

# International Swap Regulation Study

## SECTION G

### Question 1 & 2

SGX does not provide any trading facility for swaps.

### Question 3

*Please identify major central counterparties (and the Swap-related regulator(s) for each) for the clearing of Swaps.*

Singapore Exchange Derivatives Clearing Limited (SGX-DC) (the “Clearing House”), a wholly owned subsidiary of Singapore Exchange Limited (“SGX”), is a major central counterparty in Singapore. SGX-DC is licensed under the Securities & Futures Act (Chapter 289) of Singapore (“SFA”) as a “designated Clearing House” and is regulated by the Monetary Authority of Singapore (“MAS”).

The SGX-DC Clearing Rules (“Rules”) govern its Clearing Members and include among other things admission standards, ongoing requirements, risk management and default management. These Rules are publicly available on the SGX website at the following link:

<http://info.sgx.com/SGXRuleb.nsf/088c6cfc69b4f6a4482575610035f234?OpenView&Start=1&Count=30&Expand=8#8>

*a. For each central counterparty, please provide a listing and description of the major classes and subclasses of cleared Swap contracts, such as CDS, equity swaps, currency swaps, IRS, and commodity swaps;*

SGX-DC currently clears Commodity swaps and Interest Rate swaps. The clearing of Asian Non-deliverable forwards is scheduled for end October 2011.

*b. For classes and subclasses of contracts identified in paragraph a above, please provide:*  
*i. The clearing volumes for 2009, 2010, and year-to-date; and*  
*ii. The outstanding notional values at year-end 2008, 2009, 2010, and the most recent available;*

Please refer to the table below

		Interest Rate Swaps
Description		Plain Vanilla Singapore Dollar swaps with constant notional principal
Clearing Volume	2011 YTD (at 31 Aug)	S\$160b
	2010*	S\$5b
	2009	N.A.
Notional Outstanding	31-Aug-11	S\$139b
	2010*	S\$5b
	2009	N.A.

*\*launched in November 2010*

		Commodity Swaps		
Description		Energy Swaps	Forward Freight Agreements	Bulk Commodities
Clearing Volume	2011 YTD (at 31 Aug)	8,470	61,620	45,370
	2010	38,590	82,620	35,410
	2009	25,000	60,670	12,670
Open Interest	31-Aug-11	620	17,820	8,670
	2010	2,800	15,800	1,940
	2009	1,530	11,800	1,120

- c. For each central counterparty, please provide:
- A description of the method used to clear Swaps;
  - A description of the systems used to establish margin on individual Swaps and on Swap portfolios; and
  - The name of each major clearing member of the central counterparty (and the Swap-related regulator(s) for each).

i. Clearing Process

SGX-DC Rule 7.02 sets out the conditions and process for novation of eligible OTC contracts to SGX-DC.

Under these Rules, OTC transactions must be registered by Clearing Members with the clearing house through the Trade Registration System ("TRS") or other facility as prescribed by SGX-DC. The TRS performs the requisite eligibility checks as specified in the Rules and once conditions are met, the trades are registered with the clearing house.

## Margining

OTC transactions are novated to the clearing house subject to margin requirements. Prescribed margin requirements are established by the clearing house. Clearing Members are required to place Initial Margins to collateralize their exposures with the clearing house. In addition to initial margins, the clearing house will mark-to-market each Clearing Member's positions daily and variation margins will be settled between the clearing house and members. For Interest Rate swaps, the mark-to-market process is conducted 3 times daily and for Commodity swaps, 4 times daily. Any losses arising from each mark-to-market cycle must be collateralized by the Clearing Member to prevent any build-up of exposures. This is performed through a process of margin calls on Clearing Members. The margining provisions are set out in Rules 7.11 to 7.13.

## Settlement of Margin Obligations

The timely settlement of margin obligations by Clearing Members is safeguarded through the appointed Settlement Banks by each member. The Settlement Bank arrangement transfers the settlement risk for Clearing Members to Settlement Banks. The Settlement Bank is required to sign a Letter of Undertaking that it is duly authorized to act on instructions received by SGX-DC and will, within a specified time, transfer amounts between the Members' accounts and that of the clearing house to meet margin obligations.

### ii. Establishment of Margin Requirements

For the margining of OTC commodities, SGX-DC utilizes the Standard Portfolio Analysis of Risk ("SPAN") loss-estimation methodology to calculate the maintenance margin. SPAN evaluates overall portfolio risk through a scenario grid-based approach, with a loss (or gain) attached to each scenario, corresponding to a particular combination of price change, volatility change and decrease in time to expiration. The worst loss under all scenarios is the margin requirement. In terms of confidence level, SGX-DC follows a principle of selecting confidence intervals within the 95-99% range to apply across all contracts and products cleared, based on historical price volatility studies of different time periods up to a maximum of 12 months. The holding period would cover the expected time to liquidate the product in event of default.

In the margining of OTC financial derivatives such as Interest Rate swaps, SGX uses the Historical simulated Value-at-Risk ("HSVaR") methodology. The margin for each Clearing Member's positions is calculated on a portfolio basis, at the 99th percentile confidence level, based on rolling five years of daily historical price data, and assuming a 5-day holding period. The 5-day holding period is deemed necessary to account for the period of time from

the point of default to the neutralization of risks in the portfolio, including hedging.

On a half-yearly basis, SGX-DC conducts a review of the appropriateness of the methodologies and parameters used for margining as well as for stress testing, and submits a report within 30 days of completion to the MAS. The MAS reviews and approves SGX-DC's margin methods and models.

iii. List of current Clearing Members (and corresponding Swaps-related regulators):

A) Members clearing Interest Rate Swaps

	<b>Clearing Member</b>	<b>Singapore Regulator</b>	<b>Home Regulator</b>
1)	Barclays Bank PLC	Monetary Authority of Singapore	Financial Services Authority (UK)
2)	Citibank N.A.	Monetary Authority of Singapore	Office of the Comptroller of the Currency (US)
3)	Credit Suisse AG	Monetary Authority of Singapore	Financial Market Supervisory Authority (Swiss)
4)	DBS Bank Limited	Monetary Authority of Singapore	
5)	Deutsche Bank AG	Monetary Authority of Singapore	Federal Financial Supervisory Authority (German)
6)	The Hongkong and Shanghai Banking Corporation Limited	Monetary Authority of Singapore	Financial Services Authority (UK)
7)	Oversea-Chinese Banking Corporation Limited	Monetary Authority of Singapore	
8)	The Royal Bank of Scotland PLC	Monetary Authority of Singapore	Financial Services Authority (UK)
9)	Standard Chartered Bank	Monetary Authority of Singapore	Financial Services Authority (UK)
10)	United Overseas Bank Limited	Monetary Authority of Singapore	
11)	UBS AG	Monetary Authority of	Financial Market

		Singapore	Supervisory Authority (Swiss)
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B) Members clearing Commodity Swaps

	<b>Clearing Member</b>	<b>Singapore Regulator</b>	<b>Home Regulator</b>
1)	ABN AMRO Clearing Bank N.V	Monetary Authority of Singapore	Netherlands Authority for the Financial Markets
2)	Barclays Bank PLC	Monetary Authority of Singapore	Financial Services Authority (UK)
3)	BNP Paribas Securities Services SG Branch	Monetary Authority of Singapore	
4)	CIMB Securities (S) Pte Ltd	Monetary Authority of Singapore	
5)	Citigroup Global Markets Securities (S) Pte Ltd	Monetary Authority of Singapore	
6)	Credit Suisse Securities (S) Pte Limited	Monetary Authority of Singapore	
7)	DBS Vickers Securities (Singapore) Pte Ltd	Monetary Authority of Singapore	
8)	Deutsche Futures Singapore Pte Ltd	Monetary Authority of Singapore	
9)	Goldman Sachs Futures Pte Ltd	Monetary Authority of Singapore	
10)	HSBC Futures (Singapore) Pte Ltd	Monetary Authority of Singapore	
11)	J.P. Morgan	Monetary Authority of Singapore	

	Securities Singapore Pte Ltd		
12)	Merrill Lynch (Singapore) Pte Ltd	Monetary Authority of Singapore	
13)	MF Global Singapore Pte. Ltd	Monetary Authority of Singapore	
14)	Mizuho Futures (Singapore) Pte Ltd	Monetary Authority of Singapore	
15)	Morgan Stanley (Asia) Securities Pte Ltd	Monetary Authority of Singapore	
16)	Newedge Financial Singapore Pte. Ltd.	Monetary Authority of Singapore	
17)	Nomura Securities Singapore Pte. Ltd.	Monetary Authority of Singapore	
18)	OCBC Securities Singapore Pte Ltd	Monetary Authority of Singapore	
19)	Ong First Tradition Pte. Ltd.	Monetary Authority of Singapore	
20)	Phillip Futures Pte. Ltd.	Monetary Authority of Singapore	
21)	The Royal Bank of Scotland PLC	Monetary Authority of Singapore	Financial Services Authority (UK)
22)	UBS Futures Singapore Limited.	Monetary Authority of Singapore	
23)	UOB Bullion & Futures Limited	Monetary Authority of Singapore	