Guideline

Title	Settlement Risk in Foreign Exchange Transactions – Guideline (2013)
Category	Sound Business and Financial Practices
Date	June 30, 2013
Sector	Banks Trust and Loan Companies
No	E-24

Table of Contents

Introduction

Principle 1: Governance

- OSFI's Expectations

Principle 2: Principal risk

- OSFI's Expectations

Principle 3: Replacement cost risk

- OSFI's Expectations

Principle 4: Liquidity risk

- OSFI's Expectations

Principle 5: Operational risk

- OSFI's Expectations

Principle 6: Legal riskLegal risk is addressed as a separate principle from operational risk in this guidance. However, under the Basel capital framework, the definition of operational risk encompasses legal risk, which includes the legal uncertainty or difference across jurisdictions associated with FX settlement.

- OSFI's Expectations

Principle 7: Capital for FX transactions

- OSFI's Expectations

Annex - FX settlement-related risks and how they arise

- A. Risks relating to counterparty failure to deliver the expected currency
- B. Operational and legal risks
- C. Impact of pre-settlement and settlement arrangements on risks

Glossary

Introduction

This guideline establishes OSFI's expectations regarding the management of foreign exchange settlement risk by banks, bank holding companies and trust and loan companies (collectively referred to as banks in this guideline). The basis for this guideline comes from the Basel Committee on Banking Supervision's (BCBS) paper entitled *Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions*.

Banks are expected to take account of the nature, size, complexity and risk profile of their foreign exchange transactions when assessing their practices against the principles in this guideline in the course of normal compliance reviews.

Further, banks are expected to develop a plan to remedy any deficiencies that come to light during their assessments. This will enable them to respond to questions that may arise when OSFI supervisors review their foreign exchange settlement risk management practices.

Principle 1: Governance

A bank should have strong governance arrangements over its foreign exchange (FX) settlement- related risks, including a comprehensive risk management process. With regard to governance structures, see OSFI's Corporate Governance Guideline.

OSFI's Expectations

Key considerations

1. A bank should have strong governance arrangements that ensure all FX settlement-related risks are properly identified, measured, monitored and controlled on a firm-wide basis.

2. A bank should have a comprehensive risk management framework to manage FX settlement-related risks commensurate with the size, nature, complexity and risk profile of its FX activities. This framework should cover all material risks including principal risk, replacement cost risk, liquidity risk, operational risk and legal risk. The framework should include policies and procedures, limit structures, management information systems and key risk indicators, fails management, escalation procedures and an internal audit and compliance program.

3. The risk management framework should also ensure that all risks associated with the selection of specific pre-settlement and settlement arrangements used by a bank are properly identified, measured, monitored and controlled.

Strong governance of FX settlement-related risks

1.1 Management's actions to monitor and control FX settlement-related risks should be consistent with the Risk Appetite Framework and the Internal Control Framework.Refer to the Corporate Governance Guideline for additional guidance on the Risk Appetite Framework and the Internal Control Framework.

Comprehensive risk management framework

1.2 A bank should have a comprehensive risk management framework for all material risks inherent to the life cycle of an FX transaction, including principal risk, replacement cost risk, liquidity risk, operational risk and legal risk. The framework should reflect the size, nature, complexity and risk profile of the bank's FX activities; provide mechanisms that properly identify, measure, monitor and control associated risks; and be integrated into the overall risk management process.

Policies and procedures

1.3 Senior management should effectively implement the bank's risk policies, including policies for managing all of the risks associated with FX settlement. Policies and procedures should be comprehensive, consistent with relevant laws, regulations and supervisory guidance and provide an effective system of internal controls. Policies and procedures should be clearly documented. Once established, policies should be periodically reviewed for adequacy based on changes to financial markets and internal business strategies.

Limit structure

1.4 A bank should set formal, meaningful counterparty exposure limits for FX trading and settlement that include limits for principal risk and replacement cost risk. In particular, the size and duration of principal exposures that arise from non-PVP settlements should be recognised and treated equivalently to other counterparty exposures of similar size and duration. Limits consistent with the bank's risk appetite should be established by the credit risk management department, or equivalent, on a counterparty basis. Usage should be controlled throughout the day to prevent trades that would create principal and replacement cost exposures that exceed these limits. Exceptions to established limits should be approved in advance (prior to trading) by the appropriate authority in accordance with established policies and procedures.

Management information systems and key risk indicators

1.5 A bank should have sufficiently robust systems to capture, measure and report on FX settlement-related exposures on a bank-wide basis, across business lines and counterparties. The sophistication of systems should reflect the risk profile and complexity of the bank. Timely reports should be provided to the bank's senior management and include appropriate key risk indicators and risk issues that could result in a potential loss.

Fails management

1.6 A bank should ensure that its framework identifies FX fails and captures the full amount of the resulting FX settlement-related risks as soon as practicable, to allow senior management to make appropriate judgements regarding the nature and severity of the exposure.

Escalation procedures

1.7 A bank should clearly define, in its policies, the nature and types of incidents that would constitute issues requiring escalation to, and approval by, senior management. There should be clear and detailed escalation policies and procedures to inform senior management, as appropriate, of potential FX issues and risks in a timely manner, and seek their approval when required. This should include, but not be limited to, exceptions to established limits and fails management.

Internal audit and compliance program

1.8 A bank should have an independent and effective internal audit function that can evaluate the effectiveness of management's efforts to control or mitigate the risks associated with settling FX transactions. Internal audit should have audit staff with the necessary expertise and experiences on the subject, and sufficient status within the bank to ensure that senior management responds appropriately to findings and recommendations. In addition, a bank should have an effective compliance function that manages compliance-related matters associated with settling FX transactions.

Selection of appropriate pre-settlement and settlement arrangements for FX transactions

1.9 A bank's risk management framework should include procedures to identify the most appropriate settlement method for each type of FX transaction, given the size, nature, complexity and risk-profile of the bank's FX activities. In making this evaluation, a bank should carefully measure the size and duration of its principal exposures. This framework should assess all available settlement methods and their efficacy at reducing or eliminating principal risk and other FX settlement-related risks. These implications need to be identified, assessed and incorporated into the bank's decision-making process. Once an appropriate settlement method is chosen, a bank should properly manage all FX settlement-related risks associated with that method. Where PVP arrangements are available, but a bank or its client has chosen not to use them, the bank should periodically reassess its decision. (See *Annex: FX settlement-related risks and how they arise*, Section C, for descriptions of available settlement methods and their respective risk implications).

Selection of a Financial Market Infrastructure (FMI)

1.10 When choosing to use or participate in an FMI, a bank should conduct robust initial due diligence to assess the associated risks. The initial due diligence should include a review of legal, operational, credit and liquidity risks associated with the use of an FMI and its participants and controls. A bank should have a thorough understanding of an FMI's rules and procedures, as well as any responsibilities and FX settlement-related risks that it may assume through its use or participation, directly or indirectly. A bank must ensure that it has the appropriate policies, procedures and internal control structure to adequately manage its risks and to fulfil its responsibilities to the FMI and its clients. Once a bank chooses to use or participate in an FMI, it should conduct periodic monitoring to identify significant changes to the FMI's processes or controls that may affect its risk exposures. If significant changes occur, the bank should update its risk analysis, as appropriate. To the extent that an FMI is subject to the *Principles for financial market infrastructures*, See Principles for financial market infrastructures, CPSS/IOSCO, April 2012. the bank should refer to available disclosures based on the principles when conducting its own due diligence and periodic monitoring of the FMI.

Selection of a correspondent bank

1.11 A bank's risk management framework should include policies and procedures for evaluating the risks and benefits of using one or more correspondent banks to settle its FX transactions in each currency. The framework should consider the potential size, form and maturity of the bank's exposure to its correspondents; and include an evaluation of each correspondent's financial condition and the risk profile of each correspondent's jurisdiction. It should include an assessment of any credit, liquidity, operational and legal risks associated with using correspondent banking services. The framework should provide for periodic reviews of the bank's correspondent banks and have procedures in place to mitigate any FX settlement-related risks that may arise.

Dependence on other institutions

1.12 A bank should consider its level of dependence on other institutions for settling its FX transactions. It should assess the potential impact of disruption and mitigate the FX settlement- related risks, as appropriate. Such risk mitigants may include establishing dual or backup correspondent or settlement banks to make payments, or joining

an FMI directly. The appropriate method should consider costs, testing arrangements, switching time, time to on-board, legal agreements, service fees, etc.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of banks' Boards of Directors in regards to operational, business, risk and crisis management policies.

Principle 2: Principal risk

A bank should use FMIs that provide payment-versus-payment (PVP) settlement to eliminate principal risk when settling FX transactions. Where PVP settlement is not practicable, a bank should properly identify, measure, control and reduce the size and duration of its remaining principal risk.

OSFI's Expectations

Key considerations

1. A bank should eliminate principal risk by using FMIs that provide PVP settlement, where practicable.
2. Where PVP settlement is not practicable, principal risk should be properly identified, measured, monitored and controlled. In particular, measurement of exposure should not underestimate size and duration and should be subject to binding ex-ante limits and other controls equivalent to other credit exposures of similar size and duration to the same counterparty.
3. A bank should reduce the size and duration of its principal risk as much as practicable.

Eliminating principal risk using PVP settlement

2.1 A bank should eliminate principal risk by using FMIs that provide PVP settlement, where practicable. In addition to a number of regional settlement arrangements, there are also mechanisms that provide global PVP settlement. PVP arrangements are designed to eliminate principal risk, but will not eliminate a bank's replacement cost risk or liquidity risk. A bank should identify and manage these risks effectively.

2.2 While a bank should maximise its use of PVP, it may still have trades that cannot be settled through a PVP arrangement (e.g. certain same day trades, trades in certain products or currencies, trades with counterparties not eligible for PVP settlement, etc.). To further reduce principal risk, the bank should support initiatives to have such trades become eligible for settlement through available PVP arrangements.

2.3 A bank may access the services of a PVP arrangement as a direct participant or as an indirect participant. A bank that is an indirect participant, or third party, should determine whether the settlement processes of the direct participant, or third party service provider (including any “internalised” or “on-us” settlement processes it may use), creates principal risk exposure. Principal risk exposures may occur between the bank and the direct participant, or between the bank and its counterparty (in internalised settlement). Principal exposure related to internalised settlement occurs where execution or authorisation of the relevant entry in the on-us account denominated in the currency being sold is not conditional upon execution or authorisation of the corresponding entry in the on-us account in the currency being bought (See Progress in reducing foreign exchange settlement risk, CPSS, May 2008 – Box 2, Settlement methods). If principal risk exists, then the bank should manage it accordingly.

Controlling remaining principal risk

Setting and using limits

2.4 Where PVP is not practicable, a bank should manage its remaining principal risk. This will involve setting principal risk limits that are binding; measuring expected exposures appropriately to prevent those limits from being broken when trades are executed; and monitoring the subsequent status of the trades to take prompt action when problems arise. Management of principal risk should be fully integrated into a bank’s overall risk management process.

2.5 A bank should ensure that principal risk to a counterparty is subject to prudent limits. Principal risk should be subject to an adequate credit control process, including credit evaluation and a determination of maximum exposure to a particular counterparty. Counterparty exposures arising from principal risk should be subject to the same procedures used to set limits on other exposures of similar duration and size to that counterparty.

2.6 The trading limits applied by a bank should be binding, namely, usage should be monitored and controlled throughout the day to prevent trades that would create exposures during the settlement process that would exceed the limit.Frequent requests for intra-day limit increases by the same client should prompt the bank to assess its approved risk appetite for that client and the additional risk that is being assumed. Where a bank is acting as a prime broker, it should have ex-ante processes in place to prevent client trades from creating exposures that would exceed the limit. For example, prime brokers typically support high-frequency trading clients by extending credit sponsorship and access to various electronic FX trading platforms. Given the short time frames associated with high-frequency trading activities, risk positions by high-frequency traders can accumulate rapidly under the name of a prime broker; thereby, raising the need for the prime broker to closely monitor and control its clients' activities. For more information about high-frequency trading and FX prime brokerage relationships, see High-frequency trading in the foreign exchange market, The Markets Committee of the Bank for International Settlements, September 2011. When a decision is made to allow a client to exceed a limit, appropriate approval should be obtained. A bank that exceeds its principal risk limit with a particular counterparty should reduce its exposure as soon as is practicable.

2.7 To ensure that the limits are binding, a bank should use an ex-ante process that updates and reports exposure on a timely basis, preferably as each trade is executed. If a bank has limited capability to update and report exposure on a timely basis, then the bank needs to have effective post-trade risk management controls to minimise limit breaches.For example, if a settlement limit is breached for a particular value date, auto-pricing of trades is prevented from executing further trades for that value date.

Measuring expected principal risk

2.8 For a bank to estimate the expected principal risk that will arise from a trade during its settlement process and to determine whether the counterparty limit will be exceeded, it needs to accurately measure when that exposure will begin and when that exposure will end. This requires the bank to know the relevant unilateral cancellation deadline for the currency it sold and when the incoming payment for the currency it bought will be received with finality and is reconciled. A bank will also need to determine whether it is appropriate to use approximate, rather than exact, measures of exposure that may arise during a trade's settlement.

(a) Unilateral payment cancellation deadlines

2.9 A bank's principal risk exposure to its counterparty begins when a payment order on the currency it sold can no longer be recalled or cancelled with certainty – this is known as the "unilateral payment cancellation deadline."Since this deadline may be one or more business days before the settlement date, this risk can last for a significant period of time. A bank should reduce the duration of its exposures by having the capability to unilaterally cancel payment instructions as late as practicable. This might require changes to systems and processes used to process internal payments. The exposure ends when the bank receives the purchased currency with finality. The duration of principal risk can vary depending on the currency pair being settled and the correspondent banking arrangements used by the bank and its counterparty.

2.10 A key factor in determining a unilateral payment cancellation deadline is the latest time a correspondent guarantees to satisfy a cancellation request (the guaranteed cut-off time). Service level agreements should identify this cut-off time. In instances where an agreement may not specify a guaranteed cut-off time or a bank may not have a written agreement, the bank and its correspondent should establish a specific cut-off time as late as practicable.Note that unilateral delay in sending payment instructions may increase the correspondent's operational risk (e.g. incorrect execution of payment instructions). , If a bank acts as its own paying agent (e.g. if the bank is a direct participant in the payment system for the sold currency), then its unilateral cancellation deadline for that currency reflects its internal payment processing rules and procedures and those of the relevant payment system.

2.11 A bank should be able to identify and halt individual payments up to the cut-off times (regardless of time zone issues) guaranteed by its correspondents or the payment system in which it participates without disrupting the processing of other outgoing payments.In addition to impacting a universal cancellation deadline, disruption of outgoing payments may impair a bank's ability to make timely payments to its counterparties. Where a bank's internal operational factors limit the bank's ability to do so, its effective unilateral payment cancellation deadline may be earlier than the guaranteed correspondent cut-off time. In some cases, the unilateral payment cancellation deadline may actually be earlier than the time the payment order is normally sent to the correspondent. This could occur, for example, if cancelling an internally queued, but still unsent, payment order requires manual intervention.

To ensure effective processing consistent with unilateral payment cancellation deadlines under stress, a bank should periodically test with its branches and payment correspondents.

(b) Reconciling incoming payments

2.12 In order to appropriately calculate when the principal exposure of a specific trade will end, a bank should incorporate its process for reconciling incoming payments and the point in time that it will identify the final or failed receipt of the purchased currency. To avoid underestimating exposures, the bank should assume that funds have not been received until credit to its correspondent bank (nostro agent) account has been confirmed and the bank has determined which trades have successfully settled and which have failed to settle.

2.13 A bank should minimise the period of uncertainty (i.e. the time between actual final receipt and reconciliation) by arranging to receive timely information on final payment receipt from its correspondent bank.

(c) Use of approximation techniques

2.14 When calculating expected principal risk using approximation methods, a bank should not underestimate the risk. For example, as noted in Progress in reducing foreign exchange settlement risk (CPSS, 2008), the most commonly cited estimation method used is the “calendar day” method, where banks measure their daily settlement exposures as the total receipts coming due on settlement date. Such a method can lead to underestimation of risk. This requires that the bank identify the relevant unilateral payment cancellation deadlines and reconciliation process timelines for each currency pair.

(d) Fails

2.15 Effective monitoring of failed transactions is crucial for measuring and managing principal risk, as unexpected fails cause exposures to be higher than predicted. A bank should have a framework that monitors fails and properly accounts for them in its exposure measures.

Reducing the size of remaining principal risk

2.16 Where PVP settlement is not used, a bank should reduce the size of its principal risk as much as practicable. A bank could use obligation netting to reduce the size of its principal risk exposures. Depending on trading patterns, legally binding obligation netting permits a bank to offset trades to a counterparty so that only the net amount in each currency is paid or received. To allow exposures to be measured on a net basis, netting arrangements should be legally sound and enforceable in all relevant jurisdictions.

2.17 A bank should use legally enforceable bilateral netting agreements and master netting agreements (e.g. ISDA) Master netting agreements are not valid in all jurisdictions. If a bank trades in a jurisdiction that does not support master netting agreements, then it should manage FX settlement-related principal risk appropriately (usually gross). with all counterparties, where practicable. The netting agreementsA bank should understand the implications of not having a netting agreement with a counterparty (e.g. where FX 1trading is restricted to very short tenors) and manage this risk accordingly. should contain legally enforceable provisions for close-out netting and obligation netting. (See *Annex: FX settlement-related risks and how they arise,* Section C, for descriptions of netting arrangements).

2.18 If a counterparty's chosen method of settlement prevents a bank from reducing its principal risk (e.g. a market participant does not participate in PVP arrangements or does not agree to use obligation netting), then the bank should consider decreasing its exposure limit to the counterparty or creating incentives for the counterparty to modify its FX settlement methods.

Principle 3: Replacement cost risk

A bank should employ prudent risk mitigation regimes to properly identify, measure, monitor and control replacement cost risk for FX transactions until settlement has been confirmed and reconciled.

OSFI's Expectations

Key considerations

1. Replacement cost risk should be properly identified, measured, monitored and controlled. In order to ensure that the size and duration of exposures are not underestimated, a bank should identify and assess the impact of its assumptions regarding timing of FX settlement.

2. A bank should use legally enforceable netting agreements to reduce its replacement cost risk, where practicable.

3. A bank should use legally enforceable collateral arrangements and should have an explicit policy on margin, eligible collateral and haircuts to reduce replacement cost risk, where practicable. Where possible, a bank should exchange (i.e. both receive and deliver) the full amount of variation margin necessary to fully collateralise the mark-to- market exposure on physically settling FX swaps and forwards. Variation margin should be exchanged frequently (for example daily) with a low minimum transfer amount.

Identifying, measuring, monitoring and controlling exposures

3.1 A bank should employ effective replacement cost risk management tools to identify, measure, monitor and control collateralised and uncollateralised exposures.

Setting and using limits

3.2 Meaningful limits on exposures, including replacement cost risk, are an integral part of an effective risk-management framework. Replacement cost risk limits should be established by maturity buckets to control current exposure and potential future exposureThe potential future exposure sets an upper bound on a confidence interval for future credit exposure related to market prices over time. ,The methodology used to calculate the FX exposure will depend on whether the bank uses an agreed-upon internal model or the standardised approach. Limits should be assigned accordingly. . Banks should consider other measures to further control the replacement cost risk, such as regularly measuring stress test results against limits.

Duration of replacement cost risk and the timing of settlement

Reconciliation of settlement

3.3 Until the final settlement of FX transactions is confirmed and reconciled, a bank cannot be certain that it is no longer exposed to replacement cost risk for those transactions. In order to avoid underestimation of potential replacement cost risk, a bank should assume that the exposure begins at trade execution and continues until final settlement of the transaction has been confirmed and reconciled.

Close-out netting and gross settlement

3.4 A bank should identify and assess the impact of its assumptions regarding the timing and nature of settlement when measuring replacement cost risk under a close-out netting agreement. For example, a bank with close-out netting agreements might measure and manage replacement cost risk on a bilateral net basis with the assumption that either all transactions with a single counterparty due to settle on a particular day will settle or none will settle. Since payments to settle FX transactions may be made at any time, from the opening of business in the Asia-Pacific region to the close of business in the Americas, this assumption may be faulty.For instance, even if a bank is "flat" with a particular counterparty from a bilateral net replacement cost perspective, it is possible that all of its "out-of-the-money" trades could settle, while all of its "in-the-money" trade could fail. Therefore, the bank should manage its replacement cost risk according to actual settlement times to avoid underestimating its risk.

Netting and collateral arrangements

Netting

3.5 A bank should use legally enforceable bilateral netting agreements and master netting agreements with all counterparties, where practicable. The netting agreements should include provisions for close-out netting and obligation netting. Close-out netting reduces risk and provides legal clarity regarding a surviving bank's claims and/or obligations with respect to a defaulted counterparty. It mitigates the risk of being forced to make payments of gross principal, or of gross marked-to-market losses, to the defaulted counterparty, while the defaulted counterparty's obligations become unsecured liabilities in a bankruptcy process.

Collateral arrangements

3.6 A bank should use legally enforceable collateral arrangements (e.g. ISDA credit support annexes) to mitigate its replacement cost risk. Collateral arrangements should describe the parties' agreement on all aspects of the margining regime, including collateral eligibility, timing and frequency of margin calls and exchanges, thresholds, valuation of exposures and collateral and liquidation.

3.7 Where possible, a bank should exchange (i.e. both receive and deliver) the full amount of variation margin necessary to fully collateralise the mark-to-market exposure on physically settling FX swaps and forwards. Variation margin should be exchanged frequently (e.g. daily) with a low minimum transfer amount. Collateral management policies and procedures, which should be reviewed on a periodic basis, should at a minimum address: a) collateral eligibility, b) collateral substitution, and c) collateral valuation.

3.8 Non-cash collateral assets should be highly liquid in order to be liquidated in a reasonable amount of time to cover mark-to-market losses. Valuations of collateral should be appropriately calibrated to reflect underlying risks during both normal and stressed market conditions. More stable and conservative/higher haircuts can be expected to moderate the procyclical impact of these arrangements.

Principle 4: Liquidity risk

A bank should properly identify, measure, monitor and control its liquidity needs and risks in each currency when settling FX transactions.

OSFI's Expectations

Key considerations

1. A bank should ensure that its liquidity needs and risks are appropriately represented in the bank's liquidity risk management framework.This principle focuses on funding liquidity risk. Funding liquidity risk is the risk that the firm will not be able to efficiently meet expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm. Market

liquidity risk is the risk that a firm cannot easily offset or eliminate a position at the market price due to inadequate market depth or disruption.

2. A bank should identify, measure, monitor and control its liquidity needs in each currency and have sufficient liquidity resources to meet those needs in normal and stressed conditions.

3. A bank's liquidity risk management framework should incorporate the liquidity risks that arise from its use of, and the various roles it may play in, an FMI, as well as from its use of correspondent banks.

Liquidity risk management framework

4.1 A bank should appropriately manage its liquidity needs and risks to ensure that it is able to meet its FX payment obligations on time. A bank's failure to meet its FX payment obligations in a timely manner may impair the ability of one, or more, counterparties to complete their own settlement, which can lead to liquidity dislocations and disruptions in the payment and settlement systems.

4.2 A bank should manage its overall liquidity needs and risks in accordance with existing international supervisory guidance. See Principles for sound liquidity risk management and supervision, BCBS, September 2008 and Basel III: International framework for liquidity risk measurement, standards and monitoring, BCBS, December 2010. A bank's liquidity needs and risks should be appropriately represented in a bank's liquidity risk management framework. The framework should address how the bank's liquidity needs and risks in each currency will vary based on the chosen method of settlement. In addition, the framework should incorporate stress tests using various severe, but plausible, scenarios.

Identify and manage liquidity needs

4.3 A bank should identify, measure, monitor and control its liquidity needs in each currency, taking into consideration the settlement method and applicable netting arrangements. A bank should be able to prioritise time-specific and other critical payment obligations to meet payment deadlines. This is particularly important for a bank that uses an FMI to settle its FX obligations. While settlement through an FMI can reduce a bank's overall liquidity

needs, it can also place high demands on a bank to make time-critical payments to settle its FX transactions. In order to meet its payment obligations in a timely manner, a bank should maintain sufficient available liquid resources and have the ability to mobilise those resources, as required. A bank should identify and manage the timeframes required to mobilise different forms of collateral, including collateral held on a cross-border basis.

Impact of FX settlement failure

4.4 A bank may face a significant liquidity shortfall if a counterparty fails to deliver a leg of an FX transaction (the purchased currency) on time. This situation may be exacerbated in a non- PVP settlement process, whereby the bank has already paid away the sold currency and cannot use those funds as collateral or to swap outright to obtain the needed counter-currency. A bank should account for these risks in its liquidity risk management framework and develop contingency plans to address possible liquidity shortfalls.

4.5 A bank may settle its FX payment obligations based on a bilateral or multilateral net position in each currency (position netting) even though the underlying obligations remain gross from a legal perspective. When this is the case, a bank should understand and address the risk that its liquidity needs could change materially following a settlement disruption. In particular, the failure of a counterparty or a settlement disruption in an FMI could lead to a scenario where a bank's net liquidity needs increase significantly by reverting to gross liquidity needs.

Liquidity risks associated with an FMI

4.6 A bank that settles its FX obligations through an FMI should assess the FMI's rules and procedures to identify potential liquidity risks. For example, a bank should understand an FMI's rules for rescinding trades and the associated liquidity impact on the bank. In addition, a bank may use certain liquidity-saving mechanisms to reduce its funding needs and should assess and manage its risk resulting from the absence of such mechanisms.In/out swaps (see *Glossary*) are examples of liquidity-saving mechanisms. Further, as noted above, a participant failure or a disruption to the operations of an FMI may change a bank's liquidity requirements. For example, if a participant fails to make payment or settlement is disrupted, then the remaining participants may be required to make unexpected funding payments to settle their transactions. A bank should incorporate these risk scenarios into its liquidity stress tests and make appropriate adjustments to its liquidity management policies, procedures and contingency funding plans.

4.7 A bank may have additional responsibilities associated with being an FMI member that should be considered in its liquidity risk management framework. For example, a bank may provide third party settlement services, correspondent banking services or credit to its customers to facilitate FMI settlement. Further, a bank may also be a liquidity provider to an FX settlement FMI.Many FMIs rely on liquidity from members to effect settlement. If an FMI needs to draw on its liquidity facilities, a provider bank may experience liquidity stresses resulting from the combination of its own FX obligations and the needs of the FMI. As these situations are likely to occur during periods of significant market stress, a bank should incorporate these risk scenarios in its liquidity stress tests. In these scenarios, a bank should consider that normal funding arrangements may not be available.

Liquidity risks associated with the use of a correspondent bank

4.8 When choosing to settle FX activities through a correspondent bank (nostro agent), a bank should ensure that the arrangement allows it to meet its FX obligations in each currency on a timely basis under varying circumstances. For example, a bank should assess the impact of a correspondent bank restricting the provision of intraday credit on its ability to meet its FX obligations, particularly if cross-border collateral would need to be mobilised to facilitate settlement. In addition, a bank should recognise the potential for operational or financial disruptions at its correspondent bank to disrupt its own liquidity management. A bank should assess such risks and consider appropriate mitigants, such as establishing alternative settlement arrangements to ensure it can continue to meet its FX obligations on time. See Principles for Sound Liquidity Risk Management and Supervision, BCBS, September 2008 – Principle 8.

Principle 5: Operational risk

A bank should properly identify, assess, monitor and control its operational risks. A bank should ensure that its systems support appropriate risk management controls, and have sufficient capacity, scalability and resiliency to handle FX volumes under normal and stressed conditions.

OSFI's Expectations

Key considerations

1. A bank should ensure that its operational risks are appropriately represented in the bank's operational risk management framework.

2. A bank should maximise the use of straight-through processing (STP) and other effective means to control operational risks.

3. A bank should confirm trades in a timely manner, using electronic methods and standard settlement instructions,Standard settlement instructions may also be referred to as "standing settlement instructions." where practicable.

4. A bank should have a robust capacity management plan to ensure that its systems have sufficient capacity and scalability to handle increasing and high-stress FX trading volumes. The plan should include the timely monitoring of trading volumes and capacity utilisation of key systems to prevent it from approaching critical levels. A bank that engages in high-frequency trading, or has prime brokerage clients that engage in such activity, should monitor trading volumes in real-time and assess the potential for large FX trading spikes.

5. A bank should have robust business resiliency and continuity plans to manage its operational risks and complete its FX settlement obligations.

Operational risk management framework

5.1 A bank should manage its operational risks in accordance with current international supervisory guidance. See Principles for the sound management of operational risk, BCBS, June 2011. A bank should establish an operational risk management framework that identifies, assesses, monitors and controls a bank's operational risks. The framework should address the accuracy, capacity and resiliency of a bank's operational processes and systems for FX settlement. A bank should periodically reassess its operational risks, including risks that stem from changes in its FX portfolio (e.g. new products).

5.2 A bank's operational risks can arise from deficiencies in information systems, internal processes, personnel or disruptions from external events. These risks can lead to inadequacies in the accuracy, capacity and resiliency of a bank's operations and cause delays or errors in trading data or confirmation of FX trades. Further, operational risks can lead to losses resulting from the bank's failure to meet obligations on time, and create or exacerbate other risks (e.g. principal risk, replacement cost risk, liquidity risk and reputational risk).

Straight-through processing (STP)

5.3 A bank should maximise the use of STP by employing systems that automatically feed transactions, adjustments and cancellations from trade execution systems to other internal systems, such as operations and credit-monitoring systems. STP helps to ensure that data is disseminated quickly, accurately and efficiently throughout the bank, and allows for effective monitoring and control of risks from trade execution to settlement. For example, STP can facilitate the timely confirmation of trades with counterparties and eliminate errors from manual processing. Maximising the use of STP, however, does not fully eliminate operational risk. In addition, STP systems require monitoring and sufficient capacity and scalability. In the event that STP systems are disrupted, a bank should have contingency procedures to continue its operations.

Trade confirmation and affirmationA trade confirmation is legal evidence of the terms of an FX transaction. A confirmation should include trade details, settlement instructions and other relevant information to allow each counterparty to agree to the trade terms. Trade affirmation involves acknowledging a counterparty trade notification or confirmation. Both trade confirmation and affirmation can take many forms (e.g. electronic, paper or voice over a recorded phone line).

5.4 A bank should establish processes and procedures that allow it to confirm or positively affirm FX trades as soon as practicable after execution to reduce the potential for losses from market risk or other sources. Where practicable, a bank should use electronic methods and standard settlement instructions to maximise the use of STP and allow for prompt confirmation and affirmation. Escalation procedures should be in place to resolve unconfirmed transactions. Trade confirmations and affirmations should be transmitted in a secure manner to mitigate the possibility of theft or fraudulent correspondence. As the confirmation and affirmation processes are critical controls, these functions should be handled independently of the trading division.

Capacity

5.5 A bank should have a robust capacity management plan for its FX systems, including trading, credit monitoring, operations, prime brokerage and settlement systems. When assessing capacity needs, a bank should consider the sufficiency of FX systems and operational personnel.

5.6 A bank should ensure its FX systems have sufficient capacity and scalability to handle increasing and high-stress FX volumes. A bank's capacity plan should include forecasting of expected and high-stress capacity needs. The forecasts should consider the FX trading behaviour of the bank and its clients. In addition, a bank should also work with relevant FMIs when establishing capacity policies and high-stress capacity requirements.

5.7 A bank should ensure its FX systems are designed appropriately for the scale of its current and expected FX business activity. For example, a bank that offers FX prime brokerage services should ensure that the operational arrangements supporting its prime brokerage activities integrate seamlessly with the bank's FX systems and do not cause undue operational risk. Further, a bank should design its FX systems to accommodate the potential for large trading spikes in stress situations, as appropriate. Finally, a bank's FX systems should be flexible enough to meet changing operational needs.

5.8 The capacity plan should include timely monitoring of trading volumes and capacity utilisation of key systems. Volume monitoring is critical to a bank that engages in high- frequency trading or has prime brokerage clients that engage in such activity, and should be reflected in the robustness of their capacity management plan. For more details on high-frequency trading, see High-frequency trading in the foreign exchange market, The Markets Committee of the Bank for International Settlements, September 2011. A bank should monitor trading volumes in a timely manner to prevent them from reaching a critical level and assess the potential for large FX trading spikes.

Contingency planning

5.9 A bank should develop and test its business resiliency and continuity plans to ensure continued operations following a disruption. A bank should identify and address various plausible events that could lead to disruptions in their FX-related operations and should have appropriate systems, backup procedures and staffing plans to mitigate

such disruptions. Business continuity plans should be documented and periodically reviewed, updated and tested.

Principle 6: Legal riskLegal risk is addressed as a separate principle from operational risk in this guidance. However, under the Basel capital framework, the definition of operational risk encompasses legal risk, which includes the legal uncertainty or difference across jurisdictions associated with FX settlement.

A bank should ensure that agreements and contracts are legally enforceable for each aspect of its activities in all relevant jurisdictions.

OSFI's Expectations

Key considerations

1. A bank should ensure that netting and collateral agreements, including provisions for close-out netting, are legally enforceable in all relevant jurisdictions.
2. A bank should identify when settlement finality occurs so that it understands when key financial risks are irrevocably and unconditionally transferred as a matter of law.

Enforceability

6.1 Contracts, and actions taken under contracts, should be legally enforceable with a high degree of certainty in all relevant jurisdictions even when a counterparty defaults or becomes insolvent.In particular, contracts, and actions taken under contracts, include close-out netting and collateral agreements. A bank should understand whether there is a high degree of certainty that contracts, and actions taken under such contracts, will not be subject to a stay beyond a *de minimis* period, voided or reversed. In jurisdictions where close-out netting may not be legally enforceable, banks should ensure that they have compensating risk management controls in place.Compensating risk management controls may include, but not be limited to, reducing FX activities in the relevant jurisdictions, imposing counterparty limits and settling transactions on a gross basis.

6.2 A bank conducting business in multiple jurisdictions should identify, measure, monitor and control for the risks arising from conflicts of laws across jurisdictions. The identification of legal risk in various jurisdictions can be accomplished through (i) legal opinions upon which a bank is entitled to rely that are commissioned by, and addressed to, a trade organisation or an FMI of which a bank is a member; or (ii) legal opinions provided by the bank's in-house or external counsel who are licensed to practice law in the jurisdictions for which they are providing such opinions. All opinions should be reviewed for legal sufficiency by bank counsel, and be updated, on a regular basis.

6.3 Changes in law (e.g., new or changing legal restrictions on the use of currency) may adversely impact a bank's FX activities by rendering agreements and contracts unenforceable. A bank should have procedures to monitor for, and promptly assess, changes in law relevant to its FX agreements and contracts in jurisdictions in which it is doing business and jurisdictions of the currencies in which it transacts.

6.4 If a bank's agreements and contracts are not legally enforceable, a bank may find itself with significant unexpected and/or un-hedged foreign exchange obligations. The financial ramifications for a bank that has actively traded in that currency could be severe.

Settlement finality

6.5 A bank should obtain legal advice that addresses settlement finality with respect to its settlement payments and deliveries. The legal advice should identify material legal uncertainties regarding settlement finality so that the bank may assess when key financial risks are transferred. The legal advice and bank's assessment should also take into consideration the impact of relevant bankruptcy and insolvency laws and relevant resolution regimes. A bank needs to know with a high degree of certainty when settlement finality occurs as a matter of law and plan for actions that may be necessary if settlement finality is not achieved as a matter of law.

6.6 A bank should ensure that relevant contracts, including those with correspondent banks (nostro agents), specify the point at which funds are received with finality, and the point at which instructions become irrevocable and unconditional, taking into consideration the impact of relevant bankruptcy and insolvency laws and relevant resolution regimes.

6.7 A bank should clearly communicate the legal status of on-us settlements so that their customers and counterparties know when finality of settlement is achieved as a matter of law.

Principle 7: Capital for FX transactions

As part of its Internal Capital Adequacy Assessment Process and stress testing program, a bank should assess the potential for material loss arising from its exposure to FX settlement (or 'principal') risk. A bank's internal capital target should reflect this exposure, as appropriate.

OSFI's Expectations

Key considerations

1. A bank's analysis of its Internal Capital Adequacy Assessment Process (ICAAP) and stress testing program should address all FX settlement-related risks, including those related to operational risk.

FX settlement risk

7.1 As part of its ICAAP and stress testing program, a bank should assess the potential for material loss arising from its exposure to FX settlement risk – which is distinct from its exposure to pre-settlement counterparty credit risk. Banks should refer to Chapter 4: Settlement and Counterparty Risk in OSFI's Capital Adequacy Requirements Guideline for information on the regulatory capital treatment of pre-settlement counterparty credit risk pertaining to transactions covered under the scope of the Basel Committee's Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions.

7.2 More specifically, when considering its internal capital needs related to operational risk, a bank should assess its exposure to material loss arising from counterparty non-performance in the settlement of FX trades outside of payment-versus-payment settlement arrangements.As the name indicates, payment-versus-payment (or 'PvP') settlement mechanisms are designed to virtually eliminate principal risk arising from counterparty non-performance in the settlement of foreign exchange transactions. The CLS system currently serves as the industry

standard for PvP settlement of FX-related trades. A bank's assessment should reflect the accurate identification and measurement of its exposure to FX settlement risk, and should also consider the bank's existing risk mitigation practices and internal controls, and the risks inherent in payments systems used to settle FX trades.Banks should refer to Principle 2 for further information on the appropriate measurement of FX principal risk, as well as on recommended application of risk mitigation techniques and internal controls in the context of this risk. The assessment should be conditioned by the bank's own historical loss experience and, owing to the remoteness of such losses, by external loss data where practicable. Moreover, the assessment should incorporate stress-testing to the extent possible, as a means of estimating potential loss arising from non-PvP FX settlement under a variety of exceptional, yet plausible, risk scenarios.

7.3 Given the level of potential loss identified in the assessment, a bank would be expected to implement a plan of action to address this exposure as needed. To some extent, this exposure has been captured under Pillar 1. However, banks still need to assess this risk through their ICAAP and stress testing. If the residual risk (not covered in Pillar 1) is deemed material, OSFI expects banks to capitalize it under their ICAAP framework. Moreover, a bank is expected to review its FX settlement risk profile on a regular basis, including whether size of potential loss, use of risk mitigation techniques and internal control practices combine to produce a result that is consistent with its overall risk appetite, and whether further adjustments to its FX settlement risk management strategy are necessary.

Annex - FX settlement-related risks and how they arise

1. In the period between FX trade execution and final settlement, a bank is exposed to a number of different risks. The risks vary depending on the type of pre-settlement and settlement arrangements. A bank needs to understand the risks associated with FX transactions in order to adequately manage them.

2. Section A describes principal risk, replacement cost risk and liquidity risk. Section B identifies and describes the presence of operational and legal risks between trade execution and final settlement. Finally, Section C discusses the various pre-settlement and settlement arrangements and their impact on risks.

3. For the purposes of exposition, the risks are described from the point of view of "a bank" and a failed FX "counterparty" of that bank. Section A describes the risks relating to a single FX trade between a bank and its

counterparty. This is generalised to multiple trades in Sections B and C.

A. Risks relating to counterparty failure to deliver the expected currency

4. The three main risks associated with FX transactions are principal risk, replacement cost risk and liquidity risk, which arise due to the possibility that a counterparty may fail to settle an FX trade. This failure may be temporary (e.g. operational or liquidity problems of the counterparty) or permanent (e.g. counterparty's insolvency). A bank may become aware of a potential failure at any time between trading and the completion of settlement, particularly if the problem is due to insolvency. However, sometimes, a bank may only know that a problem has occurred on or after settlement day when it does not receive the currency that the counterparty was expected to deliver. Initially, a bank may not be able to identify the cause of the failure, nor determine whether the failure is temporary or permanent.

5. A bank is exposed to principal risk, replacement cost risk and liquidity risk until it receives the bought currency with finality.

Principal risk

6. Principal risk is the risk that a bank pays away the currency being sold, but fails to receive the currency being bought. Principal risk can be the most serious risk because the amount at risk can be equal to the full value of the trade.The maximum loss is the principal value of the trade. The actual loss will depend on the outcome of the counterparty's insolvency proceedings.

7. Principal risk exists when a bank is no longer guaranteed that it can unilaterally cancel the payment of the currency it sold (the unilateral cancellation deadline). Given that a bank's unilateral payment cancellation deadline may be one or more business days before the settlement date, this risk can last for a significant period of time. For more information on how principal risk arises when settling FX trades, see Progress in reducing foreign exchange settlement risk, CPSS, May 2008.

Replacement cost risk

8. Replacement cost risk is the risk that an FX counterparty will default before a trade has settled and that the bank must replace it with a new trade and a different counterparty at current market prices (potentially less favourable exchange rate). As such, the bank may incur a loss relative to the original trade. Replacement cost risk exists throughout the period between trade execution and final settlement.

Liquidity risk

9. Liquidity risk is the risk that a counterparty will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty is insolvent since it may be able to settle the required debit obligations at some unspecified later time.

10. Liquidity risk exists in addition to replacement cost risk. Whether a default is just a replacement cost problem or turns into a liquidity shortage depends on whether a bank can replace the failed trade in time to meet its obligations or, at least, to borrow the necessary currency until it can replace the trade. In principle, liquidity risk can exist throughout the period between trade execution and final settlement. In practice, the probability of the problem materialising as a liquidity shortage and a replacement cost depends on many factors, including:

    - *The timing of the default.* The closer the default is to the settlement date, the less time a bank has to make other arrangements.
    - *Whether a bank has already irrevocably paid away the currency it is selling.* If so, the bank may have fewer liquid assets available to pay for the replacement trade or to use as collateral to borrow the currency it needs.In this case, FX settlement-related principal risk will also exist.
    - *The nature of the trade.* The less liquid the currency being purchased and/or the larger the value of the trade, the harder it may be to replace.

11. A bank may find it hard to predict the probability of a liquidity shortage, as it cannot make a sound judgment based solely on normal market conditions. However, there is a strong positive correlation between a counterparty default and illiquid markets (i.e. the default may be the cause of the market illiquidity or an effect of it). In addition, trades that are easy to replace in normal conditions may be impossible to replace when markets are less liquid and experiencing stressed conditions.

B. Operational and legal risks

12. A bank may also face FX settlement-related risks caused by weaknesses in its own operations and weaknesses in the legal enforceability of contractual terms and the governing law applicable to its transactions. If a bank has inadequate operational capabilities or if there are weaknesses in the legal basis for the pre-settlement and settlement arrangements, it can face increased principal risk, replacement cost risk and liquidity risk relating to counterparty failure.

13. Operational risk is the risk of loss due to external events or inadequate or failed internal processes, people and systems. This definition includes legal risk and excludes strategic and reputational risk.

14. Inadequate skills and insufficient processing capacity may increase potential exposures. These weaknesses can cause operational delays, inaccurate confirmation and reconciliation, or an inability to quickly correct or cancel payment instructions.

15. Legal risk occurs when a counterparty's contractual FX obligations are non-binding, unenforceable and subject to loss because (i) the underlying transaction documentation is inadequate; (ii) the counterparty lacks the requisite authority or is subject to legal transaction restrictions; (iii) the underlying transaction or contractual terms are impermissible and/or conflict with applicable law or regulatory policies; or (iv) applicable bankruptcy or insolvency laws limit or alter contractual remedies.

16. Legal problems may affect settlement of a foreign exchange transaction. Legal issues may compromise the legal robustness of netting, the enforceability of unilateral cancellation times or certainty about the finality of the receipt of currency.

C. Impact of pre-settlement and settlement arrangements on risks

17. FX settlement-related risks may be affected by the type of pre-settlement and settlement arrangements used by a bank. Risk implications for the most common arrangements are described below. This section focuses on the implications for the risks related to counterparty failure described in Section A. Different pre-settlement and settlement arrangements can also impact the operational and legal risks described in Section B – some arrangements may be operationally more complex, require more demanding risk management or create different legal risks. However, since these implications can vary from bank to bank and depend on specific circumstances, they are not covered in this section.

Close-out netting

18. Legally robust and enforceable netting arrangements can be a safe and efficient method for reducing settlement exposures. In the context of bilateral FX transactions, close-out netting is a specific type of netting that establishes a close-out payment based on the net present value of future cash flows between a bank and a defaulting counterparty. This involves two counterparties entering into a formal bilateral agreement stipulating that, if there is a defined "event of default" (e.g. insolvency of one of the counterparties), the unpaid obligations covered by the netting agreement are netted. The value of those future obligations is calculated to a net present value, usually in a single-base currency. Thus, a series of future dated cash flows is typically reduced to one single payment due to, or from, the closed-out counterparty.

19. Legally enforceable close-out netting reduces principal risk, replacement cost risk, liquidity risk and operational risk for unsettled future obligations. Without close-out netting, a bank may be required to make principal payments to a defaulted counterparty. This risk is particularly relevant in jurisdictions without statutory provision – or with weak or ineffective provision – for offset of obligations with a defaulted counterparty. Thus, a bank may face gross principal risk, replacement cost risk and liquidity risk on transactions not covered by a legally enforceable netting agreement.

Bilateral obligation netting

20. Under bilateral obligation netting, FX transactions between two counterparties due to settle on a certain date are netted to produce a single obligation to pay in each currency on that date (i.e. each counterparty has an obligation to pay a single amount in those currencies in which it is a bilateral net seller). Those net amounts are likely to be smaller than the original gross amounts, reducing principal and liquidity risks. Obligation netting can take different forms (e.g. netting by novation) and may vary by jurisdiction. Their effectiveness depends on the legal soundness of the contractual terms.

Collateral arrangements

21. If netting is accompanied by a collateral arrangement, replacement cost risk can be reduced further. A collateral arrangement is where the counterparty with the negative net position provides financial assets to the other counterparty in order to secure that obligation. Collateral could be taken to cover only price movements that have already occurred. However, in this case, if there is a counterparty default, a bank is still exposed to further movements that may occur between the time collateral was last taken and the time that the bank succeeds in replacing the trade (potential future exposure). Further protection can be achieved if collateral is also taken to cover the potential future exposure. Since the actual size of this exposure cannot be determined until after the event, the degree of additional protection depends on the assumptions made when calculating the collateral amount.As with any collateral arrangement, there is a risk that the value of the collateral may decline. Thus, the degree of protection against both current and potential future exposure also depends on the type of collateral and the haircut applied. Note that such collateral arrangements are typically not used to provide protection against liquidity or principal risk.

Settlement via traditional correspondent banking

22. Under this settlement method, each counterparty to an FX trade transfers to the other counterparty the currency it is selling, typically using their correspondent banks for the currencies concerned. Once a payment instruction is irrevocable, the full amount being transferred is subject to principal risk, and some portion may

be subject to replacement cost risk and liquidity risk.

On-us settlement

23. On-us settlement is where both legs of an FX transaction are settled across the books of a single institution. On-us settlement can occur either where one counterparty to a transaction provides accounts in both currencies to the other counterparty, or where one institution provides accounts to both counterparties to an FX transaction in both currencies.For example, a bank provides accounts to two of its customers, which have traded with each other. The account provider debits one of its customer's accounts and credits the other, while making opposite debits and credits to its own account. Those credits can be made simultaneously (via PVP) or at different times, in which case one counterparty may be exposed to principal risk from the other counterparty. Irrespective of whether principal risk exists, normal correspondent credit risks are also likely to exist.

Payment-versus-payment settlement

24. Payment-versus-payment (PVP) settlement is a mechanism that ensures the final transfer of a payment in one currency if, and only if, a final transfer of a payment in another currency occurs, thereby removing principal risk. There are various forms of PVP settlement arrangements, including the type offered by CLS Bank International (CLS Bank). For a description of the CLS system, see Progress in reducing foreign exchange settlement risk, CPSS, May 2008, Annex 4. Another form consists of a link between payment systems in the two currencies, where a payment is made in one system if, and only if, payment is made in the other system. PVP arrangements do not guarantee settlement. In a basic PVP arrangement, a trade will settle only if a bank and its counterparty pay in the correct amount. If the counterparty fails to pay in, a bank will receive back the currency it was selling, thus providing protection against principal risk. However, it will still be short on the currency that it was buying and face liquidity risk equal to the full amount of that currency, as well as the replacement cost risk on that amount.

Central clearing

25. A central counterparty (CCP) is an entity that interposes itself between counterparties to trades in a financial market, thus, becoming the buyer to every seller and the seller to every buyer. In this way, a form of multilateral obligation netting is achieved among the original counterparties. Currently, CCPs for FX trades involving an exchange of payments at settlement are rare, but they may become more widespread in the future.

Indirect participation in settlement or CCP arrangements

26. A bank may choose to be an indirect participant of a settlement or CCP arrangement (i.e. a customer of a direct participant). In this case, the FX settlement-related risks a bank faces will depend, in part, on the exact terms of the service provided by the direct participant. Thus, the risks associated with indirect participation may not be the same as those associated with direct participation.

Glossary

Bilateral netting

A general term describing an arrangement to offset the obligations between two parties to a single bilateral obligation. The obligations covered by the arrangement may arise from financial contracts, transfers or both.

Bilateral obligation netting

A form of netting where two counterparties agree (via a legally-enforceable netting agreement) to settle transactions by making or receiving a single payment in each of the currencies (i.e. each counterparty has an obligation to pay a single amount in those currencies in which it is a bilateral net seller). This reduces the value at risk by replacing multiple gross obligations (that would, otherwise, be settled on a trade-by-trade basis) with one netted obligation.

Central counterparty (CCP)

An entity that interposes itself between counterparties to trades in a financial market, becoming the buyer to every seller and the seller to every buyer.

Close-out netting

A form of netting which occurs following some predefined events, such as default. Close-out netting establishes a close-out payment based on the net present value of future cash flows due between a bank and a defaulting counterparty. Close-out netting is intended to reduce exposures on open contracts with a defaulting counterparty. (Also referred to as “default netting,” “open contract netting” or “replacement contract netting”).

CLS Bank International (CLS Bank)

Owned by the foreign exchange community, CLS Bank operates a multi-currency PVP cash settlement system to mitigate settlement risk in the foreign exchange market.

Confirmation and affirmation

The process in which the terms of a trade are verified either by market participants or by a central entity. A trade confirmation is legal evidence of the terms of an FX transaction. Trade affirmation involves acknowledging a counterparty trade notification or confirmation. Both trade confirmation and affirmation can take many forms (e.g. electronic, paper or voice over a recorded phone line).

Contingency planning

The development of practical and credible plans to promote resiliency during periods of severe financial distress and to facilitate a rapid resolution. The plans should ensure access to relevant information in a crisis and help evaluate resolution options.

Correspondent banking

An arrangement in which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as “agency relationships” in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle FX transactions. Reciprocal correspondent banking relationships may involve the use of nostro and vostro accounts to settle foreign exchange transactions.

Credit support annex (ISDA CSA)

A legal document that regulates credit support (collateral) for derivative transactions. It is one of the four parts that make up an ISDA master agreement, but is not mandatory. A CSA defines the terms or rules under which collateral is posted or transferred between swap counterparties to mitigate the credit risk arising from "in the money" derivative positions. Terms include thresholds, minimum transfer amounts, eligible securities and currencies, haircuts applicable to eligible securities and rules for settling or resolving disputes over valuation of derivative positions.

Currency swap

An agreement between two parties to exchange aspects (namely the principal and/or interest payments) of a loan in one currency for equivalent aspects of a loan in another currency at some point in the future according to a specified formula. Currency swaps are over-the- counter derivatives and are closely related to interest rate swaps. However, unlike interest rate swaps, currency swaps generally involve the exchange of the principal. (Also known as a "cross-currency swap").

Derivatives

Financial contracts whose values depend on the value of one or more underlying reference assets, rates, currencies or indices.

Enforceable

A legal document, agreement, right or obligation is enforceable if the party obligated can be forced or ordered to comply through a legal process.

Fail

A failure to settle a transaction on the contractual settlement date, usually due to technical or temporary difficulties. Fails typically arise from operational problems, while "defaults" arise from credit or solvency problems. (Also known as a "failed transaction").

Financial market infrastructure (FMI)

A multilateral system among participating institutions, including the operator of the system, used for purposes of clearing, settling or recording payments, securities, derivatives or other financial transactions.

FX forward

A contract between two parties that agree to buy or sell an amount of currency against a second currency at a specified future date (more than two business days later) and at an agreed-upon rate on the date of the contract.

FX spot

The purchase of one currency for another, with immediate delivery according to local market convention (usually two business days) at an agreed-upon price on trade date.

FX swap

A contract between two parties that simultaneously agree to buy or sell an amount of currency against a second currency at an agreed- upon rate; and to resell or repurchase the same currency at a later date with the same counterparty, also at an agreed-upon rate.

Governance

The set of relationships among a bank's Board, management, shareholders and other interested parties or stakeholders. Governance also provides the structure for setting company objectives, the means of attaining those objectives and the framework for monitoring performance.

In/out swap (with regard to CLS Bank only)

An in/out swap comprises two equal and opposite FX transactions that are agreed-upon as an intraday swap between two CLS Bank settlement members. One of the two FX transactions is settled through CLS Bank to reduce each member's net position in the two currencies. The other transaction is settled outside of CLS Bank. The combined effect of these two FX transactions reduces funding requirements of the two members during the CLS Bank settlement session, but leaves the institutions' overall FX positions unchanged.

Initial margin

Collateral that is collected to cover potential changes in the value of each participant's position (also known as "potential future exposure") over the appropriate close-out period in the event the participant defaults.

Legal risk

The risk of an unexpected application of a law or regulation, usually resulting in a loss.

Liquidity risk

The risk that a bank is unable to make payments due to a shortage of liquidity arising from a counterparty (or participant in a settlement system) not settling an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified later time.

Margin call

A demand for additional funds or collateral (following the marked-to- market of a margined transaction) if the market value of the underlying collateral falls below margin requirements.

Master netting agreement

A master netting agreement (e.g. ISDA or IFEMA) sets forth the standard terms and conditions applicable to all, or a defined subset of, transactions that the parties may enter into from time to time. Includes the terms and conditions for close-out and obligation netting.

Multilateral netting

Netting on a multilateral basis is the offsetting of obligations between or among multiple participants to a net position per participant.

Non-deliverable forwards (NDFs)

An outright forward or futures contract in which counterparties settle the difference between the contracted NDF price or rate and the prevailing spot price or rate on an agreed notional amount.

Nostro account

A foreign currency-denominated account (usually at a foreign bank) where a domestic bank keeps reserves to maintain its balance in that currency and to make and receive payments.

On-us settlement

On-us settlement is where both legs of an FX transaction are settled across the books of a single institution. On-us settlement can occur either where one counterparty to a transaction provides accounts in both currencies to the other counterparty, or where one institution provides accounts to both counterparties to an FX transaction in both currencies.For example, a bank provides accounts to two of its customers, which have traded with each other. The account provider debits one of its customer's accounts and credits the other, while making opposite debits and credits to its own account.

Operational risk

The risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events. This definition includes legal risk and excludes strategic and reputational risk.

Payment-versus-payment (PVP) settlement

Potential future exposure A settlement mechanism that ensures the final transfer of a payment in one currency if, and only if, a final transfer of a payment in another currency occurs.

Potential future exposure

The most common measure of forward-looking exposure. It is the maximum expected exposure over a specified interval of time calculated at some level of confidence. Potential future exposure is the additional exposure that a counterparty might potentially assume during the life of a contract, or set of contracts, beyond the current replacement cost. It is calculated by evaluating existing trades executed against possible market prices in the future. Both initial margin and variation margin mitigate this future exposure. Variation margin mitigates actual price volatility so that the price protection provided by initial margin is maintained.

Prime brokerage

A service that enables a bank's customer to conduct transactions in the name of the bank (the prime broker). The prime broker sets up an arrangement that permits the customer to trade directly with dealers in the name of the prime broker. These dealers recognise the prime broker (not the customer) as the counterparty in these trades.

Principal risk

The risk of outright loss of the full value of a transaction resulting from the counterparty's failure to settle. This can arise from paying away the currency being sold, but failing to receive the currency being bought. (Also referred to as "Herstatt risk").

Principal risk duration

The length of time that a bank might be exposed to principal risk from an FX transaction. This length of time extends from the unilateral payment cancellation deadline to the time a bank receives, with finality, the purchased currency. (There may also be additional time needed for a bank to confirm receipt of the expected settlement payment and to reconcile the settlement payment against its outstanding transactions.) Depending on the internal practices, procedures or any legal agreements of a bank and its correspondent bank, the duration of a bank's principal risk may begin as soon as the bank submits its payment order for a sold currency.

Real-time gross settlement (RTGS)

The continuous (real-time) settlement of funds or securities on an order-by-order basis (without netting).

Replacement cost risk

The risk of loss due to unsettled transactions with a counterparty. The resulting exposure is the cost of replacing the original transaction at current market prices.

Risk appetite

A high-level determination of how much risk a bank is willing to accept considering risk/return attributes. Risk appetite is a forward-looking view of risk acceptance.

Settlement finality

The irrevocable and unconditional transfer of an asset or financial instrument, or the discharge of an obligation by the FMI or its participants in accordance with the terms of the underlying contract. Final settlement is a legally defined moment.

Straight-through processing (STP)

Automated processing that allows data to be entered into technical systems once and is then used for all subsequent processing of transactions.

Stress test

An estimation of credit and liquidity exposures that would result from extreme price and implied volatility scenarios.

Unilateral payment cancellation deadline

The point in time after which a bank is no longer guaranteed that it can recall, rescind or cancel (with certainty) a previously submitted payment instruction. This deadline varies depending on the currency pair being settled, correspondent payment system practices, and operational, service and legal arrangements.

Variation margin

Variation margin is an amount of collateral posted to cover exposures resulting from actual changes in market prices. (Also known as “mark-to-market margin”).