

Public Quantitative Disclosure Standards for Central Counterparties

Thailand Clearing House

As of March 2017



Responding institution: **Thailand Clearing House Co. Ltd. (TCH)**

Jurisdiction (s) in which the FMI operates: **Thailand**

Authority (ies) regulating, supervising or overseeing the FMI: **The Securities and Exchange Commission (SEC) and Bank of Thailand (BOT)**

The date of this disclosure is 12 April 2017

This disclosure can also be found at www.set.or.th/tch

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PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data | |
|--------------------------------|---|-----------------|------------|
| | | Derivatives | Securities |
| Principle 4 Credit Risk | | | |
| 4.1 | Total value of default resources (excluding initial and retained variation margin) | | |
| | (a) Pre-funded default resources | 1,138.14 | 6,335.15 |
| | i. Own capital that forms part of the default waterfall (further split by whether used before, alongside, or after, member contributions) | | |
| | • Prefunded – Own Capital Before | 40.00 | 60.00 |
| | • Prefunded – Own Capital Alongside | - | - |
| | • Prefunded – Own Capital After | 391.80 | 4,702.56 |
| | ii. Aggregate participant contributions (both amount required and post-haircut amount posted, where different) | 706.34 | 1,572.59 |
| | iii. Other | - | - |
| | (b) Committed | | |
| | i. Own/parent funds that are committed to address a participant default (or round of participant defaults) | - | - |
| | ii. Aggregate participant commitments to address an initial participant default (or initial round of participant defaults) | 706.34 | - |
| | iii. Aggregate participant commitments to replenish the default fund to deal with a subsequent participant default (or round of participant defaults) after the | NA | |

PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|-------|--|--|---|
| | | Derivatives | Securities |
| | initial participant default (or round of participant defaults) has been addressed. | | |
| | iv. Other | - | - |
| 4.2 | Kccp - Kccp need only be reported by those CCPs which are, or seek to be, a “qualifying CCP” under relevant law. | THB 221,390 (Data as of 31 March, 2017) | - |
| | C-FACTOR | 0.233% | - |
| 4.4 | State whether the CCP is subject to a minimum “Cover 1” or “Cover 2” requirement in relation to total pre-funded default resources. | Cover 2 | Cover 2 |
| 4.4.1 | For each clearing service, state the number of business days within which the CCP assumes it will close out the default when calculating credit exposures that would potentially need to be covered by the default fund. | 1 day | 3 - 5 days Depend on Securities Type |
| 4.4.2 | For each clearing service, what is the estimated largest aggregate stress loss (in excess of initial margin) that would be caused by the default of any single participant and its affiliates (including transactions cleared for indirect participants) in extreme but plausible market conditions. | N/A | |
| 4.4.3 | Report the number of business days, if any, on which the above amount exceeded actual pre-funded default resources (in excess of initial margin) and by how much. | N/A | |
| 4.4.4 | What was the actual largest aggregate credit exposure (in excess of initial margin) to any single participant and its affiliates (including transactions | N/A | |

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As of Quarter 1/2017

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|-------------------------------|---|--|--|
| | | Derivatives | Securities |
| | cleared for indirect participants). | | |
| 4.4.5 | What is the estimated largest aggregate stress loss (in excess of initial margin) that would be caused by the default of any two participants and their affiliates (including transactions cleared for indirect participants) in extreme but plausible market conditions. | N/A | |
| 4.4.6 | Report the number of business days, if any, on which the above amount exceeded actual pre-funded default resources (in excess of initial margin) and by how much. | N/A | |
| 4.4.7 | What was the actual largest aggregate credit exposure (in excess of initial margin) to any two participants and their affiliates (including transactions cleared for indirect participants) | N/A | |
| Principle 5 Collateral | | | |
| 5.1 | Assets eligible as initial margin and the respective haircuts applied. | Please refer to the information disclosed at TCH website http://www.set.or.th/tch/en/derivatives/news.html TCH → Rules & Regulations → Derivatives → What's New → Haircut Rate | Please refer to the information disclosed at TCH website http://www.set.or.th/tch/en/equity/equity_announcement.html TCH → Rules & Regulations → Equity and Bond → Announcement/Circular Letter → Haircut Rate |

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As of Quarter 1/2017

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|---------------------------|--|--|-------------|
| | | Derivatives | Securities |
| 5.2 | Assets eligible for pre-funded participant contributions to the default resources, and the respective haircuts applied (if different from 5.1). | Same as 5.1 | Same as 5.1 |
| 5.3 | Results of testing of haircuts; <ul style="list-style-type: none"> • Confidence interval targeted through the calculation of haircuts. • Assumed holding/liquidation period for the assets accepted. • Look-back period used for testing the haircuts. • The number of days during the look-back period on which the fall in value during the assumed holding/liquidation period exceeded the haircut on an asset. | N/A | |
| Principle 6 Margin | | | |
| 6.1 | For each clearing service, total initial margin required, split by house and client. | | |
| | <ul style="list-style-type: none"> • House | 1,193.56 | 476 |
| | <ul style="list-style-type: none"> • Client | 4,237.52 | - |
| 6.2 | Total initial margin held, split by house and client (if segregated). For each of the overall house and client totals (or for just the overall total posted, if house and client are not segregated). | | |

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As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|-----|--|--|--|
| | | Derivatives | Securities |
| | House <ul style="list-style-type: none"> Secured cash deposited at commercial banks (including reverse repo) Unsecured cash deposited at commercial banks Non-cash | 1,663.30 | 552.31 |
| | Client <ul style="list-style-type: none"> Secured cash deposited at commercial banks (including reverse repo) Unsecured cash deposited at commercial banks Non-cash | 7,435.83 | - |
| 6.3 | Initial margin rates on individual contracts, where the CCP sets such rates. | Please refer to the information disclosed at TCH website http://www.set.or.th/tch/en/derivatives/news.html TCH → Rules & Regulations → Derivatives → What's New → Margin | Please refer to the information disclosed at TCH website https://www.set.or.th/tch/en/equity/equity_announcement.html TCH → Rules & Regulations → Equities & Bond → Announcement / Circular Letter → Other → Notification : Early Warning |

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As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|-----|--|--|---|
| | | Derivatives | Securities |
| 6.4 | Type of initial margin model used (e.g. portfolio simulation or risk aggregation) for each clearing service and the key model design parameters for each initial margin model applied to that clearing service. | | |
| | i. Single-tailed confidence level targeted | 99% | 99% |
| | ii. Sample/data look-back period for calibrating the model | At least 120 days | At least 250 days |
| | iii. Adjustments or scalars or weighting, if any, applied to historical data | - | - |
| | iv. Close-out/holding periods by product (or, if varying, contract type) | 1 day | 3 - 5 days Depend on securities type |
| | v. For risk aggregation models, the margin rate per contract and details of the offsets between different contracts [e.g. for SPAN style models this might include inter-month spread charges and inter-contract spread credits] | Please refer to the information disclosed at TCH website http://www.set.or.th/tch/en/derivatives/news.html TCH → Rules & Regulations → Derivatives → What's New → Margin | - |
| | vi. The frequency of parameter reviews | Monthly | Daily |
| 6.5 | Results of back-testing of initial margin. At a minimum, this should include, for each clearing service and each initial margin model applied to that clearing service: | N/A | |

PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data | |
|-----------------------------------|---|-----------------|------------|
| | | Derivatives | Securities |
| | (a) Number of times over the past twelve months that margin coverage held against any account fell below the actual marked-to-market exposure of that member account. | - | - |
| | (b) Number of observations (i.e. number of accounts multiplied by number of days covered in the back test) | - | - |
| | (c) Achieved coverage level, i.e. $[(b) - (a)]/(b)$ | - | - |
| 6.6 | Average total variation margin paid to the CCP by participants each business day. | N/A | |
| Principle 7 Liquidity Risk | | | |
| 7.1 | State whether the clearing service maintains sufficient liquid resources to 'Cover 1' or 'Cover 2'. | Cover 2 | Cover 2 |
| 7.1.1 | Size and composition of qualifying liquid resources for each clearing service (or at aggregate CCP level if not managed at clearing service level) – for each relevant currency – split by: | N/A | |
| | (a) Cash deposited at a central bank of issue of the currency concerned | - | - |
| | (b) Cash deposited at other central banks | - | - |
| | (c) Secured cash deposited at commercial banks (including reverse repo) | - | - |

PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|-------|--|--|------------|
| | | Derivatives | Securities |
| | (d) Unsecured cash deposited at commercial banks | - | - |
| | (e) Secured committed lines of credit (ie those for which collateral/security will be provided by the CCP if drawn) including committed foreign exchange swaps and committed repos; | - | - |
| | (f) Unsecured committed lines of credit (ie which the CCP may draw without providing collateral/security) | - | - |
| | (g) 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. | - | - |
| | (h) other (please specify).State whether the CCP has routine access to central bank liquidity or facilities. | - | - |
| 7.2 | Size and composition of any supplementary liquidity risk resources for each clearing service above those qualifying liquid resources above. | 11,920.60 | 10,834.89 |
| 7.3 | For each clearing service (or at the aggregate CCP level if not managed at clearing service level). | N/A | |
| 7.3.1 | Estimated largest same-day and, where relevant, intraday and multiday payment obligation in total that would be caused by the default of any single participant and its affiliates (including transactions cleared for indirect | - | - |

PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|-------|--|--|------------|
| | | Derivatives | Securities |
| | participants) in extreme but plausible market conditions. | | |
| 7.3.2 | Report the number of business days, if any, on which the above amount exceeded its qualifying liquid resources (identified as in 7.1, and available at the point the breach occurred), and by how much. | - | - |
| 7.3.3 | Actual largest intraday and multiday payment obligation of a single participant and its affiliates (including transactions cleared for indirect participants) over the past twelve months. | - | - |
| 7.3.4 | Estimated largest same-day and, where relevant, intraday and multiday payment obligation in each relevant currency that would be caused by the default of any single participant and its affiliates (including transactions cleared for indirect participants) in extreme but plausible market conditions. | - | - |
| 7.3.5 | Report the number of business days, if any, on which the above amounts exceeded its qualifying liquid resources in each relevant currency (as identified in 7.1 and available at the point the breach occurred), and by how much. | - | - |

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| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|--|---|-------------------------------------|------------|
| | | Derivatives | Securities |
| Principle 12 Exchange of value settlement systems | | | |
| 12.1 | Percentage of settlements by value effected using a DvP, DvD or PvP settlement mechanism. | - | DVP 100% |
| 12.2 | Percentage of settlements by volume effected using a DvP, DvD or PvP settlement mechanism. | - | DVP 100% |
| Principle 13 Default rules and procedures | | | |
| 13.1 | CCPs are encouraged, subject to legal constraints on timing and content, to disclose as soon as practicable quantitative information related to defaults, such as: Appropriate references to other published material related to the defaults may also be helpful. <ul style="list-style-type: none"> • Amount of loss versus amount of initial margin • Amount of other financial resources used to cover losses • Proportion of client positions closed-out/ported | N/A | |
| Principle 14 Segregation and portability | | | |
| 14.1 | Total Client Positions held as a share of notional values cleared or of the settlement value of securities transactions Split by clearing service, of total client positions held in : | N/A | |

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| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|---|---|--|------------|
| | | Derivatives | Securities |
| | (a) Total Client positions individually segregated accounts | - | - |
| | (b) Omnibus client-only accounts, other than LSOC accounts | - | - |
| | (c) Legally segregated but operationally comingled (LSOC) accounts | - | - |
| | (d) Comingled house and client accounts | - | - |
| Principle 15 General business risk | | | |
| 15.1 | (a) Value of liquid net assets funded by equity (b) Six months of current operating expenses | Please refer to TCH Factsheet disclosed at SET Website https://www.set/tch/en/derivatives/tch_factsheet.html TCH → Pubicized Document → TCH Factsheet | |
| 15.2 | Financial disclosures: including, but not limited to <ul style="list-style-type: none"> • Total revenue • Total expenditure • Profits • Total assets • Total liabilities | Total revenue: 577.50 MB Total expenditure: THB 445.80 MB Profit: THB131.71 MB Total assets: THB 12,977.18 MB Total liabilities: THB 11,938.96 MB For more detailed information, please refer to the TCH Factsheet disclosed at SET Website https://www.set/tch/en/derivatives/tch_factsheet.html TCH → Pubicized Document → TCH Factsheet | |
| 15.3 | Income breakdowns: <ul style="list-style-type: none"> • Percentage of total income that comes from fees related to provision of clearing services. | Please refer to TCH Factsheet disclosed at SET Website https://www.set/tch/en/derivatives/tch_factsheet.html TCH → Pubicized Document → TCH Factsheet | |

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| No. | Disclosure Description | Disclosure Data | |
|--|---|--|---|
| | | Derivatives | Securities |
| | <ul style="list-style-type: none"> Percentage of total income that comes from the reinvestment (or rehypothecation) of assets provided by clearing participants. | (TCH does not rehypothecation or reinvestment of assets provided by clearing participants.) | |
| Principle 16 Custody and investment risks | | | |
| 16.1 | Total cash (but not securities) received from participants, regardless of the form in which it is held, deposited or invested, split by whether it was received as initial margin or default fund contribution. | Margin : 9,039.11 - THB 8,559.93 - USD 14.15 million USD (equivalent 479.18 MB.) Securities Depository : 842.95 Clearing Fund : 706.34 | Margin : 552.31 Clearing Fund : 1,572.59 |
| 16.2 | How the total cash received from participants (ie the combined total of initial margin and default fund contributions in 16.1) is held/deposited /invested. | | |
| 16.2.1 | Percentage of this total participant cash held as cash deposits (including through reverse repo). | Margin : 100% Securities Depository : 74.16% | Margin : 100% Clearing Fund : 0.005% |
| 16.2.2 | Percentage of this total participant cash invested in securities. further split into: | | |
| | <ul style="list-style-type: none"> Government Bond | Securities Depository : 25.82% Clearing Fund : 99.95% | Clearing Fund : 99.995% |
| | <ul style="list-style-type: none"> Other instruments: other current asset /accrued payable /dividend payable / due to investor | Securities Depository : 0.02% Clearing Fund : 0.05% | |

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| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|------|--|-------------------------------------|------------|
| | | Derivatives | Securities |
| 16.3 | Rehypothecation of participant assets (ie non-cash) by the CCP where allowed, split by initial margin and default fund <ul style="list-style-type: none"> • Total value of participant non-cash rehypothecated. • Maturities (overnight/one day; over one day and up to one week; over one week and up to one month; over one month and up to one year; over one year and up to two years; over two years) | Not Applicable | |

Principle 17 Operational risk

| | | | |
|------|---|-------------|-------------|
| 17.1 | Operational availability target for the core system(s) involved in clearing (whether or not outsourced) over specified period for the system. | 99.97% | 99.97% |
| 17.2 | Actual availability of the core system(s) over the previous twelve month period. | 100% | 100% |
| 17.3 | Total number and duration of failures affecting the core system(s) involved in clearing over the previous twelve month period. | 0 | 0 |
| 17.4 | Recovery time objective(s) (e.g. within two hours) | 0 - 2 Hours | 0 - 2 Hours |

Principle 18 Access and participation requirements

PFMI Quantitative Disclosure



As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|---|---|--|--|
| | | Derivatives | Securities |
| 18.1 | Number of clearing members, by clearing service. <ul style="list-style-type: none"> Category of membership (e.g. direct clearing member, general clearing member) Type of participant (central bank, CCP, bank, other) Domestic or foreign participants. | Clearing Member : 44 For more detail information about TCH Clearing member participant, please refer to the information disclosed at TCH website : https://www.set.or.th/tch/en/derivatives/deriv_members.html | Clearing Member : 39 For more detail information about TCH Clearing member participant, please refer to the information disclosed at TCH website : https://www.set.or.th/tch/en/equity/members.html |
| 18.4 | Segregated Default Fund Concentration. For each segregated default fund with ten or more members, but fewer than 25 members: <ul style="list-style-type: none"> Percentage of participant contributions to the default fund contributed by largest five and ten clearing members in aggregate. | 32.67% (five) 48.32% (ten) | 25.58% (five) 43.47% (ten) |
| Principle 19 Tiered participation arrangements | | | |
| 19.1 | Measures of concentration of client clearing: <ul style="list-style-type: none"> Number of clients (if known) Number of direct members that clear for clients Per cent of client transactions by clearing service (by total gross notional for derivatives or total cleared value of securities transactions or similar) attributable to the top five clearing members (if the CCP has ten or more clearing members) and top ten clearing members. | Not Applicable | |

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As of Quarter 1/2017

| No. | Disclosure Description | Disclosure Data (Unit: million THB) | |
|--|---|--|--|
| | | Derivatives | Securities |
| Principle 20 FMI Links | | Not Applicable | |
| Principle 23 Disclosure of rules, key procedures, and market data | | | |
| 23.1 | Average daily volumes and notional values of new trades cleared, by instrument/asset class, by currency, and split by OTC or exchange-traded. | Please refer to the information disclosed at TFEX website : http://www.tfex.co.th/tfex/dailyMarketReport.html?locale=en_US | Please refer to the information disclosed at SET website: https://marketdata.set.or.th/mkt/marketsummary.do |
| 23.2 | Gross notional outstanding/total settlement value of novated but not-yet-settled securities transactions per instrument/asset class and currency and split by OTC or exchange-traded. | - | - |
| 23.3 | Average daily volumes and notional contract values submitted by each execution facility or matching/confirmation venue. | Please refer to the information disclosed at TFEX website : http://www.tfex.co.th/tfex/dailyMarketReport.html?locale=en_US | Please refer to the information disclosed at SET website: https://marketdata.set.or.th/mkt/marketsummary.do |



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