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Regulatory Reform of OTC
Derivatives and Its
Implications for Sovereign
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Regulatory Reform of OTC Derivatives and Its Implications for Sovereign Debt Management Practices

*Report by the OECD Ad Hoc Expert Group on OTC
Derivatives: Regulations and Implications for
Sovereign Debt Management Practices*

JEL Classification: G18, H63, G15

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Abstract

REGULATORY REFORM OF OTC DERIVATIVES AND ITS IMPLICATIONS FOR SOVEREIGN DEBT MANAGEMENT PRACTICES

This report analyses the possible implications for public debt management practices arising from regulatory changes for over the counter derivatives (OTCD) that are being developed worldwide to strengthen the resiliency of the financial system.

Many OECD sovereigns use OTCD in their debt management activities (mainly interest rate swaps and cross-currency swaps). Some of the regulatory initiatives for OTCD markets may lead to changes in sovereign and dealer practices. Potential changes include modifications to collateralization requirements, the use of central clearing for OTCD trades, and increased pre- and post-trade reporting. Issues around sovereign exemptions and the transition of existing OTCD portfolios may also require attention from sovereign debt managers.

Moreover, as sovereigns develop their debt and asset management policies, they may also need to account for the broader public policy implications of their decisions. To maintain well-functioning domestic capital markets and help ensure effective implementation of the regulatory changes, sovereigns may also need to consider adjusting their funding strategies.

The current publication is the outcome of recent background work and discussions by the OECD Working Party on Public Debt Management. OECD debt managers provided input to the study, while it was prepared by a collective of experts from the OECD Working Party on Public Debt Management. All chapters were edited by Hans J. Blommestein, Co-ordinator of the Working Party's activities and Ron Morrow, Chair of the Working Party.

Other studies and reports by the OECD Working Party on Public Debt Management include *OECD Public Debt Markets: Trends and Recent Structural Changes* (Paris, 2002); Hans J. Blommestein, ed., (2002), *Public Debt Management and Government Securities Markets in the 21st Century* (OECD, Paris), Hans J. Blommestein, ed., (2005), *Advances in Risk Management of Government Debt* (OECD, Paris), *A Public Debt Management Perspective on Proposals for Restrictions on Short Selling of Sovereign Debt* (2010, Paris).

In parallel, the OECD publishes annually *Central Government Debt: Statistical Yearbook*, *African Central Government Debt: Statistical Yearbook* and the *Sovereign Borrowing Outlook*.

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Key words: Government policy and regulation, debt management; sovereign debt, general financial markets, international financial markets

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Report by the OECD Ad Hoc Expert Group on OTC Derivatives: Regulations and Implications for Sovereign Debt Management Practices

Members of the Working Group

| | |
|-----------------------|--------------------------------------|
| Canada: | Ron MORROW, Chair |
| OECD: | Hans BLOMMESTEIN |
| Denmark: | Ove Sten JENSEN, Uffe MIKKELSEN |
| Finland: | Teppo KOIVISTO |
| Germany: | Carl Heinz DAUBE, Andreas DORFMÜLLER |
| Sweden: | Thomas OLOFSSON |
| United States: | Colin KIM |

Contributors:

In addition to the Working Group Members, the following persons contributed to this report:

| | |
|----------------|---------------------------|
| Canada: | Meyer AARON, Oumar DISSOU |
| OECD: | Ahmet KESKINLER |
| BIS: | Jacob GYNTELBERG |

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TABLE OF CONTENTS

| | |
|----------------------------------------------------------------------------|----|
| 1. INTRODUCTION..... | 6 |
| 2. OECD SURVEY ON DMOS AND OTC DERIVATIVES..... | 6 |
| 2.1 Types of derivative instruments..... | 7 |
| 2.2 Outstanding and transacted notional amounts | 8 |
| 2.3 Collateralization policies | 10 |
| 2.4 Reporting and accounting standards | 11 |
| 3. THE CHANGING REGULATORY LANDSCAPE | 11 |
| 3.1 Brief overview of the new regulatory regimes..... | 12 |
| 3.1.1 Basel III..... | 12 |
| 3.1.2 The Dodd-Frank Act | 12 |
| 3.1.3 The European regulations..... | 12 |
| 3.2 Collateralization practices..... | 13 |
| 3.3 A push to central clearing counterparty | 14 |
| 3.3.1 Overview of central counterparties | 15 |
| 3.3.2 Regulatory initiatives and CCPs..... | 17 |
| 3.4 Trading venues..... | 17 |
| 3.5 Trade repositories..... | 17 |
| 4. EXPECTED IMPACTS ON DMOS | 18 |
| 4.1 Implications for CSA practices..... | 18 |
| 4.2 Centralized clearing | 19 |
| 4.3 Implications for existing OTCD portfolios | 21 |
| 4.4 Trade repositories..... | 21 |
| 4.5 Exchange-based trading | 22 |
| 4.6 Implications for the well-functioning of government debt markets..... | 22 |
| 5. POLICY ISSUES FOR DMOS | 23 |
| 5.1 Financial stability versus traditional debt management guidelines..... | 23 |
| 5.2 Balancing cost and risk | 24 |
| Concentration of risk..... | 24 |
| 5.3 Risk management policies | 25 |
| 5.3.1 Operational risk | 25 |
| 5.3.2 Credit risk..... | 25 |
| 5.4 Accounting and budgeting issues..... | 25 |
| 5.5 Legislative issues | 26 |
| 6. SUMMARY | 26 |
| ANNEX I: SWEDEN CCP CASE STUDY | 27 |
| ANNEX II: THE AGENT AND PRINCIPAL MODELS | 38 |
| ANNEX III: MAIN OPERATIONAL INTEREST RATE SWAP CCPS | 40 |

REGULATORY REFORM OF OTC DERIVATIVES AND ITS IMPLICATIONS FOR SOVEREIGN DEBT MANAGEMENT PRACTICES

Introduction¹

The regulatory response to the financial crisis has been a key driver of changes in the over-the-counter derivatives (OTCD) market. These reforms are being driven by G-20 commitments,² the development of Basel III and changes to capital charges, along with Dodd-Frank in the United States, and other European Union regulations. Although the details of the reforms are being finalized, it is already evident that Debt Management Office (DMO) collateralization policies and practices will have to be reviewed in light of the higher capital costs and funding requirements faced by financial institutions and other dealers who transact in the OTCD market. Also on the horizon are clearing of OTCD trades through central counterparties (CCPs), reporting of OTCD contracts to trade repositories, and the movement of OTCD trades onto exchanges or electronic trading platforms.

In adapting to these changes, DMOs will also have to take into account the broader public policy implications of their decisions beyond narrow financial/fiscal considerations, since their decisions could impact the general functioning of markets for government securities and related derivatives. The magnitude of this impact will depend on the interaction between the regulatory changes and subsequent changes in the business policies of DMOs' and financial institutions.

The key objectives of this report are to develop, to the extent possible, a framework to analyze the implications of the OTCD regulatory reforms and DMO OTCD policies.

This report is organized as follows. Section 2 examines the use of OTCD products by sovereigns. Consideration is given to the types of instruments used, rationale for using OTCD products and sovereigns' collateralization practices. Section 3 discusses the regulatory initiatives that are currently being developed to address systemic risk in the financial system and channels through which they may affect sovereigns. Section 4 discusses some implications for sovereign funds management activities and Section 5 provides a list of policy considerations for members to analyze OTC derivatives from a sovereign end-user perspective. A summary is included in Section 6.

1. OECD Survey on DMOs and OTC Derivatives

A survey of OECD member DMOs was conducted to explore the use of derivatives by OECD sovereign issuers from the following perspectives: (i) types of instruments, (ii) notional outstanding

¹ The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

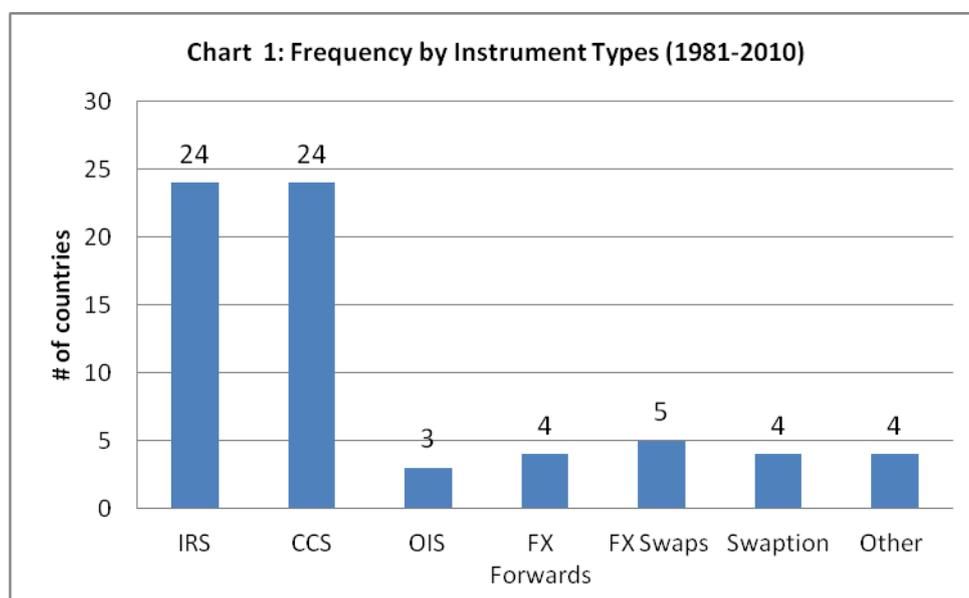
² http://www.g20.org/Documents/pittsburgh_summit_leaders_statement_250909.pdf

amounts, and (iii) counterparties (including collateralization policies). The survey was sent to 33 OECD DMOs, yielding 32 responses.³

2.1 Types of derivative instruments

The survey asked DMOs for the frequency and history of their use of the different OTCD instruments. Four DMOs answered that they have never used derivatives; two-thirds of them are contemplating using derivatives in the future. In addition, there are 3 DMOs that have not used derivatives since 2007/2008 and one DMO that has not used them from 2002.

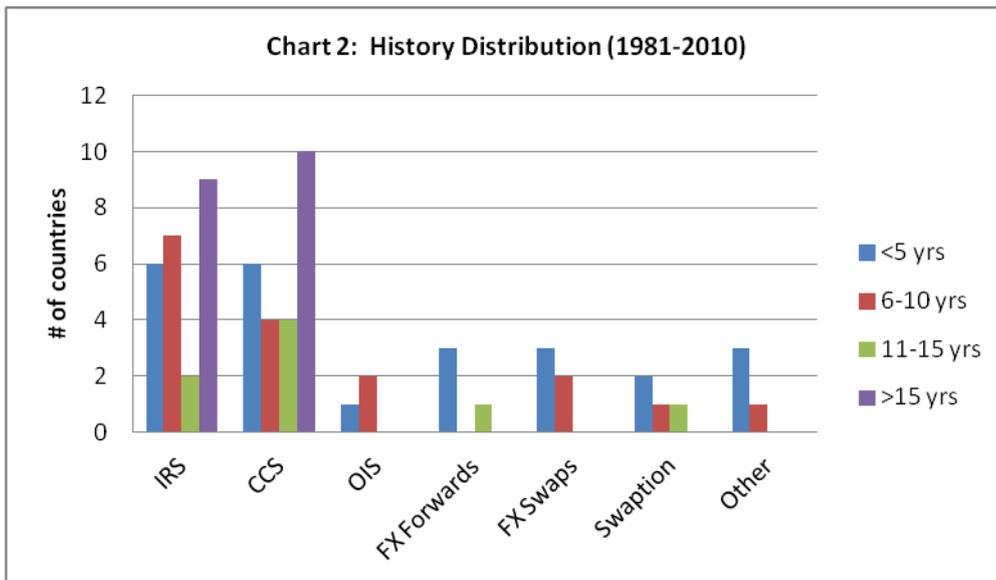
Over the period 1981-2010, interest rate swaps (IRS) and cross currency swaps (CCS) were by far the most commonly used instruments (24 countries; **Chart 1**).



Most countries reported using more than one type of instrument. Although OTC derivative use decreased somewhat after the 2008 Lehman shock, their use is still quite prevalent among sovereigns.

Among surveyed countries, one has been using IRS since 1981. As shown in **Chart 2**, IRS and CCS have been used for more than 15 years by 9 countries and 10 countries, respectively. Other derivative instruments seem to have been used mostly in more recent years. CCS and IRS have been used by 24 DMOs. One reason for the frequent and common use of IRS is its importance for domestic portfolio management; for example, countries that have duration targets tend to use derivatives. The frequent use of IRS is also associated with a higher ratio of domestic (currency) debt to total debt in the portfolios of OECD governments.

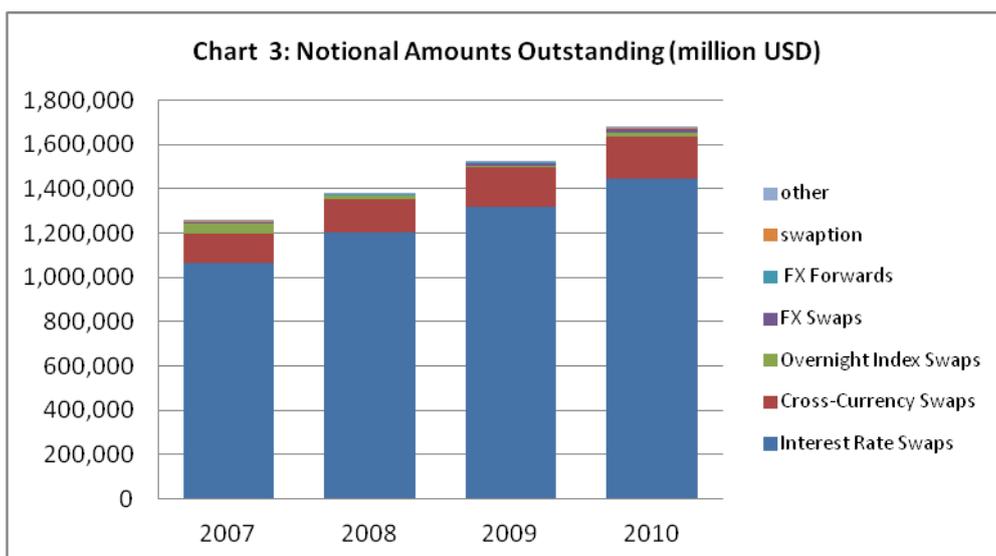
³ The following countries responded to the survey: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.



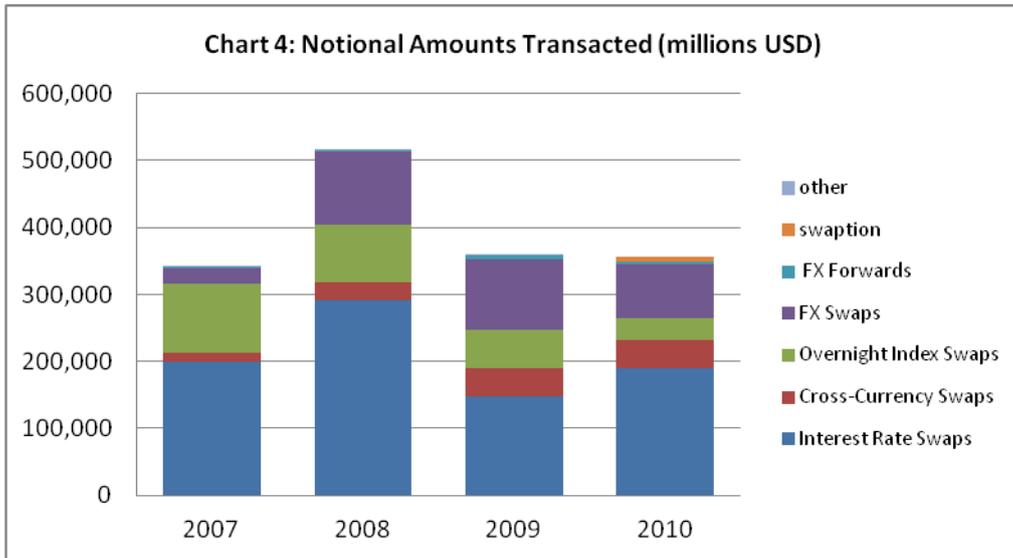
2.2 Outstanding and transacted notional amounts

The purpose of this section is to calculate the notional amounts of OTC derivatives outstanding and transacted between 2007 and 2010 and relate them to central government debt levels.

As the most traditional and commonly used hedging instruments, IRS and CCS account for 96 percent of the *total outstanding notional amounts* in 2007 and 98 percent in the following three years (**Chart 3**). On the other hand, *transacted amounts* of overnight indexed swaps (OIS) and foreign exchange (FX) swaps are very high (**Chart 4**) in comparison to their share in the outstanding amounts. One factor may be the natural short maturity of these instruments (especially the OIS), while the IRS and CCS typically have longer maturities. It should also be noted that relatively few countries use OIS (three countries) and FX swaps (four countries) although the transacted amounts are strikingly high.

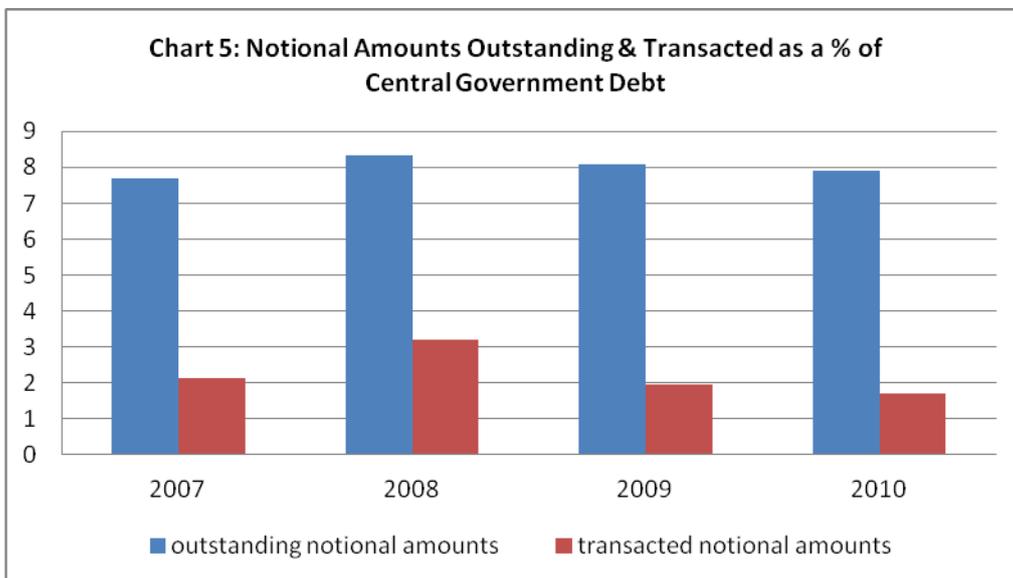


Note: Data were not available for three of the countries that responded.



Note: Data were not available for three of the countries that responded.

Since the use of OIS and FX swaps is limited to a few countries, it is not easy to make generalizations and/or to detect a clear trend.⁴



Note: Data were not available for two of the countries that responded.

Source: Survey, OECD Statistical Year Book and national data.

⁴ The increasing use of FX swaps between 2008 and 2010 might be explained by the increased need for protection against currency risk. Higher counterparty risk highlighted by the crisis on the one hand and the loss of the benchmark interest rate after the crisis might be the contributing factors for rising OIS transactions

Although the global credit crisis and the increase in sovereign risk have triggered a (partial) switch to other instruments in some countries, outstanding notional amounts as a percentage of central government debt have barely changed, while transacted amounts have decreased (**Chart 5**). In fact, the decreasing ratios in 2009 and 2010 are mostly due to the rapid increase in debt levels in those years. Moreover, ratios are very sensitive to changes in the behaviour of a relatively small number of countries that report a relatively high use of derivatives or that have a high debt stock (**Table 1**).

| Table 1: Notional Outstanding Amounts as a Percentage of Central Government Debt in 2010 | | | | |
|-------------------------------------------------------------------------------------------------|------|----------|-----------|--------|
| | < 5% | 5% - 25% | 25% - 50% | > 100% |
| # of countries | 8 | 9 | 5 | 2 |

Note: Data were not available for one of the countries that responded.

2.3 Collateralization policies

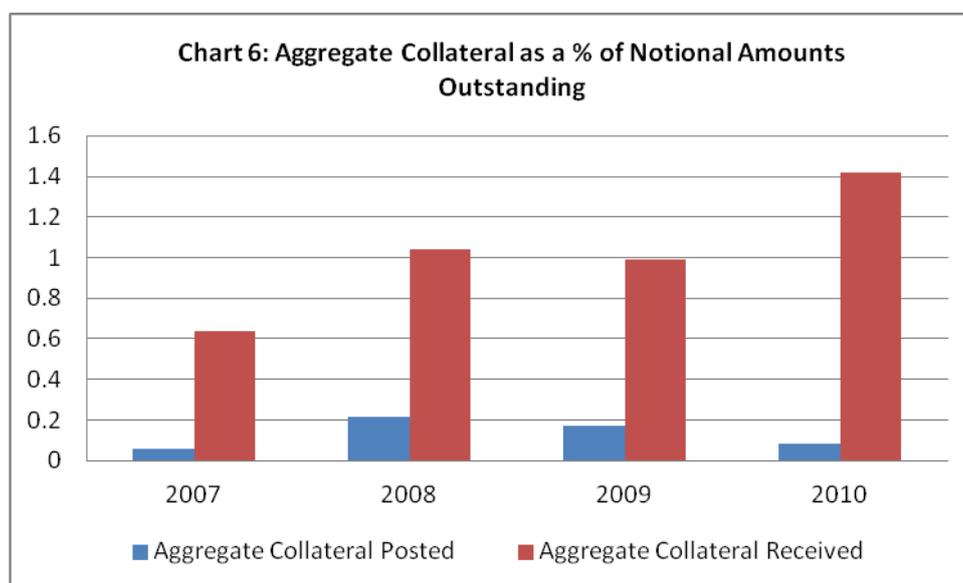
The purpose of this section is to give an overview of collateral arrangements by type of derivative instrument.

| Table 2: Collateral Arrangements by Type of Instrument | | | | | |
|---------------------------------------------------------------|-------------|-------------|-----|------|-------|
| | One-way CSA | Two-way CSA | CCP | None | Other |
| IRS | 15 | 4 | 1 | 3 | 2 |
| OIS | 3 | | | | |
| CCS | 11 | 6 | | 3 | 2 |
| FX forwards | 1 | | | | 1 |
| FX swaps | 3 | | | 1 | 1 |
| Swaptions | 1 | | | 1 | |
| Other | 1 | | | | |

| Table 3: Distribution by Collateral Arrangement | | | | | |
|--------------------------------------------------------|------------------|------------------|--------------------|------|-------|
| | Only one-way CSA | Only two-way CSA | Both arrangements* | None | Other |
| # of countries | 16 | 3 | 5 | 3 | 1 |

* This may include one-way and two-way and one-way and other, two-way and CCP, two way and none.

Tables 2 and 3 show that for all types of instruments, the most common collateral arrangement is a one-way collateral support annex (CSA) (the sovereign is the party receiving the collateral). For example, 15 countries have used a one-way CSA for IRS. One country started to use a central counterparty (CCP) clearing house on a fairly small scale in addition to their use of two-way CSAs. Most of the countries prefer to use only one type of arrangement and three countries do not use any collateral at all.



Note: Data were not available for one of the countries that responded.

Chart 6 indicates that posted collateral amounts by governments are very low (with the received collateral amount being almost 1.4 percent of notional amounts outstanding in 2010). Collateral amounts received show an upward trend. Although we do not have sufficient data on the distribution of collateral amounts by type of instrument, the upward trend in the use of currency- and interest-related hedging instruments (against the backdrop of higher volatility in currencies and interest rates) is likely a contributing factors to the increase in 2010.

2.4 Reporting and accounting standards

Data on the use of swaps are published on a regular basis by most respondents. The reporting on the basis of accounting standards varies across countries, and this lack of uniformity makes the comparison across countries difficult. Many countries use international accounting rules (European System of Accounts for Euro countries or International Accounting Standards); while some prefer public sector accounting rules or fair value accounting.

3. The changing regulatory landscape

In response to concerns about the systemic risks arising from OTCD markets, a number of regulatory initiatives are being developed worldwide to strengthen the infrastructure of the financial markets, and improve transparency on the OTCD markets. Currently, four regulatory reforms are expected to be relevant

to sovereigns as counterparties in OTCD transactions: Basel III, the Dodd-Frank Act, the European Markets Infrastructure Regulation (EMIR) and the Market in Financial Instruments Directives (MiFID). Although the details of these reforms are still being finalized, it is clear that DMO policies and practices will have to consider the following impacts: (i) the capital costs and funding requirements for financial institutions and other dealers who transact OTC derivatives with DMOs, and the implications for collateralisation practices, (ii) clearing of OTCD trades through Central Counterparties (CCPs), (iii) reporting of OTCD contracts to trade repositories, and (iv) the movement of OTCD trades onto exchanges or electronic trading platforms.

3.1 Brief overview of the new regulatory regimes

3.1.1 Basel III

Basel III rules outline new global capital and liquidity standards for banks, effective 2013. The objective of the framework is to strengthen the banking sector's ability to absorb shocks, whatever the source, and to better align international definitions of capital. The new framework includes heightened capital requirements, stricter guidelines for measuring exposures and a realignment of incentives that pushes banks towards centralized clearing of derivatives contracts.

Under the new regime, banks will have to hold more capital in the form of common equity against the risk they take. Current expectations are that the new regime may have an indirect impact on sovereign derivatives transactions—banks facing higher capital charges could very well look to pass on those costs to their clients including sovereigns. Final rules are expected in due course and implementation is anticipated to commence in early 2013 with a six year phase-in period.

3.1.2 The Dodd-Frank Act

In the United States, regulators are beginning to implement the Dodd-Frank Act, which outlines a set of reforms that are designed to reduce systemic risk and increase market transparency. These goals are expected to be achieved by introducing margining requirements for bilateral OTCD transactions, mandating central clearing and electronic execution of all standardized OTC derivatives, and improving pre- and post-trade reporting.

Under current proposed regulations, non-U.S. sovereigns are not expected to be exempt from central clearing, margining on non-cleared OTCD products and reporting requirements. Only the U.S. Federal Reserve and any entity backed by the full faith and credit of the U.S. government are exempt from clearing, margin and reporting requirements. Final rules are expected by the end of 2011.

3.1.3 The European regulations

In Europe, regulators are enacting two initiatives that will mirror the Dodd-Frank Act: the European Market Infrastructure Regulation (EMIR), and the Market in Financial Instruments Directives (MiFID). EMIR focuses on addressing banks' counterparty risk, central clearing and trades repositories. It mirrors Dodd-Frank with broadly similar requirements that will increase margining requirements on OTCD bilateral transactions, mandate central clearing of eligible OTCD products and require reporting to a trade repository of any OTCD transaction (bilateral or centrally cleared). Under the current version of the rules, sovereigns including those that are non-European, are expected to be exempt from central clearing. At this moment it is uncertain whether sovereigns will be exempt from the margin requirements on non-cleared OTCD contracts. Implementation of the European regulation is lagging the Dodd-Frank by six months to one year; the current target is the end of 2012.

The MiFID is another European initiative closely related to the EMIR and it corresponds to the trading and transparency sections under Dodd-Frank. The MiFID is currently under review and legislative proposals are expected by the end of 2012.

The implementation of the above initiatives is expected to bring material changes to current market practices; i.e. collateralization practices, the clearing landscape, pre- and post-trade transparency and execution venues. The next sub-sections discuss in more detail the expected regulatory impacts.

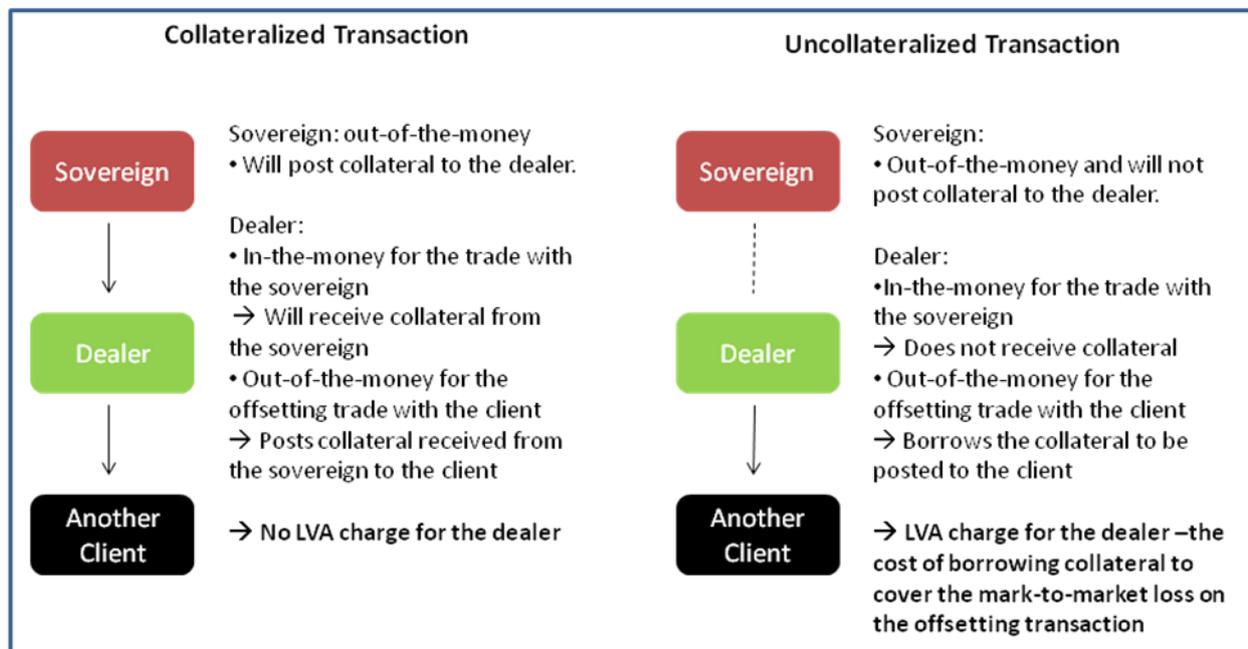
3.2 Collateralization practices

As highlighted above, sovereigns often use one-way CSAs for their OTC transactions, meaning that they do not post collateral to offset their mark-to-market losses on OTC derivatives, but receive collateral on their mark-to-market gains. As a result, banks' mark-to-market gains are uncollateralized, exposing them to a counterparty risk. Basel III and regulations under development in United States and Europe include provisions that will increase the costs associated with banks' uncollateralized derivative exposures.

Under the proposed Basel III rules, uncollateralized derivatives exposures will affect banks in three ways. First, banks' uncollateralized OTC mark-to-market gains will be subject to a credit value adjustment (CVA), i.e. a capital charge that accounts for the possibility of mark-to-market losses associated with the deterioration of the creditworthiness of the counterparty. Second, the limit on banks' liquidity coverage ratio (LCR)⁵ included in the new Basel III liquidity standards is likely to increase the liquidity valuation adjustment (LVA) currently borne by banks under one-way CSAs. The liquidity valuation adjustment is the cost for financing the collateral not received from the sovereign when the trade is in favour for the bank. Banks usually hedge their derivative positions with sovereigns using offsetting trades with other clients—invariably covered by bilateral CSAs in which both sides have an obligation to post collateral. As a result, the unilateral CSA creates funding pressures for banks since they need to post collateral in one transaction without receiving any reciprocal collateral in the corresponding hedge transaction (see **Box 1** for a description of funding pressures under unilateral CSA). Third, banks' uncollateralized sovereign exposures will now be subject to capital requirements related to the balance sheet usage. This refers to the cost of holding capital given the riskiness of counterparty exposures (risk-weighted-asset or RWA). Under current Basel rules, banks are allowed to use a zero or very low risk-weight for most sovereign exposures (given their superior credit rating), so capital requirements have been nonexistent or very minimal. Under incoming Basel III rules, capital requirements for uncollateralized exposures are expected to be determined by the size of the position, counterparty credit spread minus any collateral posted.

⁵ The LCR will require banks to have sufficient high liquid assets to cover for a 30-day stressed funding scenario.

Box 1: Funding Charges on Comparing Collateralized and Uncollateralized Transactions



Regulators in the United States and Europe have also moved to strengthen bilateral clearing and increase capital requirements for non-CCP derivatives. The Dodd-Frank Act outlines specific proposals and parameters on collateral for a market standard CSA. Banks that will register as "covered swap entities"⁶ in the United States will be required to collect initial and variation margin on non-cleared contracts from 'financial-end users'. Currently, non-U.S. sovereigns are expected to be classified as "high risk financial end-users" and as a result to be subject to these margining requirements. Other parameters that could be relevant to sovereigns include the amount and type of collateral (currently cash and highly liquid US government securities), the frequency of margin call, and the riskiness of the OTCD product as determined by U.S. regulators.

European rules are also expected to set out high level of capital requirements for non-cleared contracts. The issue of sovereign exemptions has not yet been finalized in Europe.

3.3 A push to central clearing counterparty

The financial crisis following Lehman's demise and the AIG bailout has provided an impetus to move OTCD derivatives from bilateral clearing to central counterparties as a means to limit the interconnectedness in the financial system. Globally, regulators have been introducing reforms to mandate and incentivize central clearing for OTCD products. The following sub-sections provide an overview on the functioning of CCPs, and describe different regulatory initiatives for them. The initiative taken by Sweden in this respect is attached as a case study in Annex I.

⁶ A covered swap entity includes registered swap dealers or major swap participants security-based swap dealers, and major security-based swap participants

3.3.1 Overview of central counterparties

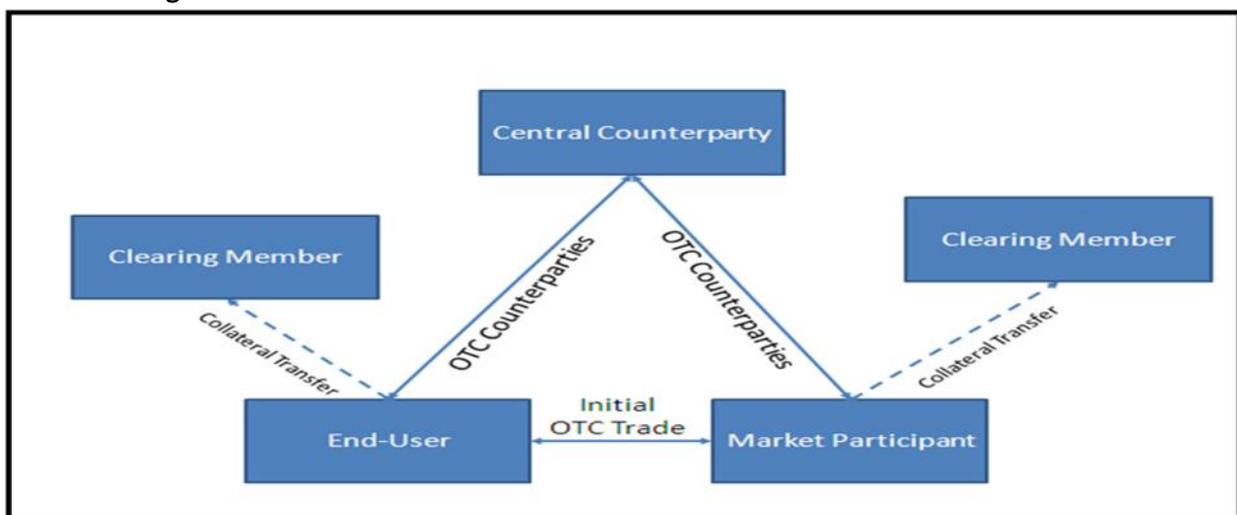
A central counterparty is an entity that interposes itself between two OTC counterparty, protecting each from the other's default. In an OTC market with a CCP, once a bilateral agreement is reached between two market participants (e.g.: an end-user and a bank), the trade is transferred or "novated" to the CCP. Through the "novation" process, the single contract between the two original counterparties is replaced by two separate contracts in which the CCP is counterparty to each of the two original parties. The credit risk of the original transacting parties is thus transferred to and managed by the CCP. Note that market participants that do not have clearing member status in the CCP must clear through a direct clearing member. As a result of this arrangement, the indirect clearer may have a credit exposure to its direct clearer, a situation that has important risk and cost implications. Conversely, the direct clearer may also bear the responsibility for the contract if its client defaults on its obligations.

To manage its counterparty risk, the CCP collects from its clearing members an initial margin and a contribution to a default fund to cover any losses that may occur should the variation margin posted by the defaulted member not be sufficient. The CCP's default protection also includes the potential mutualization of losses among participating members; i.e., losses of defaulted members may be shared among participants when defaulted members' initial margin and contribution to a default fund are insufficient.

Currently, several CCPs are already clearing many of the OTC products used by sovereigns (see Annex III for the list of CCPs that clear IRS). But, there is no CCP that clears cross-currency swaps (CCS is one of the most commonly used OTC derivatives by sovereigns).

Two basic models are emerging for these CCPs: an agent model and a principal model. The agent model or the so called Futures Commission Merchant (FCM) model is an US-based model in which the clearing member is not a counterparty of any OTC derivative (**Box 2**). In this model the clearing member acts as an agent between the end-user and the CCP. After the 'novation' process, the transaction exists only between the end-user and the CCP, and not with the clearing member. Only the CCP and the end-user are counterparties in the trade. The clearing member only facilitates the margin transfer between the end-user and the CCP.

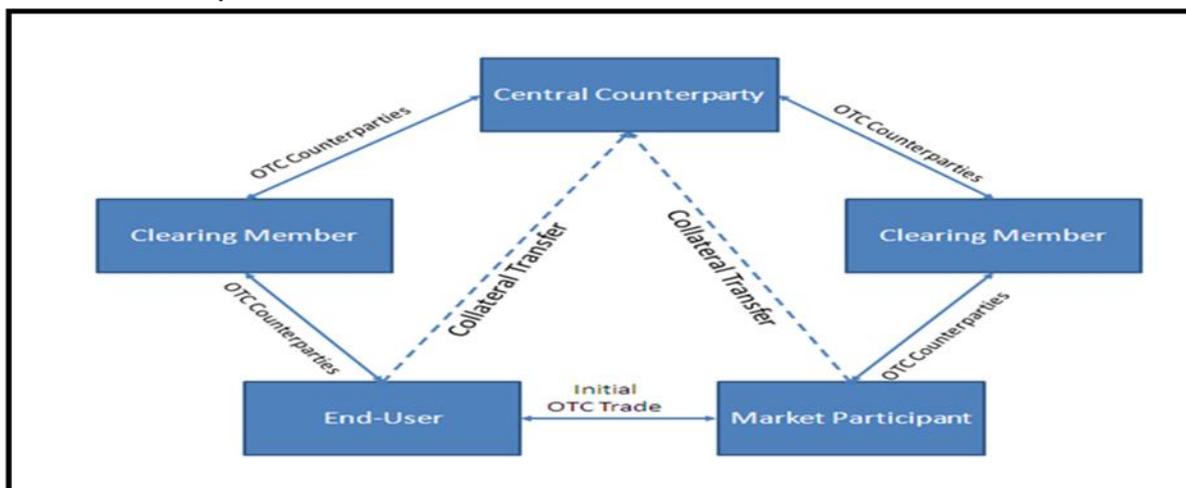
Box 2 – The Agent Model



In the principal model (**Box 3**), the clearing member acts as principal and is counterparty to both the end-user and the CCP after the novation process. In this model, the CCP and the end-user are not direct counterparties to each other.

The principal model is broadly implemented in Europe. In contrast to the agent model, in which the clearing member directly receives the collateral from the end-user, the end-user directly transfers the collateral to the clearing member's custodial account with the CCP.

Box 3 – The Principal Model



Under both models, end-users including sovereigns that are not expecting to be a direct clearing member will need to consider mitigating their credit exposure to the direct clearing member, perhaps through segregation and portability. The Committee on Payments and Settlement Systems and the Technical Committee of the International Organization of Securities Commission (CPSS-IOSCO) define segregation and portability as follows⁷:

- Segregation: refers to a method of protecting customer collateral and contractual positions by holding or accounting for them separately from those of the direct participant (such as a carrying firm or broker).
- Portability: refers to the operational aspects of the transfer of contractual positions, funds, or securities from one party to another party by means of a conveyance of money or financial instruments.

For better credit risk management, it may be necessary for sovereigns to request that their funds be segregated from the clearing member's own funds in the agent model, or from the clearing member's custodial account with the CCP, and therefore distinct from the collateral posted by other clients. To avoid losses in the event of the clearing member's default, sovereigns should have an arrangement in place that would facilitate the transfer of all margin accounts (cash or securities) to another clearing member with the same or better level of creditworthiness (before bankruptcy). If the transfer could not be achieved, sovereigns' trades would be closed out. It is important that the sovereign's account not be considered as a

⁷ Principle 14 of the new standards addresses the issue of segregation and portability (Committee on Payment and Settlement Systems – Technical Committee of the International Organization of Securities Commissions, 2011).

part of the clearing member's assets. Since all of these arrangements will constrain the use of collateral held by the CCP or the dealer, there will be a cost impact of this better risk-proofing.

3.3.2 Regulatory initiatives and CCPs

Basel III, the Dodd-Frank Act and EMIR include strong capital incentives for banks to use central counterparties for derivatives transactions.

Basel III rules on CCPs will affect banks in two ways. First, banks are not required to add the CVA capital charge for derivatives exposures to a CCP. Second, a bank's collateral and mark-to-market exposures to CCPs will be subject to a modest risk charge, currently proposed at 2 per cent, contingent on meeting strong standards to be set by CPSS-IOSCO, and exposures to CCPs through the default fund will also be subject to risk-sensitive capital requirements. The modest capital charges relative to bilateral contracts were designed to incentivize banks towards central clearing.

Under the new regulatory framework in the United States, regulators require that all OTCD products that are "clearable" be centrally cleared and subject to clearing-house margining requirements. The U.S. Federal Reserve and any entity with the full faith and credit of the U.S. government are exempt from clearing. Non-U.S. sovereigns are currently expected to be subject to clearing requirements. Interest rate swaps and cross-currency swaps which are the most commonly used OTCD products by sovereigns, fall under the definition of clearable products under the Dodd-Frank Act. However, the U.S. Treasury has recently proposed to exempt FX swaps and forwards from central clearing given their lower level of systemic risk relative to other swap products. The final rule is expected later this year.

Similar to United States, the European regulator requires financial counterparties to clear all OTCD transactions determined to be clearable or eligible. Currently, all sovereigns are exempt from the requirement to centrally clear OTC derivatives. There is a possibility that regulations in both the United States and Europe will converge in order to limit regulatory arbitrage.

The current expectations are that the main driver for central clearing will not be purely prescriptive, and that the introduction of additional counterparty risk-capital charges (CVA) and the increased RWA charges for bilateral trades in Basel III will provide strong economic incentives to move to central clearing.

3.4 Trading venues

Regulations being developed in the United States and Europe are expected to bring greater pre-trade pricing transparency in the execution layer of OTCD markets, and lead to changes in the trading structure of OTCD markets. Regulations on both sides of the Atlantic have articulated mandatory use of electronic platforms for the trading of clearable OTCD products. There is minimal sovereign-specific guidance at this time, and sovereigns that use OTC derivatives as part of their funds management activities are expected to be subject to this requirement.

3.5 Trade repositories

Another aspect of the regulatory initiatives is to improve post-trade transparency. Currently proposed regulations include a requirement for all derivatives transactions (bilateral and centrally cleared) to be reported to trade repositories as a means of improving monitoring of the financial system and reducing systemic risk. Sovereigns are also expected to be subject to this requirement.

There are, however, a number of issues that remain to be addressed in the final regulations for trade repositories. Some of the issues that could be relevant to sovereigns include:

- **Timeliness of reporting:** reporting of large and lumpy transactions to regulators poses no problems, although real-time reporting of cross-currency swaps transactions transacted by sovereigns to the market could result in potential FX volatility, depending on the degree of public post-trade transparency. The European regulator requires reporting within one working day, while the U.S. regulator (the Commodity Futures Trading Commission, or CFTC) has mandated real-time reporting.
- **Counterparty confidentiality:** some sovereigns could have practical and legal concerns around potential breaches to confidentiality rules, due to information sharing.

4. Expected impacts on DMOs

The landscape of the OTCD market is being reshaped by a multitude of regulatory initiatives designed to facilitate more effective risk management, greater systemic oversight and improved transparency in OTCD markets. These initiatives are expected to have material impacts and must be taken into account as sovereigns develop their funds management strategies.

4.1 Implications for CSA practices

Currently, most sovereigns transact OTC derivatives with dealers under one-way CSA agreements. This practice is borne out of the historically strong creditworthiness of sovereign counterparties and the dealers' choice to cross-subsidize any funding costs incurred on the OTCD transaction against profits from other elements of their business. The costs that arise from CSA asymmetry include the dealer's funding costs, direct capital charges to the dealer and frictions from dealers hedging their exposure to the sovereign counterparty. Market dynamics are changing, however, as regulators aim to improve collateralization standards and requirements for measuring exposure. Regulators are urging dealers to explicitly price-in the counterparty risks related to uncollateralized derivatives exposure. The current expectation is that the main driver for changes in CSA practices will be the new Basel III rules.

In anticipation of upcoming regulations, banks have already begun to encourage their sovereign clients to adopt two-way CSAs. The shift to two-way CSAs could result in more favourable pricing terms for sovereigns, since banks may look to pass on the additional costs if sovereigns choose to maintain unilateral CSAs. Sovereigns must weigh this pricing advantage against the increased operational, funding and counterparty-risk costs associated with posting collateral.

First, a shift to bilateral CSAs will expose sovereigns to counterparty risk in instances where they post collateral to banks. Delivery of collateral can increase credit exposure if rehypothecation rights are granted and if the counterparty fails to return the collateral. Sovereigns transitioning into an environment where they post collateral will need to review their credit-risk management policies to determine the appropriate level of counterparty risk they are willing to take.

Second, sovereigns could incur additional funding costs from the need to generate the required collateral to be posted. Banks usually post the collateral they receive from offsetting transactions, or post financial assets from their balance sheets. Sovereigns do not have access to such assets, nor are they engaged in offsetting transactions in which they can receive collateral. As a result, sovereigns may need to

alter their debt issuance strategy and/or asset mix to generate the collateral to be posted, and could incur additional funding costs. Sovereigns will likely be able to post their own debt, as well as other highly liquid assets and cash as collateral. The choice of collateral will depend on the type of funds management activity for which OTCD products are being used, and the RWA charge implication. Sovereigns using OTC derivatives for debt management activities may choose to post their own debt (but still subject to the RWA capital charge) or cash as collateral. Those using OTC derivatives for foreign reserves management activities can alter their asset-mix strategy such that they increase holdings of highly liquid assets and/or cash to cover periodic margin calls. Establishment of an active asset repo program may also be an effective collateral-generation strategy for sovereigns using OTC derivatives within their foreign reserves management activities. Sovereigns can eliminate the collateral funding cost by using their highly liquid assets to generate cash on the repo market.

Third, the move towards a two-way CSA regime could also add operational burden and costs to sovereigns choosing to manage their collateral operations internally. The main challenges include building the IT infrastructure for calculating and exchanging collateral on a periodic basis. Those reluctant to manage their collateral internally may follow the example of some of the sovereigns who choose to outsource these activities.

Overall, if the transition to two-way CSAs reduces the cost advantage that OTC derivatives provide to sovereigns, they may need to review their funding strategy; i.e., reassess the mix of swaps versus bond issuance.

4.2 Centralized clearing

There are numerous considerations that sovereigns need to take into account in evaluating the prospect of centrally clearing their OTCD transactions. From a cost perspective, a move from bilateral trades to centrally cleared trades could impact sovereigns in many ways.

First, sovereigns would also incur funding costs since they need to generate the collateral required for the initial and variation margins. The current expectation is that regulators will mandate CCPs to accept cash and very high liquid assets as collateral. As a result, sovereigns may need to alter their debt issuance strategy and/or asset mix to generate the collateral to be posted. Second, similar to the move to bilateral CSAs, the management of the collateral could also add operational costs, albeit on a limited basis. Third, there may be a potential cost related to the credit risk depending on the sovereign's membership status in the CCP (participation in a default fund, direct or indirect membership, and agreements on segregation and portability).

The incremental costs and risks that would result in transitioning from a one-way CSA practice to centralized clearing may be considerably different than those associated with a shift from a one-way CSAs environment to two-way CSAs. **Table 4** summarizes some of these issues:

| Table 4: Cost comparison under different collateralization regimes | | | | |
|---------------------------------------------------------------------------|---------------------------------------------------|-------------|-------------|----------------------|
| Costs/risks borne directly by sovereigns | | One-way CSA | Two-way CSA | Centralized clearing |
| Margin | Funding initial margin | - | ✓* | ✓ |
| | Funding variation margin | - | ✓ | ✓ |
| | Operational costs of managing margin requirements | - | ✓ | ✓ |
| | Counterparty risk resulting from posting margin | - | ✓ | ✓ |
| Clearing fees | | - | - | ✓ ** |
| Contribution to a default fund | | - | - | ✓ ** ? |

*Only under the currently proposed rules of the Dodd-Frank Act

**Potential charges, exact charges are uncertain

As illustrated above, the move towards better collateralization practices will add certain funding and operational costs for sovereigns that currently do not post collateral. The margin requirements are slightly different for contracts under two-way CSAs than those of CCPs (CCPs require an initial margin). The incremental cost of funding an initial margin may be offset to some extent if the sovereign is clearing multiple contracts through the CCP, and may benefit from multilateral netting. This would potentially reduce the operational and funding costs of meeting variation margin requirements. These differences are critical to a cost-benefit analysis of the move to centralized clearing.

In summary, the key benefits for sovereigns in using a CCP for OTCD transactions include:

- the ability to reduce counterparty risk by transferring the credit risk that would be incurred in bilateral OTCD transactions to an entity that is assumed to have effective risk controls, adequate financial resources and robust default procedures;
- more OTCD transactions on CCPs can increase pricing competition, which could be beneficial to end-users, including sovereigns (a reduced bid-ask spread);
- potential for enhanced multilateral netting;
- the concentration of all sovereign outstanding OTCD positions with a CCP should also improve and simplify the management of the counterparty risk, and reduce the operational burden related to collateral management.

There are, however, some disadvantages for sovereigns in using CCPs:

- the use of CCPs for OTCD transactions would concentrate a sovereign's credit risk, since the high number of bilateral counterparties would be replaced by one single counterparty (the CCP);
- since CCPs determine the margin requirements and select the counterparties to transact with, all participants, including sovereigns, will be essentially delegating most of the risk-management activities of their derivatives business to the CCP. As part of their current risk management process, some sovereigns evaluate the creditworthiness of their counterparties, perform mark-to-market operations (calling and receiving collateral), determine which counterparty to transact with, etc;
- the use of CCPs reduces a sovereign's flexibility to tailor OTCD contracts to meet their specific needs (for example, to transact a certain amount of swap that matures on a specific date). Currently, global regulators have agreed that only "standardized" contracts should be centrally cleared, but the ultimate definition of standardized remains open.

4.3 Implications for existing OTCD portfolios

Existing banks' OTCD portfolios are also expected to be subject to new regulatory initiatives when they become effective. Both Basel III and Dodd-Frank are expected to apply to these portfolios under different timelines (grandfathering). This issue is not as advanced in Europe and there is less certainty at this moment regarding the framework that would be applied to existing portfolios.

When existing OTCD portfolios become subject to new regulatory initiatives, banks will have to hedge their existing bilateral uncollateralized sovereign OTCD exposures (through a renegotiation to bilateral CSAs or buying CDS protection on the sovereign), or move the transactions to CCPs. In either case, there would be additional costs for banks, which they may look to pass on to sovereigns. As a result, it is expected that some sovereigns may adjust their funding strategies to account for:

- the additional cost (i.e. potential collateral funding cost) if sovereigns switch to bilateral CSAs or the bank's cost for buying CDS protection on the sovereign if the current one-way CSA is maintained; and
- the increase in counterparty risk arising from bilateral CSAs.

4.4 Trade repositories

To increase transparency, the new regulations will require detailed information on OTCD contracts to be reported to trade repositories and made accessible to supervisory authorities. Trade repositories may publish aggregate positions by class of derivatives accessible to all market participants. Increasing transparency in the OTCD market will reduce counterparty credit risk and operational risk. However, there should be some consideration given to the details and timeliness of disclosure of the reported information to the markets generally.

With access to trade repository data, sovereigns would benefit from improved price discovery. However, if the DMO is using derivatives for active interest rate risk management, timely and transparent reporting can be costly for the sovereign. For example, even aggregated reporting may allow markets to infer a sovereign's positioning or hedging techniques, which might cause speculative positioning against its interest and increase transaction costs.

In addition, reporting OTCD information will require resources and new processes, resulting in additional costs.

4.5 Exchange-based trading

The 2009 G-20 commitment calls for a shift towards exchange-based trading of OTC derivatives. Exchange-based trading of OTC derivatives would fundamentally change market dynamics. Exchanges offer a number of benefits including improvement of market efficiency and resiliency. Additionally, exchange-based trading would support transparency and liquidity in the derivatives market.

Similar to the trade repository proposition, this move would support price discovery in the derivatives market. Exchange-based trading should improve the liquidity of OTC derivatives (tighter bid-ask spread); however it does leave participants vulnerable to sudden changes in liquidity (for example, the flash crash of 2010).

Since there is minimal sovereign-specific guidance at this time it is difficult to ascertain the impact of this transition on sovereigns.

4.6 Implications for the well-functioning of government debt markets

The push by regulators for better collateralization practices (bilateral CSAs or central clearing) has the potential to substantially increase collateral and margin requirements for bilateral and centrally cleared OTCD contracts. The expected increase would be attributed mainly to the upfront initial margin that is not typically posted on bilateral trades and contributions to CCPs' default funds.

An IMF study estimates collateral requirements related to initial margin and default fund contributions to amount up to \$150 billion, assuming that existing bilateral OTCD contracts (credit default swaps, interest rate derivatives, other derivatives) are moved to CCPs⁸. Such collateral would consist mainly of highly liquid government debt, and would not be available to the banks for re-use through rehypothecation. The inability of banks to rehypothecate the collateral, coupled with the potential fragmented CCP space (multiple domestic CCPs are likely to initially emerge), could impact some sovereigns' debt management strategies, particularly for sovereigns with less-developed government debt markets.

To maintain the well-functioning of their government debt markets, some of these sovereigns may have to adjust their funding strategy, either by reducing their reliance on foreign debt issuance or by issuing debt beyond their financing requirement levels. Sovereigns that would issue debt beyond their financing requirement levels would need to manage the excess liquidity which could give rise to a counterparty risk.

⁸ See the IMF paper, "Making Over-the-Counter Derivatives Safer: The Role of Central Counterparties." Requirements were estimated using a percentage of outstanding notional amounts.

5. Policy issues for DMOs

An increase in financial stability is the main objective behind new regulations to move OTC derivatives to central counterparty clearing. Effective CCP clearing has the potential to mitigate systemic risk, by lowering the risk that defaults propagate from counterparty to counterparty. Exemptions are foreseen in new regulations only for the members of the European System of Central Banks, public bodies charged with, or intervening in, the management of the public debt, and multilateral development banks, in order to avoid limiting their powers to intervene to stabilize the market if and when required.

5.1 Financial stability versus traditional debt management guidelines

From a purely cost-benefit perspective, the benefits and costs/risks for DMOs are still difficult to quantify. Potential costs and risks involved in CCP clearing of OTC derivatives can be outweighed by positive financial stability effects supporting systemic risk reduction. Sovereigns' participation will have at least three benefits that would typically be considered beyond public debt management's objectives of cost minimization on an acceptable level of risk. First, in order to realize the financial stability benefits, a critical mass of OTC derivatives must be moved to CCPs. By participating in CCP clearing, public bodies could contribute to building up this critical mass. Second, for sovereigns not currently posting collateral, a decision to participate in CCP clearing would reduce the costs of capital for banks⁹ with which they transact, stemming from the current asymmetry, as well as reduce the uncertainty of the drain on banks' liquidity due to derivatives contracts with sovereigns. Third, DMOs could send a strong signal to the market that they are willing to support financial stability by using CCPs for clearing OTC derivatives. This signalling effect would probably be significant relative to sovereigns' market size in the derivatives markets. This has to be weighed against the potential for introducing moral hazard through sovereign participation in CCPs, as such participation could be viewed as an implicit promise of liquidity or credit support for the CCP. Another risk is that the CCP chosen by a DMO may gain an unfair competitive advantage if the choice is interpreted to be an "approval" by the DMO and sovereign.

The challenge of engaging individual debt managers with financial stability objectives lies in their traditional debt management guidelines. Individual DMOs typically have clear-cut debt management guidelines to minimize costs on an acceptable level of risk. Some policy co-ordination and decision making at the inter-governmental level may be required to foster a more general public policy objective for sovereigns to participate in CCP clearing, with financial stability as the primary objective.

However, the latter perspective is a macro one. From the perspective of a purely traditional micro portfolio, the following can be noted regarding the use of swaps in the context of a conventional cost-versus-risk analysis. DMOs use swaps to reduce borrowing costs and/or improve the risk profile of the stock of debt; for example, managing the duration of the debt stock by using interest rate swaps. This allows DMOs to issue debt instruments in the most liquid, longer-term capital market segment and at the same time to take advantage of lower short-term interest rates. Clearly, this borrowing (and risk-management) strategy makes sense only when the transaction costs of the use of swaps remain lower than this potential cost advantage. If the cost of swaps increases dramatically, they may no longer be as attractive to DMOs. As a result, borrowing strategies (and borrowing costs) could change.

⁹ This cost on banks would, to some extent, probably be passed on to the sovereign.

Despite these rather universal and unambiguous guidelines, the starting point for individual DMOs would be to evaluate the benefits and costs of two-way CSAs¹⁰ or centralized clearing. These will vary given the heterogeneity of sovereign credit ratings and the varying extent to which different countries make use of OTC derivatives. As an example, in a simplistic world the DMO has two key principles for decision making regarding OTC derivatives: cost minimization and an acceptable concentration of counterparty risk. Cost minimization is a function of the sovereign credit rating, number of counterparties and volume of derivative transactions, while an acceptable concentration of counterparty risk is a function of the number of counterparties and volume of derivative transactions. These two policy dimensions create a fourfold table where options for decision making can be scrutinized.

5.2 Balancing cost and risk

| | | Concentration of risk | |
|-------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Low | Rising |
| Transaction costs | Low | a) Typically this sovereign has a high credit rating and its debt management strategy does not rely heavily on derivatives. | c) The sovereign is more interested in shifting from one-way CSAs straight into CCP clearing, because that would be operationally safer than several bilateral clearing arrangements with two-way agreements. This sovereign typically has a high credit rating but is strongly relying on derivatives in its debt management strategy. However, a high credit rating correlates positively with an acceptable amount of debt and this sovereign is most likely not in a hurry to make any decision. |
| | Rising | b) The sovereign is willing to move from one-way CSAs to two-way CSAs. Typically bank charges on one-way CSAs will be higher if the sovereign's credit rating is under pressure. The debt managers' key concern in this scenario is to minimize transaction costs or to even secure access to the derivatives market. | d) This sovereign is under pressure to move away from one-way CSA arrangements. The first step could be a move into two-way CSAs and later into CCP clearing. Also the threshold to move into CCP clearing is far lower than in environment (c). The sovereign can also consider an abrupt change of debt management strategy that would replace the use of derivatives with cash instruments. |

¹⁰ This cost-benefit perspective on one-way-versus-two-way CSAs is less straightforward than sometimes assumed. Pledging collateral under two-way CSAs will not necessarily increase the costs to the government, since the greater counterparty risk inherent in one-way CSAs may be already factored into a bank's pricing of transactions.

5.3 Risk management policies

A single CCP that jointly clears various classes of derivatives is more efficient from a netting perspective than the framework of separate CCPs. However, there is a clear trade-off between netting efficiency and the number of CCPs. A competition between separate CCPs would reduce costs for central clearing, but can bring down netting efficiency gains.

5.3.1 Operational risk

By moving OTC derivatives to CCPs, DMOs will have to engage in new relationships that may incur new operational risks. Moreover, CCP clearing could involve posting collateral, which is new for many DMOs and gives rise to new potential risks. However, compared to a set-up with several bilateral clearing arrangements with two-way collateral arrangements, clearing via CCPs would reduce operational risk. First, the DMO would have only one or a few counterparties, namely the CCPs. The operational risk reduction depends on the number of counterparties at the outset. Second, using CCPs improves the quality of mark-to-market calculations, since counterparties' positions are calculated using a common methodology with the same market data at the close of each business day. This will foster efficiency in collateral movements and reduce the potential for disputes.

5.3.2 Credit risk

CCP clearing reduces counterparty risk, but it also concentrates credit risk and magnifies the systemic risks related to the failure of the CCP. A CCP is, however, typically well-protected against the default of a clearing member. There is a clear trade-off between the netting efficiency of a CCP and the credit risk of a CCP. The more derivatives a CCP clears, the higher the netting efficiency. Clearing many derivatives products will imply that the CCP is also exposed to more markets. In choosing a CCP, the sovereign will have to weigh this trade-off.

The sovereign's credit risk from exposure to the CCP depends on the chosen participation option of the CCP. In case a DMO becomes a general (direct) member of a CCP, the credit risk is concentrated on the CCP. Moving contracts to CCPs as a direct clearing member implies IT infrastructure costs, upfront initial margins and guarantee fund contributions. As a general member, the sovereign risks being required to cover losses in the CCP in case one or more of the other general members of the CCP defaults.

If a sovereign chooses to be an indirect member, the credit risk would be on one (or more) of the members of the CCP. In the latter case, it is important for the DMO to clarify whether the positions of the DMO will be seamlessly ported to another CCP member in the event of the default of its CCP member. If the collateral posted from the sovereign is segregated from the collateral posted by the CCP member and its other customers, this credit risk could be mitigated.

A way to reduce the credit risk for the sovereign is to obtain a direct membership of the CCP with an exemption from covering losses in the CCP, or a membership where the sovereign is not required to post collateral to the CCP; however, special membership for sovereigns would probably not come without costs.

5.4 Accounting and budgeting issues

Sovereigns joining a CCP would probably be required to mark their OTC derivatives to market. This could mean that the government's OTC derivatives would be marked to market, whereas the rest of the government debt portfolio would be measured at nominal value, and that the government debt volume would depend on the market value of the OTC derivatives. This would be a new situation for sovereigns that have used an accrual accounting principle for financial reporting of the OTC derivatives.

The treatment of the collateral posted and received should be the same. Instead of classifying them as revenues or expenditures, posted and received collateral should be recorded as a change in the government balance sheet (since the market value is posted in both ways).

5.5 Legislative issues

As the regulatory requirements are finalized, the change in practices dictated by the new landscape may require some sovereigns to make changes to their domestic legal structure to accommodate them. For example, some countries have legal borrowing limits that do not allow liquidity buffers. In this context, if countries need to post collateral as cash, those countries may need to change their legislation.

6. Summary

OECD sovereigns make extensive use of OTCD products in their funds management activities (mainly interest rate swaps and cross-currency swaps). They often use OTC derivatives to reduce debt cost (create a synthetic debt tool) and/or to manage (hedge) their liability portfolios. Some of the regulatory initiatives that are being developed worldwide to strengthen the infrastructure of the financial markets, reduce systemic risk and improve transparency for OTCD markets may lead to changes in sovereign and dealer practices. Potential changes include modifications to collateralization requirements, the use of central clearing for OTCD trades, and increased pre- and post-trade reporting and transparency.

Under the new regulatory regime, regulators are designing rules that would push banks to reduce uncollateralized derivatives exposures, and add capital incentives for banks to use central counterparties for derivatives transactions. In an effort to increase market transparency, regulators have also articulated rules around the use of electronic platforms for OTCD products and timely post-trade reporting requirements.

It is expected that sovereigns would have to reevaluate their current collateralization policies, since banks may look to pass on additional capital charges that arise with the new regulations. Sovereigns may also be required to centrally clear their OTCD products, since many jurisdictions are mandating central clearing of standardized OTCD products. The definition of a standardized OTCD contract remains open.

Issues around sovereign exemptions and the transition of existing OTCD portfolios will also pose challenges.

Moreover, as sovereigns develop their funds management policies, they may also need to account for the broader public policy implications of their decisions. To maintain well-functioning domestic capital markets and help ensure effective implementation of the regulatory changes, sovereigns may also need to consider adjusting their funding strategies.

ANNEX I: SWEDEN CCP CASE STUDY

Summary

NASDAQ OMX Stockholm AB (NASDAQ OMX) is developing a full-fledged central counterparty (CCP) clearing for SEK denominated interest rate swaps called SWAPCLEAR Nordic. The Swedish National Debt Office (SNDO) has had the opportunity to participate in a pilot project, together with NASDAQ OMX and Skandinaviska Enskilda Banken AB (SEB), to test and evaluate SWAPCLEAR Nordic.

In this report we will describe the reasons why SNDO has participated in the pilot project, what questions and issues we have discussed prior to and during the pilot project and what questions we will still have to answer before attending a full scale participation of CCP clearing in the future. There is also a description of today's SWAPCLEAR Nordic and its future development planes (phase II and phase III).

Introduction

The Swedish Government has established benchmarks for the share of nominal SEK debt, inflation-linked SEK debt and foreign currency debt. The purpose of allocating the debt to different types of debt is to reduce the risk in central government debt without increasing cost. The Government has also established benchmarks for the maturity of each of these shares, with the purpose to achieve the desired balance between cost and interest rate refixing and refunding risk. To achieve these benchmarks, derivatives are an important instrument for the SNDO. SNDO has used derivatives for more than fifteen years and around half of the outstanding government bonds are swapped to short interest rate exposure.

Counterparty risks are managed by ISDA Master Agreements with a downgrading clause and Credit Support Annex (CSA). SNDO uses bilateral agreements with cash only as collateral. Our policy is to participate in the swap market on the same terms and conditions as other institutions. As known from today's financial markets, states are not as risk free as one-sided CSA's imply. One-sided CSA's will also give rise to significant costs for the other participant. SNDO want to achieve a level playing field without trying to push costs for hedging risk to other participants. All in all the SNDO thinks that bilateral CSA's are fair and that, in the end, it will give SNDO better pricing.

Bilateral CSA's cause administrative costs. For example, setting up a management for the daily handling of collateral will give rise to both an initial and a running cost. The SNDO is using interest rate futures and hence already have routines and resources for handling margin calls and collateral. The extra costs for bilateral CSA's are therefore negligible.

The OTC market for swaps is a complicated web of transactions and counterparty relations. A CCP mechanism would most likely increase transparency and reduce systemic risks. Oversight by supervisory authorities and management of defaults could be made more efficient. Disruptions following defaults could be shortened and counterparty uncertainty reduced.

By participating in CCP clearing for swaps, counterparty and systemic risks for debt offices will likely be reduced. At the same time competition will increase. SNDO is positive to clearing swaps through a CCP. According to pooling effects, one CCP might be the optimum choice, but the SNDO assessment is that it is important to have some competition and avoid extensive concentration. What if a single CCP runs into trouble? Therefore SNDO found it natural to be part of and support the creation of a Nordic CCP when asked, to create alternatives. As one of the five biggest participants in the Swedish financial market, SNDO also found it important to participate in the creation to be able to influence the setup of a CCP on the local market.

CCP for IRS –”The Nordic solution”¹¹

IRS clearing product

NASDAQ OMX has developed support for registration and clearing of SEK denominated IRS. The service has been developed with a clear focus to align with the existing OTC market where IRSs are traded through bilateral negotiation and governed by ISDA and CSA agreements between the parties. The service will provide matching and clearing of trades that are registered and a daily market valuation of the complete IRS portfolio.

The use of NASDAQ OMX as a central counterparty will provide the market with some additional benefits compared to the current bilateral agreements:

- Reduced counterparty risk
- Multilateral netting of positions and cash flows
- Freed up limits on existing counterparties
- Possible to perform transactions with a wider number of counterparties

The swap trades can be reported to the clearinghouse in two ways, either directly in the newly developed window “OTC swap Trade Report” in the NASDAQ OMX back-office application (GENIUM INET Clearing™) or through a third party application that connects to the clearinghouse API (OMnet). The OTC Swap Trade Report window provides a flexible way for trade registration of swaps and supports the adaptability needed for swap transactions. The information entered in the trade report window is used to generate the cash flow schedule for both the fixed and floating leg and are visible before the trade report is sent in for clearing. Once a trade has been sent in and accepted for clearing, reports containing for example all known cash flows, margin requirement and market value are created on a daily basis and are visible in GENIUM INET Clearing™.

Risk Model and Margin Requirements

NASDAQ OMX has developed a, for the clearinghouse new, yield curve based margin model for interest rate instruments. This new approach increases the ability to capture correlation between instruments that are valued against the same yield curve, as the margin will correspond to the worst curve movement for the entire portfolio that is valued against a specific curve. The new margin model has been specifically developed for clearing of IRS's and other fixed income products, taking a portfolio approach to the risk in a portfolio of specific instruments.

¹¹ This chapter is written by NASDAQ OMX.

The new margin model has been implemented in the technical infrastructure and is today applied on the IRS transactions that are registered for clearing. The model calculates the market value and the margin requirement per account for IRS's and repos cleared by NASDAQ OMX.

The following instruments are currently used to determine the zero coupon curve that is used for valuation and margin calculation

- STIBOR contracts from T/N to 3 months
- Forward Rate Agreements up to 3 years
- SEK IRS rates from 3 years to 20 years

Regulatory Capital (Default Fund) and Default Management today and in the future

Default Fund

NASDAQ OMX does currently not operate a member sponsored default fund for the Nordic market. Instead the required regulatory capital consists of capital funded by NASDAQ OMX and synthetic capital.

Under EMIR12, NASDAQ OMX clearing will be required to introduce a member sponsored default fund. NASDAQ OMX has developed a default fund structure that follows the proposed new regulations regarding structure and governance of a default fund. To keep the unique client segregation of collateral available in NASDAQ OMX end customer clearing model, NASDAQ OMX propose to fund the respective default fund contributions for its direct pledge clients. Since the final version of EMIR is not yet available, NASDAQ OMX may have to make some adaptations to the proposed default fund structure when taking into account the final version.

One of the benefits with a member sponsored default fund is that it provides incentives for members to support the clearing house in unwinding of a defaulter's portfolio since their contribution to the default fund would be at risk.

NASDAQ OMX plans to implement the member sponsored default fund in March 2012.

Default Management

The risk nature of an OTC IRS is quite different from a typical standardized exchange traded future. The large volumes associated with the IRS market in combination with the non standardized maturities make default management highly important. A defaulter's portfolio will likely include a number of positions with illiquid maturities and to unwind these positions NASDAQ OMX will have to rely on its members.

In order to create a default management process that is robust NASDAQ OMX will require firm commitment from market makers (clearing members) to assist in the case of a default. In short this entails providing prices for hedging purposes and place bids in auctions replacing all positions of the defaulter. In the auction process NASDAQ OMX will divide the defaulter's portfolio into maturity buckets in order for market makers to provide relevant bids.

¹² European Market Infrastructure Regulations

Hedges will also be executed against the risk in each individual bucket in order to reduce the market exposure.

The auctions may include other fixed income positions held by the defaulter at the time of the default.

SWAPCLEAR Nordic – the project

Following phase I where the SNDO and SEB cleared a limited number of IRS trades, NASDAQ OMX aim to launch phase II in November 2011. Phase II will allow all eligible members (including the SNDO) to clear limited IRS volumes. The purpose of phase II is to test the clearing system in live environment, verify the capital efficiencies inherent in the risk model and prepare members for the full phase III launch in March 2012 allowing unlimited volumes from both member and end investors.

Participants: current and potential

The SNDO, the Nordic banks and the Nordic end investor community are likely to be the initial users of NASDAQ OMX SWAPCLEAR Nordic.

As a clearinghouse NASDAQ OMX also has many international members that clear other SEK denominated fixed income products such as Government and Mortgage bond forwards, FRAs and REPOs. These participants will evaluate the benefits of clearing their client's swap portfolios with NASDAQ OMX since they already have the infrastructure in place.

Further developments

In order to provide an effective clearing service, additional currencies should be added to the IRS offering. Following the SEK IRS launch NASDAQ OMX would like to investigate the interest from members to clear IRS's denominated in Norwegian Krona (NOK) and Danish Krona (DKK). Other instruments that should be taken into considerations for clearing are STINA, basis swaps and swaptions. In the future, a natural next step would be for NASDAQ OMX to offer clearing of Euro (EUR) denominated interest rate instruments that are feasible and supported by the members.

Agreements to be signed for CCP-members. How are the agreements constructed?

NASDAQ OMX swap offering falls under the same rules and regulation as all other Swedish fixed income products, hence from a trading and clearing perspective no additional agreements are needed for an existing member, but there will be some minor adaptations in the rules and regulations.

However, as mentioned above, in order to mitigate the risk inherent in OTC IRS's NASDAQ OMX has enhanced its current default management routines. In short, all market makers will be contractually bound to provide NASDAQ OMX with liquidity and bid in auctions following a default of a participant with open fixed income contracts. Such default management commitment is a pre requisite for members wanting to clear IRS's with NASDAQ OMX.

Background to the SNDO preparation for CCP

SNDO is today part of a pilot project (*phase I*) for CCP clearing of SEK denominated interest rate swaps (IRS), together with NASDAQ OMX and SEB.

The purpose of *phase I* was partly to test the CCP solution as well as a practical understanding of and learning from CCP clearing of swaps on the Swedish interest rate market. The experiences gathered from

phase I have provided a base for discussions and further development work with more market participants¹³ involved.

Initial discussions regarding *phase I* started in February 2010. NASDAQ OMX had, together with SEB, developed a solution for CCP clearing of SEK denominated IRS's (plain vanilla only). To be able to test this newly developed solution, they needed to involve another party. As an independent market participant, SNDO was requested.

In *phase I* two existing SEK denominated OTC IRS's, between SNDO and SEB, were transferred into CCP clearing with NASDAQ OMX. The novation took place on the 21 July 2010. The first swap matured in August 2011 and the second swap will mature in September 2012.

Before *phase I* could be launched a lot of preparation work had to be accomplished. Many questions arose that had to be discussed and analyzed. Examples of such questions are:

- Risk-assessment of NASDAQ OMX, due to risk-concentration.
- NASDAQ OMX default management: sufficient or shortages?
- Which legal framework applies for the “window” between the deal and novation?
- Operational issues, for example trade-registration.

A description of these, and other, questions and issues that have been discussed and other steps taken will be described throughout the report.

Risk related aspects

NASDAQ OMX as a central counterpart

A vital question for SNDO regarding risk in phase I, related to NASDAQ OMX as a central counterpart. SNDO needed to approve NASDAQ OMX as “counterpart” – both for phase I and preparatory for future implementation of CCP clearing.

Normally, when SNDO approve a new counterpart there is a demand for a lowest accepted rating level (A-). NASDAQ OMX had a rating of A+ (negative outlook), i.e. an adequate rating level according to the normal regulations.

CCP clearing of OTC derivatives is new for SNDO, why a risk-assessment of NASDAQ OMX was made to deepen the understanding of the company. The risk-assessment was based partly on the yearly evaluation of NASDAQ OMX made by the Swedish Financial Supervisory Authority (SFSA) and the Swedish Central Bank (CB) according to the CPSS/IOSCO-recommendations for central counterparties. According to this evaluation¹⁴ NASDAQ OMX fulfilled 12 out of 14 recommendations and the other two recommendations they partly fulfilled. Information from the rating institutions was also used for the risk-assessment of NASDAQ OMX.

NASDAQ OMX as a central counterpart differs from other CCP's as they are not owned by its members. This implies that counterparty losses are handled in a different way than in CCP's that are

¹³ Swedbank, Nordea, Svenska Handelsbanken and Danske Bank.

¹⁴ http://www.fi.se/upload/43_Utredningar/40_Skrivelser/2009/assess_nasdaq_omx_counterp_2008.pdf

member owned. For example, as they are not member owned they do not have mutual liability for payments among the members if one member defaults. They do not have a member sponsored default fund either (will be implemented in March 2012), which otherwise is the usual setup among most clearing houses. At the moment, NASDAQ OMX only has its own regulatory capital, bank guarantees and insurances to cover unpredicted losses.

Like other CCP's, NASDAQ OMX are also working with margin requirements¹⁵. In case of a member default, NASDAQ OMX will as a first step try to replace or close the defaulting members positions. If the cost for this is not covered by 100 % the defaulting member's margins will be used.

This setup, described above, is approved by SFSA and CB in their yearly evaluation of NASDAQ OMX as a central counterpart. All in all, SNDO was therefore satisfied with NASDAQ OMX as a "counterpart" in phase I.

The derivative instruments that NASDAQ OMX is clearing today have a limited time to maturity (3 years for Forward Rate Agreements for example) and they are quite "transparent". When introducing IRS's to the clearing, the time to maturity will increase to 20 years and the liquidity might be much more limited than with today's derivative instruments. This will make greater demands on NASDAQ OMX. Therefore, the implementation of a member sponsored default fund in March 2012 is highly desired.

Credit limit

SNDO has discussed if a maximum credit limit on NASDAQ OMX is required or not as all trades will be concentrated to one counterpart. In principle, a credit limit should not be necessary as the idea with a CCP is to restrict counterparty- and systemic risks.

Whether to set a maximum credit limit or not is a complex question and the SNDO will have to investigate it further for a potential future full scale implementation of CCP clearing. Setting a maximum limit on NASDAQ OMX has not been a question for phase I as it only covers two swaps.

Lowest accepted rating level

Another question that SNDO has discussed is the necessity of keeping a demand for a lowest accepted rating level on the counterparties. This has not been a question for phase I either, but it is another question that SNDO has to answer before a full scale implementation of CCP clearing in the future. The answer will be depending on the legal solutions decided on if NASDAQ OMX, for any reason, refuses to register a swap that was intended to be CCP cleared. For further information on the legal solutions, see chapter 5.3.

Evaluation of the NASDAQ OMX risk model

One of SNDO's tasks in phase I was to check the risk model used by NASDAQ OMX to calculate margin requirements. The purpose of the evaluation was only to provide a second opinion on the model, not to give a formal approval.

NASDAQ OMX has developed a risk model based on principal components analysis. Yield curves are stressed in terms of level, slope and curvature in order to simulate various scenarios. A counterparty portfolio is then valued using the altered yield curves and the margin requirements are determined by the worst case scenario.

¹⁵ For more information, please see:

http://nordic.nasdaqomxtrader.com/digitalAssets/70/70434_fixed_income_margin_guide__otc__.pdf

SNDO's analysis gave support to the margin methodology. The principal components model was considered to be adequate and SNDO was able to replicate the results of NASDAQ OMX. Having evaluated the model however, SNDO pointed out that the model does not stipulate by how much the components are to be stressed. The maximum stress levels are instead decided on by the NASDAQ OMX Risk Committee.

Since the stress levels are crucial to determining the actual margin requirements, evaluating the model itself does not guarantee satisfactory margins. SNDO therefore suggested that NASDAQ OMX consider an explicit method to determine maximum stress levels or in other ways improve the transparency of the decisions made by the Risk Committee.

Legal and regulatory aspects

Background

SNDO enters into interest rate and currency swaps under the 1992 ISDA Master Agreement with Credit Support Annex (CSA) with a number of counterparties. The CSA's are bilateral and includes rating dependent thresholds (EUR 50 million for AAA to 0 for BBB+). The agreement also includes a rating trigger (lower than BBB).

SNDO has also entered into a Clearing Membership Agreement with NASDAQ OMX and is a Direct Clearing Member (DCM) – see chapter 7.

SEB is one of SNDO's counterparties with which SNDO among other things enters into IRS's. SEB and SNDO have entered into an ISDA Master Agreement (including a CSA).

Phase I

Under phase I two existing IRS's denominated in SEK made under the ISDA Master Agreement ("the ISDA swaps") with SEB were transferred to NASDAQ OMX as Tailor Made instruments ("TM-instruments") under the Rules and Regulations of NASDAQ OMX Derivatives Markets ("the Rules and Regulations").

From a legal point of view the transfer was made by registering the swaps with NASDAQ OMX as TM-Instruments, simultaneously as the two ISDA swaps were terminated. The commercial terms of the swaps registered with NASDAQ OMX were identical with the ISDA swaps. The transfer was governed by two legal documents.

1. Agreement with SEB. SNDO entered into an agreement with SEB under which the parties agreed to apply for registration of the ISDA swaps as TM-Instruments with NASDAQ OMX. Under the agreement the parties also agreed the two ISDA swaps should be terminated when NASDAQ OMX accepted the application for registration.

2. Application for registration of two TM-Instruments with NASDAQ OMX. An application for registration of the swaps as TM-instruments with NASDAQ OMX was made. When the application for registration was accepted by NASDAQ OMX, the terms of the TM-Instruments are governed by the Rules and Regulation together with a contract specification for IRS's ("the contract specification"). The contract specification sets out the more detailed terms of the swaps, such as payment dates, business day convention etc. No references are made in the contracts specification to the terms and conditions of the ISDA Master Agreement or the ISDA definitions as it follows the NASDAQ OMX Rules and Regulations.

Legal Issues

Besides agreeing on the terms with SEB, the main legal focus was to ensure that the commercial terms of the transferred swaps was not changed due to the fact that swaps were governed by the Rules and Regulations and the contract specification. This included a comparison of the definitions in the contract specification of e.g. the business day convention, determination of STIBOR and the definition of day count fraction.

When centrally cleared swaps are offered on the Swedish market as a standard product and used in the day to day debt management, there are some additional legal questions to consider. One of the questions which SNDO has identified has to do with the steps for entering into a centrally cleared swap and what kind of agreement that would be necessary between the two business parties (besides the central counterparty).¹⁶

Steps for entering into swap with central counterparty

Centrally cleared swaps would basically be entered into by two business parties (“the initial parties”) in three steps:

1. The terms of the swap is agreed between the two initial parties’ front office over the phone.
2. The parties apply for registration of the swap with the central counterparty.
3. The central counterparty registers/accepts the swap and become the new counterparty to each of the initial parties. From a legal perspective it is important to consider that the central counterparty does not become a party to the swap until it has accepted and registered the swap.

Agreement between the initial counterparties

The initial counterparties must in some way agree that the swap-trades between them shall be registered with the central counterparty. If the central counterparty does not (for whatever reason)¹⁷ register the swap between the two initial counterparties, the agreement should state the legal and practical consequences. Basically there are two options; first the parties could agree that in such event the swap shall be null and void. However in such case it has to be considered whether the parties should compensate each other for any movements in the market.¹⁸ Otherwise there could be an additional risk. Second, the parties could agree that if the swap is not registered by the central counterparty, the swap should be a bilateral swap under an ISDA Master Agreement. This of course requires that the parties have entered into an ISDA Master Agreement with each other.

¹⁶ In some markets this has been solved by an adapted ISDA Master Agreement (“A cleared ISDA”), but this does not seem to be the way the market participants will solve it on the Swedish market.

¹⁷ This could happen for a number of reasons: one of the initial parties does not take all necessary actions in order to register the swap, there is a mismatch in the information regarding the swap provided to the CCP by the initial parties, an administrative error occurs or the CCP for some reason does not accept the swap (which it basically has discretionary powers to do).

¹⁸ From the time which the trade is made between the counterparties until it’s established that the trade will not be registered with the CCP, the market could have moved in such a way the one of the parties is “in the money” or vice versa.

Back-office related aspects

Today's collateral management

When SNDO are trading OTC-swaps they fall under the ISDA Master Agreement with CSA. The aggregated exposures for every unique counterparty's outstanding OTC trades are calculated daily. SNDO has decided that all CSA between SNDO and the counterparties are to be formulated on a bilateral basis.

A positive exposure triggers the creation of margin calls, where SNDO demands for collateral or demands for the return of collateral from that specific counterparty to reduce the credit risk. But also, the counterparties have the possibility in their turn to send margin calls when they have an exposure towards SNDO. If SNDO and the counterparty agree on the valuation of exposure, then collateral will be transferred. Otherwise the dispute mechanism is triggered according to the ISDA Master Agreement.

Cash is the only eligible collateral according to SNDO's CSA.

Test-period

In phase I, before the two IRS's between SNDO and SEB were cleared through NASDAQ OMX, there was a test-period – a “shadow clearing”. During this period a fictitious portfolio was registered in NASDAQ OMX's test environment. SNDO thereby had the possibility to confirm, for example, market values calculated by NASDAQ OMX and SNDO also had the possibility to influence what kind of reports to receive from NASDAQ OMX.

Trade registration and cash flow when clearing through NASDAQ OMX

Another back-office related task in phase I was to set up the routines for trade registration and the handling of cash flows.

After a business deal, IRS's are registered by the dealers in the in-house business application. In the application it is specified whether the swap will be cleared in NASDAQ OMX or OTC-traded.

When specified that the swaps are to be cleared in NASDAQ OMX, back-office users register the trades in GENIUM INET Clearing™, the back-office application¹⁹ of NASDAQ OMX. Afterwards, back-office users create a report in the same application showing if the trades are matched with the counterparty. If the trades are not matched, investigations start by contacting the dealers and the counterparty's (not NASDAQ OMX) back-office to solve the discrepancy.

When the interest rates on coupons are fixed, back-office users download reports in GENIUM INET Clearing™ specifying the cash flows for coupons on every swap leg. After verifying the amounts with our business application, the transactions are prepared for payment.

On the settlement day all cash flows with NASDAQ OMX, also other instruments than IRS's, are netted into one single payment. This netted payment amount is reconciled with the in-house business application. In event of an outgoing payment, it is processed by SNDO. Incoming payment is generated by NASDAQ OMX, no further instruction from SNDO is needed. The payments are settled in the daily clearing of NASDAQ OMX.

¹⁹ The creation of an interface between our business application and GENIUM INET Clearing™ is planned to be developed. When completed, back-office users will no longer need to register the trades manually in GENIUM INET Clearing™ and operational risks will be reduced.

Collateral

When swaps are cleared through a CCP, ISDA Master Agreement with CSA will cease to apply. The counterparty risk is transferred from the counterparty with whom the swap was traded to the clearing institution, NASDAQ OMX. Hence, these swaps will not be included in the calculations for the demand of collateral with that specific counterparty.

SNDO membership in NASDAQ OMX

The SNDO membership in NASDAQ OMX is a Direct Clearing Member (DCM). A DCM can clear their own and their customers' trades²⁰ (SNDO does not have any related customers).

In contrast to other DCM's, SNDO does not have to post any collateral or participate in any default fund or as market maker. This is a special clause in the agreement with NASDAQ OMX and is based on the assumption that SNDO is a risk-free counterparty. Due to EMIR, SNDO will not be able to keep these exceptions in the DCM agreement with NASDAQ OMX. This implies that SNDO, among other things, will have to participate in the default fund. If this is not possible, due to for example policy or legal issues, SNDO will have to change to another membership alternative. If a change of membership will be necessary, and what it will implicate for SNDO, are still outstanding questions.

Presently SNDO are internally discussing the advantages of being a DCM versus an end-customer. As a DCM, SNDO has a direct relationship with NASDAQ OMX. This opens, for example, for real-time trade information and the possibility to participate in different projects that NASDAQ OMX runs and that will influence the Swedish financial market (like SWAPCLEAR Nordic). As an end-customer, SNDO will be dependent on a custodian bank. SNDO can observe some disadvantages in such a setup. First, SNDO will miss the possibility to influence projects run by NASDAQ OMX. Second, if SNDO is dependent on a specific custodian bank, it might raise questions regarding moral hazard and that is something SNDO will avoid. Moreover, if the custodian bank runs into trouble, what will then happen to the SNDO trades and collateral? If many end-customers are dependent on one custodian bank this custodian bank will be systemically important and that is a negative aspect in its own. These trade-offs will have to be evaluated together with issues arising from participating in a default fund.

Concluding remarks

The SNDO participation in phase I for clearing IRS's through a central counterpart (NASDAQ OMX) have given SNDO a unique possibility to, at an early stage, start working with and analyze all the relevant questions for CCP clearing. Some questions have been specific for phase I but a majority of the questions have also embraced future full scale implementation of CCP clearing of IRS's according to the coming regulations in this area.

Even if SNDO has started to work with and analyze these questions and issues during phase I, there are still a lot to do before a full scale implementation. For example, SNDO will have to investigate further if a maximum limit on NASDAQ OMX should be required. Another question that is still not answered is what kind of agreements that would be necessary between two business parties when swaps are centrally cleared through NASDAQ OMX. To avoid operational risks an interface between SNDO's business application and GENIUM INET ClearingTM needs to be created.

²⁰

http://nordic.nasdaqomxtrader.com/Clearing/optionsfuturesclearing/Clearing_Models_Account_Structures/Membership_Alternatives/, 2011-08-25.

A new issue that has been raised recently is that SNDO as a DCM at NASDAQ OMX, will have to participate in the coming default fund. This is a question that SNDO has not considered at all during phase I as SNDO has worked from the hypothesis that the membership agreement should persist unchanged.

ANNEX II: THE AGENT AND PRINCIPAL MODELS

To show the pros and cons of each model for the end-user the above illustrated structure of the cleared trades is important. In this context it is necessary to understand the mutual obligations between the end-user, the clearing member and the CCP.

The agency clearing model requires the clearing member to guarantee the obligations of the end-user. In the case of a default of the end-user, the clearing member has the duty to fulfil the obligations of the end-user towards the CCP. If the end-user defaults, the clearing member is required to make all payments the end-user is liable for. On the other hand the clearing member has not the duty to fulfil the obligations of the CCP towards the end-user. In the case of a default of the CCP the end-user has no legal claim against the clearing member for compensating his losses.

On the other hand in the case of the principal model the clearing member is counterparty of two trades with the end-user on the one side and the CCP on the other side. In the event of the default of the CCP, the clearing member has a legal duty to fulfil all obligations the CCP is required to. In the case of a default of the end-user, the clearing member is required to continue all payments to the CCP. It is obvious that the obligations of the clearing member as a principal go further than as an agent.

Due to the described obligations it is important for the end-user to examine whether the clearing member acts as a principal or as an agent. The tables in this report which give a short overview of the major CCP infrastructures for Interest Rate Swaps and Credit Default Swaps contain the information if the specific CCP works on the basis of the agent or the principal model. This information could be used within the risk analysis of the end-user to get a clear picture which risk occurs for him. Due to the above described legal obligations between the end-user, the CCP and the clearing member, the risk for the end-user is greater towards the CCP in the case of the agent model and greater towards the clearing member in the case of the principal model. A detailed counterparty risk analysis of the CCP in the agent model and additionally of the clearing member in the principal model is necessary. It would be not sufficient to take a deep look at the CCP, if the CCP works on the basis of the principal model. Additionally it is important to analyse the specific rules of the CCP and the concluded documentation with the clearing member to get a clear picture of the incurred risks. Further complexity could arise if the concluded Interest Rate Swaps get converted into futures before the CCP takes them into the clearing process because the obligations after converting the trade are not 100 per cent identical to the obligations of the trade concluded with the market participant (for instance IDCH International Derivatives Clearinghouse converts the concluded trades into futures via its product swapdrop).

Furthermore it is important for the end-user to examine and analyse the specific rules in connection with payments of collateral. In every case the CCP demands the end-user or the clearing member to deliver collateral to cover its exposure against these two parties. On the other hand in most cases there is no obligation of the CCP to deliver collateral to the clearing member or the end-user to cover their exposure against the CCP. This varies between the different CCPs. In this case the analysis of the end-user regarding the risks arising from the CCP and the clearing member (see above) must take into account these circumstances.

Another point which must be considered is the way the end-user is obligated to margin his trades, i.e. on a net or gross basis. As described above the default of the clearing member could lead to the need to transfer the delivered collateral of the end-user to another suitable clearing member. The same would apply for the default of the CCP. This transfer should be much easier if the calculation of the positions of the end-user is on a gross basis and no netting effect will be taken into account. On the other hand the calculation of the positions of the end-user on a net basis leads to a much more efficient use of capital.

The following table tries to give a short summary of the above described implications of the different models:

| Principal model | Agency model |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCH SwapClear, LCH Clearnet, Eurex, ICE Trust, ICE Clear | CME, IDCG, LCH SwapClear FCM |
| Clearing member acts as principal | Clearing member acts as agent |
| Collateral posted at CCP, gross or net | Collateral posted at clearing member in segregated accounts |
| End-user monies segregated in custodial account at CCP | End-user monies segregated from the clearing members own funds in segregated pooled client accounts |
| In the event of a clearing member insolvency or bankruptcy, end-user has the right to request portability and if portability is not accepted, then the end-user trades will be closed out at CCP price | In the event of a clearing member bankruptcy, a clearing member must act to separate and transfer all customer accounts to another clearing member with the same or better level of creditworthiness. If transfer is not achieved, end-user trades will be closed out. End-user accounts are not considered a part of the assets of the clearing member for purposes of a bankruptcy distribution. |

ANNEX III: MAIN OPERATIONAL INTEREST RATE SWAP CCPS

| CCP | LCH SwapClear | LCH SwapClear FCM | CME Clearing | IDCG | Eurex Clearing |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Region | Global | US | US | US | Europe |
| Legal Model | Principal | Agent | Agent | Agent (Principal?) | Principal |
| Status | Live since 17.12.2009 for the buy-side | Live since 09.03.2011 | Live since 18.10.2010 | Live since 06.01.2009 | Under discussion, planned start of project in Q2 2011 |
| Acceptable Collateral | -Initial Margin (IM) in cash or treasuries -Variation Margin (VM) in cash only | -IM in cash or treasuries -VM in cash USD only | -Collateral under CFTC rules -VM in cash | -IM can be 100% securities -FCM manages pool | Open |
| Cleared currencies | USD, EUR, JPY, GBP, CHF, AUD, DKK, CAD, HKD, NOK, NZD, SEK, PLN, ZAR | USD, EUR, JPY, GBP, CHF, AUD, DKK, CAD, HKD, NOK, NZD, SEK, PLN, ZAR | USD | USD | Open |
| Cleared products | - Libor and Fed Funds Indices - USD, EUR, GBP IRS up to 50 years - AUD, CAD, CHF, SEK, JPY IRS up to 30 years - HKD, NOK, DKK, NZD, PLN, ZAR IRS up to 10 years - USD, EUR, GBP, CHF OIS - Compounding Swaps | - Libor and Fed Funds Indices - USD, EUR, GBP IRS up to 50 years - AUD, CAD, CHF, SEK, JPY IRS up to 30 years - HKD, NOK, DKK, NZD, PLN, ZAR IRS up to 10 years - USD, EUR, GBP, CHF OIS - Compounding Swaps | - 3M Libor Index up to 31 years - (future enhancements: 1M and 6M Libor Index, Basis Swaps, Vanilla IRS in additional currencies) | IRS contracts after conversion via swapdrop to IRS futures contracts with maturities up to 30 years | Open |
| Most important minimum | - Minimum capital of USD 5,000 Mio | - be registered with the CFTC as an FCM | - Corporation or partnership with the | - Corporation or partnership with the | Open |

| | | | | | |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| acceptance criteria for clearing member status | <ul style="list-style-type: none"> - Minimum rating of A - Minimum swap portfolio of USD 1,000,000 Mio - At least one credit institution within its group | <ul style="list-style-type: none"> - incorporated in the United States - Minimum capital of USD 1,000 Mio - Minimum swap portfolio of USD 1,000,000 Mio - At least one credit, banking, etc institution within its group | <ul style="list-style-type: none"> qualification for business in Illinois or New York - Minimum capital of USD 1,000 Mio (banks USD 5,000 Mio tier one) - Various written policies regarding risk management, anti money laundering, etc | <ul style="list-style-type: none"> qualification for business in New York - Minimum capital of USD 300 Mio - Fulfil financial reporting requirements | |
| Client customer business clearing / | Yes | Yes | Yes | Yes | Open |