settle in central bank money. Participants that are not eligible for cash accounts at the BOT rely on banks for the settlement of the cash leg of the transactions. There are 3 settlement banks acting as settlement agents for the cash clearing of securities transactions, which are Siam Commercial Bank, Krung Thailand Bank and Bangkok Bank. Their share of the cash settlement is 65, 25, and 10 percent, respectively.</p> <p><i>Settlement bank risk</i></p> <p>There are no specific rules and requirements set by TSD, BOT or SEC for settlement agents' financial soundness. However, settlement agents are banks and subject to prudential supervision by the BOT. According to a Memorandum of Understanding (MOU) signed between the BOT and SEC, the BOT will inform the SEC on any financial difficulties faced by a settlement agent. The SEC has also the possibility to pass on this information to the TSD in order to protect the integrity of the settlement system.</p> <p><i>Same day funds</i></p> <p>Proceeds of securities settlements, i.e., cash and securities, can be used immediately, as soon as they are credited on the participants' cash/securities accounts. Participants shall also transfer to their clients via Automatic Transfer System for Securities Settlement (ATS) on the same day.</p>

Assessment	<b>Observed</b>
Comments	
Recommendation 11.	Sources of operational risk arising in the clearing and settlement process should be identified and minimized through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and back-up facilities should be established to allow for timely recovery of operations and completion of the settlement process.
Description	<p><i>Identification and managing of operational risk</i></p> <p>The responsibility for identifying and managing operational risks of TSD is assumed by the risk management department of SET, taking into account the recommendations of the different department. Risk management policies are then established and periodically reviewed. In addition, there are operational manuals for clearing and settlement system, registration system, and risk management system provided.</p> <p><i>Contingency plans and back up facilities</i></p> <p>TSD has developed contingency plans to cover the failure of key systems. The contingency plans cover both the handling of contingencies/emergencies and the event of a major hardware failure (Disaster Recovery Plan). The plans identify different levels of contingencies such as minor contingency, emergency and disaster. Each level requires different actions to be carried out and different levels of responsibility. Regular reports are also prepared and discussed at the Board level.</p> <p>All procedures, databases and messages within the securities clearing and settlement procedures are duplicated. In case of failure of the primary system, the duplicated information may be used to ensure the smooth functioning of the system. When the failure involves the whole system, a secondary site is activated, ensuring the recovery of the information and restoring the operation of the system. Since all transactions are duplicated on the two sites as they take place, in case of disruption the status of all transactions is clearly identified and no transactions are lost. TSD can resume its operations within a maximum period of less than one hour. The contingency plan is tested once a year.</p> <p>Intermediaries are also involved in the testing.</p> <p><i>Protection of data communication</i></p> <p>Adequate measures are taken to ensure integrity, authentication, confidentiality, and nonreputability of data flows and data storage and effective firewalls are in place to protect the systems from intrusion attempts.</p> <p><i>Availability and scalability</i></p> <p>The key systems had no failure during 2004–2006. Total current capacity has been utilized around 60 percent. The TSD reviews risks involved in its computerized system once a year and it is in the process of developing the new system (Post Trade Integration), which can bring about an increase in its efficiency and capacity. This new system is expected to be launched in Q3 of 2007.</p> <p><i>Audits</i></p> <p>Business continuity plans are reviewed by the internal audit department of the SET</p>

	and external auditor. Each department is responsible for evaluating the operational risk of its own. The internal audit department of the SET then conducts a review again by risk-based audit. The audit report on the TSD will then be sent to TSD management and board and up to the Board of the SET. Moreover, there is an external audit team from PricewaterhouseCoopers who is responsible for conducting an audit and review on overall procedural risks of the TSD.
Assessment	<b>Observed</b>
Comments	SEC should receive a copy of the internal and external audit of TSD policy and procedures to handle operational risk.
Recommendation 12.	Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.
Description	<p><i>Legal protection of customers assets</i></p> <p>Several technical and institutional arrangements are in place in order to ensure the protection of the customers' securities. In particular, the regulation of TSD obliges the participants to segregate their assets from those of the customers. Furthermore, intermediaries holding securities in custody are obliged to reconcile the securities held in their records once a day for the book entry and once a month for the immobilized securities. In addition, intermediaries carry out internal audit to ensure sufficiency of securities to satisfy customer claims.</p> <p><i>Supervision and regulation</i></p> <p>Market intermediaries are subject to the regulation of SEC and custodians banks holding securities on behalf of their customers are subject to rigorous regulations and supervision by the BOT. In particular, they are subject to specific rules on safekeeping and protection of customer's assets. SEC performs onsite examination on market intermediaries periodically. SEC does the onsite audit on the participants' securities account balance regularly. The frequency of audit depends on the risk based approach criteria.</p>
Assessment	<b>Observed</b>
Comments	SEC and BOT should cooperate in order to ensure that custodian banks are implementing the necessary measures to protect the customer's assets.
Recommendation 13.	Governance arrangements for CSD and central counterparties should be designed to fulfill public interest requirements and to promote the objectives of owners and users.
Description	<p><i>Internal governance arrangements</i></p> <p>TSD is a subsidiary of the SET. TSD has its own board composed mainly of representatives from SET. Similar to other companies incorporated in Thailand, the corporate body of TSD is the Shareholder's Meeting and the Board of Directors. It is currently composed of 11 members, which comprises chairman of the SET board, President and Vice President of the SET, President of the TSD, two directors of the SET board (one elected by SET members, another one appointed by the SEC), and five external experts from customers/users such as fund managers or related government organizations such as the BOT. The responsibilities of the Board are</p>

	<p>established by the Thai civil law, which implies that all members of the Board are jointly liable for damages toward the company.</p> <p>The annual report of TSD contains comprehensive information on TSD, the ownership, boards and management structure, financial results and status, development and achievement. This information is also available on its web site.</p> <p><i>Users participation</i></p> <p>TSD maintains close working relationships with professional Association such as the Association of Securities Companies, Banking Association, etc. TSD carries out consultation with users on a regular basis. Participants are also invited to share the analysis and development stages of new projects and participate in tests and validations before new applications become operational. Information about major decisions (new regulations, services, projects, changes in pricing, etc.) is provided in writing and sent to all participants in advance of the effective date.</p> <p><i>Management incentives</i></p> <p>The achievement of the managers (by area of responsibility) is monitored and measured by senior management. The skills of personnel are kept updated through a number of seminars, conferences and internal training initiatives.</p>
Assessment	<b>Broadly observed</b>
Comments	<p>The majority of the board members of TSD are nominated by SET. Furthermore, SEC supervisory power on TSD is limited and is rather indirect exercised through the SET board. This gives SET a strong influence on the function and operation of TSD. Consequently, the current governance structure of TSD may not entirely serve the interest of TSD users, in particular, as many of them are not members of the stock exchange. This may lead to conflict between the interest of SET and that of TSD.</p> <p>For the compliance with this recommendation, the Governance structure of TSD should be strengthened by appointing more independent board members and by not being subject to the “regulation power” of the Board of SET.</p>
Recommendation 14.	CSD and central counterparties should have objective and publicly disclosed criteria for participation that permit fair and open access.
Description	<p><i>Access criteria</i></p> <p>The access criteria to TSD are objective and clearly disclosed on its website. The criteria of TSD permit fair and open access to all financial intermediaries. However, TSD accepts only direct participant located in Thailand. This is justified by the need to limit the system’s exposure to the risks associated with cross-border activities. Information about new regulations is immediately given to all participants through specific means of communications.</p> <p>Participants in TSD can have access to the clearing function, CSD function, settlement system or all three functionalities. Membership requirements are the same regardless of the identity and category of the applicant.</p>

	<p><i>Exit criteria</i></p> <p>The TSD rules and conditions define cases for termination or temporary suspension of membership. These cases are:</p> <ul style="list-style-type: none"> <li>- The broker/dealer license has been revoked;</li> <li>- Failure to contribute fund to the clearing fund or other fees as prescribed by the TSD;</li> <li>- Failure to comply with risk management process as defined by the TSD;</li> <li>- Inability to comply with rules, regulations, conditions prescribed by the TSD;</li> <li>- Having the operation of financial condition that might be detrimental to the clearing and settlement of securities among the clearinghouse members; and</li> <li>- Members having requested termination of their participation in TSD.</li> </ul> <p>TSD has in place steps to facilitate the orderly exit of members who no longer meet the requirements. Members who request to terminate or are ordered to terminate their membership must complete all of their obligations before they leave the system. The conditions for termination or temporary suspension of membership are publicly available on the web site in both Thai and English language.</p>
Assessment	<b>Observed</b>
Comments	The TSD may consider opening its system to foreign participants. Appropriate risk management procedures could be defined and put in place in order to monitor and manage the risks associated with cross-border activities. The participation of foreign participants would contribute to the development of the Thailand capital market.
Recommendation 15.	While maintaining safe and secure operations, recommendations securities settlement systems (RSSS) should be cost-effective in meeting the requirements of users.
Description	<p><i>Budgetary process, price structure and benchmarking</i></p> <p>TSD settlement fees are integrated into the aggregated fees collected by the parent company, SET. A large share of TSD costs is covered by revenues generated from the registrar and custody functions. There is clearly a risk of cross subsidizing; that means the customers using only the custody services of TSD are subsidizing the settlement function of TSD. Furthermore, as settlement fee is bundled in trading fee charged by SET, TSD hasn't had benchmark its prices against other CSDs in the region.</p> <p>Since a large share of TSD fees are integrated in those of the stock exchange, TSD does not have in place procedures to regularly review its pricing levels against its costs of operation.</p> <p><i>Reviewing service levels</i></p> <p>The service levels are reviewed annually by surveying users and owners (information technology of SET). Dedicated business and technical customer support departments provide support and problem resolution related to service issues. Feedback from participants is taken into account in creating customer satisfaction index, which helps the TSD to measure satisfaction of its participants.</p>

	<p><i>Operational reliability and capacity levels</i></p> <p>The TSD has procedures to review operational reliability including adequacy of its capacity. Operational reliability and possible malfunctioning are also systematically checked on a regular basis.</p>
Assessment	<b>Non-observed</b>
Comments	For compliance with this recommendation the pricing structure of TSD should be separated from that of the stock exchange, and TSD should have in place procedures to regularly review its pricing levels against costs of operation. This measure would eliminate any risk of cross subsidizing and would increase transparency of the pricing/costs structure.
Recommendation 16.	Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.
Description	<p>TSD uses proprietary communication network for securities listed on the SET. At present, this network does not offer high level of data transfer protection and data can be converted into international standards with considerable difficulty.</p> <p>For government bonds, Society for Worldwide Interbank Financial Telecommunication (SWIFT) message is used and TSD has already subscribed to SWIFTNET for communication and linked its system to those of the BOT.</p> <p>TSD is in the process of developing post trade integrated platform, which will use international standards procedures and standards.</p>
Assessment	<b>Partly observed</b>
Comments	For the observance of this recommendation, TSD should enhance its proprietary network to meet international procedures and standards.
Recommendation 17.	CSD and central counterparties should provide market participants with sufficient information for them to accurately identify the risks and costs associated with using the CSD or central counterparty services.
Description	<p><i>Availability or rules, regulations etc.</i></p> <p>Laws, regulations, systems' rules, and fees are part of the contractual agreements which are to be signed by participants. In particular, participants' rights, obligations and costs are defined in these documents, which are also available, on TSD website.</p> <p>TSD risks and steps taken to mitigate them are described in the Business Continuity and Contingency Plan, also available on the website and through official documents available to participants.</p> <p><i>CPSS/IOSCO disclosure framework</i></p> <p>TSD indicated that it has completed the questionnaire set out in the CPSS/IOSCO disclosure framework and answered the key questions in this methodology, but it has not disclosed the answers to the public. However, the SEC intends to publish the answers of key question in RSSS methodology in SEC website.</p>

Assessment	<b>Observed</b>
Comments	
Recommendation 18.	<p>Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to RSSS should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and resources to perform their responsibilities, including assessing and promoting implementation of these recommendations. They should cooperate with each other and with other relevant authorities.</p>
Description	<p><i>Entities involved in the oversight/supervision</i></p> <p>Under the SEA, the SEC has the power to:</p> <ul style="list-style-type: none"> <li>- grant clearinghouse license to the clearinghouse (Section 219);</li> <li>- determine rules applied to the clearinghouse (Section 223);</li> <li>- approve operating rules, conditions and procedures issued by the board of directors of the SET governing the clearing house function of the SET or SET's subsidiary (Section 224); and</li> <li>- restrict some activities of the TSD as a clearinghouse that may cause damage to the public by exercising power through the SET's board of directors. (Section 186).</li> </ul> <p>However, SEC does not have the legal power to directly regulate and supervise TSD. In order to influence the design and operation of TSD, SEC needs to rely on the SET.</p> <p>Despite the limitation of legal power, SEC has carried out several examinations on the performance of the TSD with emphasis on its functions and the risks associated with its activities. SEC communicates the results of its investigation either informally or formally to the TSD and SET Board of Directors, encouraging them to take appropriate actions and to report the remedial actions to the SEC.</p> <p>TSD is not subject to the oversight responsibility of the BOT, which currently does not have any clear policies and objectives for securities clearing and settlement systems.</p> <p><i>Roles, responsibilities and resources</i></p> <p>The SEC has 421 staff, 23 percent of which achieve degrees in finance, 17 percent in accountancy, and the rest in laws and economy. The SEC also has sufficient funding for its operation, with funds generated from industry fees it sets and collects. In case of a budgetary shortfall, the SEC has a permanent endowment that may be used.</p> <p><i>Cooperation between relevant authorities</i></p> <p>The MOU between the SEC and the BOT has been signed as an arrangement of communication and cooperation. However, their cooperation, which is crucial to addressing financial disruption and to share information on relevant prudential issues, has not yet been implemented.</p>

	<p><i>Cross-border cooperation</i></p> <p>There is a framework for cooperation with the regulators outside the country such as Hong Kong, Special Administrative Region (SAR) Malaysia, Australia, and Taiwan Province of China (POC), etc.</p>
Assessment	<b>Partly observed</b>
Comments	<p>For the observance of this recommendation, the following measure need to implemented:</p> <p>SEC should have the legal power to directly regulate and supervise TSD without the involvement of the Board of SET.</p> <p>The BOT should assume its oversight responsibility of TSD and should set put a dedicated team to oversee the activities of TSD.</p> <p>The SEC and BOT should develop a cooperation framework that identifies the responsibilities of each authority, aimed at avoiding overlapping and loopholes. This framework should specify clearly the tasks of each authority, areas where both authorities have common interests, exchange of information, etc. For instance and in line with international experience, the BOT would be responsible for the containment of systemic risk and the soundness of clearing and settlement systems, while SEC would be responsible for the proper conduct, protection of investors, governance, access and transparency.</p> <p>In order to increase the effectiveness of their cooperation and strengthening their overall supervision and oversight roles, the SEC and the BOT need to increase their mutual understandings of respective regulatory objectives and needs.</p> <p>SEC and BOT should enhance the capacity of their staff by setting up dedicating team in respective authority to deal with securities clearing and settlement systems. The members of these teams should be offered specific courses, seminars and on-job training.</p>
Recommendation 19.	CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlement.
Description	TSD does not have cross-border link to foreign CSDs.
Assessment	<b>Not applicable</b>
Comments	

**Table 2. Summary Observance of TSD of the CPSS-IOSCO Recommendations for Securities Settlement Systems**

Responsibility	Grading	Comments
<b>Legal risk</b>		
1. Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdiction.	BO	The contractual arrangements between TSD and its participants are fully enforceable under the Civil and Commercial Code. Netting arrangements can be challenged in the event of bankruptcy.
<b>Pre-settlement risk</b>		
2. Confirmation of trades between market participants should occur as soon as possible after trade execution, but no later than the trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.	O	Trade confirmation for regulated markets occurs the day after between direct participants, while it is not mandatory for indirect participants. For OTC transactions, market convention is to confirm the trade the same date. However, market participants may agree to confirm at a later stage.
3. Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be assessed.	O	Trade transactions are settled on a rolling basis in the regulated market and the settlement cycle for equities is T+3 and for debt instrument T+2. The settlement date for OTC transactions is negotiable, but the current convention is to settle on T+2.
4. The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.	BO	<p>TSD acts as a CCP for equities. No costs benefit analysis has been done for introducing CCP for debt instruments.</p> <p>The risk management procedures of TSD as a CCP have not yet been assessed against the CPSS/IOSCO recommendations for CCP.</p> <p>The CCP activities are currently not subject to the regulation and supervision of the SEC.</p>

Responsibility	Grading	Comments
5. Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.	O	TSD has introduced securities lending and borrowing facilities, although the activity is relatively negligible. Furthermore, there is no active securities lending market, such as a repurchase agreement in Thailand.
<b>Settlement risk</b>		
6. Securities should be immobilized or dematerialized and transferred by book entry in CSD to the greatest extent possible.	O	<p>A relatively high share of securities is still transferred in physical form. This increases the level of risk and settlement costs as well as reduces efficiency.</p> <p>Immobilization and, in particular, dematerialization of securities and their transfer by book entry would significantly reduce costs and increase the efficiency of settlement and custody.</p>
7. Securities settlement systems should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.	O	TSD provides DVP facility for the execution of settlement.
8. Final settlement on a DVP basis should occur no later than the end of the settlement day. Intra-day or real-time finality should be provided where necessary to reduce risks.	O	TSD provides both intraday and end-of-day settlement finality.
9. CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.	NO	<p>TSD permits debit balances in securities. This means securities which have not yet been delivered to the system are booked on the accounts of the participants.</p> <p>In addition, the CSD functions—registration, settlement and custody—are integrated with the CCP function of TSD. This means that CSD is exposed to the principle risk inherited in CCP activities. As best practice, the CCP function is separated from the CSD functions, and the former one is provided by a distinct legal entity.</p>

Responsibility	Grading	Comments
10. Assets used to settle the cash leg of securities transactions between CSD members should carry little or no credit risk. If Central Bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of a settlement bank.	O	The cash leg of the transactions is settled in central bank money. However, the settlement risk is concentrated in the three major banks.
<b>Operational risk</b>		
controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and back-up facilities should be established to allow for timely recovery of operations and completion of the settlement process.	O	TSD has adequate measures in place in order to identify and monitor operational risk. It also has developed a contingency plan that ensures the system can resume on short notice and the information can be retrieved. The procedures are tested on a regular basis and market participants are involved in the testing.
<b>Custody risk</b>		
12. Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.	O	Adequate measures and arrangements are in place to ensure the protection of the customers' securities. In particular, the regulation of TSD obliges the participants to segregate their assets from those of the customers and reconciliation is done on a regular basis.
<b>Other issues</b>		
13. Governance arrangements for CSDs and central counterparties should be designed to fulfill public interest requirements and to promote the objectives of owners and users.	BO	SET appoints the majority of the TSD board and defines its policy and objectives. SET has also the power to specify the issues, conditions and procedures of TSD. This create a conflict of interest, as the interest of SET may not be compatible with that of TSD, which also provides settlement and custody services to non trading members.
14. CSDs and central counterparties should have objectives and publicly disclosed criteria for participation that permit fair and open access.	O	The access and exit criteria are clearly defined and publicly disclosed. TSD accepts only direct participants located in Thailand. This is justified by the need to limit the system's exposure to the risks associated with cross-border activities.

Responsibility	Grading	Comments
15. While maintaining safe and secure operations, RSSS should be cost-effective in meeting the requirements of users.	NO	TSD's settlement and custody fees are integrated in the aggregated fees collected by the parent company, SET. These fees cover trading, clearing, settlement and custody services. Consequently, TSD is not able to benchmark its prices against other CSDs in the region. TSD service levels are reviewed annually by surveying users.
16. Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.	PO	TSD uses proprietary communication network for securities listed on the SET. This network does not offer a high level of data transfer protection and the data can be converted into international standards with considerable difficulty. For government bonds, SWIFT message is used.
17. CSDs and central counterparties should provide market participants with sufficient information for them to accurately identify the risks and costs associated with using the CSD or central counterparty services.	O	<p>Laws, regulations, systems' rules, and fees are part of the contractual agreements that are to be signed by participants. In particular, participants' rights, obligations and costs are defined in these agreements, which are also available on the TSD website.</p> <p>TSD has not publicly disclosed the questionnaire set out in the CPSS/IOSCO disclosure framework.</p>
18. Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to RSSSs should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and resources to perform their responsibilities, including assessing and promoting implementation of these recommendations. They should cooperate with each other and with other relevant authorities.	PO	<p>The SEC lacks the legal power to regulate and supervise TSD. However, through its regulation of the stock exchange, the SEC has the possibility to influence the design and operation of TSD.</p> <p>TSD is not subject to the oversight responsibility of the BOT.</p> <p>The cooperation between the SEC and BOT is not fully effective.</p>
19. CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlement.	NA	TSD has not established links to foreign CSDs.

**Table 3. Recommended Action Plan to Improve Observance of TSD of the CPSS-IOSCO Recommendations for Securities Settlement Systems**

Reference Recommendation	Recommended Action
<b>Legal risk</b>	Adequate legal measures should be implemented as soon as possible to ensure that the netting arrangement is legally protected even in the event of the insolvency of a participant.
<b>Pre-settlement risk</b>	<p>A cost-benefit analysis should be carried out aimed at assessing whether CCP should be introduced for debt instruments transactions.</p> <p>As an immediate measure, the CCP activities should be subject to the regulation and supervision of the SEC.</p> <p>SEC is encouraged to assess the CCP function of TSD against the CPSS/IOSCO Recommendations for CCP.</p>
<b>Settlement risk</b>	<p>SEC together with the BOT should explore the possibility to develop a regulatory framework for dematerialized securities. TSD should abolish debit balances in securities.</p> <p>In order to protect the CSD from any contagious risk inherited in CCP activities, it should consider separating the CCP function from the CSD function, by setting up a distinct legal entity that provides CCP services.</p>
<b>Operational risk</b>	SEC should receive a copy of the internal and external audit of TSD policy and procedures to handle operational risk.
<b>Custody risk</b>	<p>SEC and BOT should cooperate in order to ensure that custodian banks are implementing the necessary measures to protect the customer's assets.</p> <p>The TSD may consider opening its system to foreign participants .</p>

Reference Recommendation	Recommended Action
<p><b>Other issues</b></p>	<p>The TSD may consider opening its system to foreign participants. In order to eliminate the risk of cross-subsidizing and increase transparency, the pricing structure of TSD should be separated from that of the stock exchange and TSD should have in place procedures to regularly review its pricing levels against costs of operation.</p> <p>The Governance structure of TSD should be strengthened by appointing more independent board members and by not being subject to the “regulation power” of the Board of SET.</p> <p>TSD should enhance its proprietary network to meet international procedures and standards.</p> <p>SEC should have the legal power to directly regulate and supervise TSD without the involvement of the Board of SET.</p> <p>The BOT should assume its oversight responsibility of TSD and should set put a dedicated team to oversee the activities of TSD.</p>
	<p>The SEC and BOT should develop a cooperation framework that identifies the responsibility of each authority, aimed at avoiding overlapping and loopholes. This framework should specify clearly the tasks of each authority, areas where both authorities have common interests, exchange of information, etc. For instance and in line with international experience, the BOT would be responsible for the containment of systemic risk and the soundness of clearing and settlement systems, while SEC would be responsible for the proper conduct, protection of investors, governance, access and transparency.</p> <p>In order to increase the effectiveness of their cooperation and strengthening their overall supervision and oversight roles, the SEC and the BOT need to increase their mutual understandings of respective regulatory objectives and needs.</p> <p>SEC and BOT should enhance the capacity of their staff by setting up dedicating team in respective authority to deal with securities clearing and settlement systems. The members of these teams should be offered specific courses, seminars and on-job training.</p>