

A Guide to Best Practice in the European Repo Market

ICMA European Repo and Collateral Council

February 2017



The International Capital Market Association (ICMA) and ICMA's European Repo and Collateral Council

ICMA has over 500 members located in approximately 60 countries worldwide drawn from both the sell side and buy-side of the market. It is primarily a pan-European association but with strong links and a growing number of members outside Europe.

ICMA market conventions and standards have been the pillars of the international debt market for almost 50 years, providing the framework of rules governing market practice which facilitate the orderly functioning of the market. Since the early 1990's, ICMA has played a significant role in promoting the interests and activities of the international repo market, and of the product itself. ICMA's European Repo and Collateral Council (ERCC) represents the firms active in Europe's cross-border repo and collateral markets.

This guide has been authored by Richard Comotto, Senior Visiting Fellow, ICMA Centre at Reading University, and is reflective of substantial input from member firms of the ICMA European Repo and Collateral Council.

© International Capital Market Association (ICMA), Zurich, 2017

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without permission from ICMA.

Contents

Preface Martin Scheck, Chief Executive of the International Capital Market Association (ICMA) and Godfried De Vidts, Chairman of the ICMA International Repo and Collateral Council (IRCC) and the ICMA European Repo and Collateral Council (ERCC)

Chapter **Paragraph**

1 Purpose and scope of the Guide

2 Best practice in initiating a repo transaction

Be certain of the identity of your counterparty	2.1-2.2
The need for clear communication	2.3
How to quote the price of a repo	2.4-2.5
How to quote the Purchase Price	2.6-2.7
Fixing the Purchase and Repurchase Dates	2.8-2.23
Negotiating repos with the intention of registering them with a CCP after agreement	2.24
Allocation of collateral in a general collateral (GC) repo	2.25
Agreeing the price of collateral	2.26
Agreeing permission to substitute collateral	2.27-2.29
Agreeing interest rates for late payments	2.30-2.31
Verifying the terms of transactions	2.32-2.51
Recommended delivery size (shaping)	2.52
Partial delivery	2.53-2.55
Anticipating problems that may be caused by low or negative repo rates	2.56-2.63
Calculating floating-rate repo interest payments	2.64-2.72
Calculating open repo interest payments	2.73-2.76
Netting	2.77-2.81

3 Best practice in margining repo

Fixing an initial margin or Haircut	3.1-3.8
Calculating a margin call	3.9-3.15
What transactions are included in the calculation of Net Exposure of non-forward repos?	3.16-3.20
Margining failed purchases	3.21
Margining failed repurchases	3.22
What transactions are included in the calculation of Net Exposure of forward repos?	3.23-3.24
What price is used to value collateral?	3.25-3.31
How often should Net Exposure be calculated and margin called?	3.32-3.33

Exposure thresholds and minimum transfer amounts	3.34-3.36
Periodic elimination of Net Exposure below an agreed threshold	3.37-3.38
Suspension of an agreed exposure threshold and minimum transfer amount	3.39
What is the deadline for making a margin call?	3.40-3.41
Which securities have to be accepted as margin?	3.42
Should initial margin or Haircut be deducted from margin securities?	3.43
What is the deadline for delivering margin?	3.44
Can margin securities be substituted?	3.45
Interest payments on cash margin	3.46-3.48
How is “repricing” used to eliminate Net Exposures?	3.49-3.52
When is margin returned?	3.53-3.54
What happens if margin is not delivered?	3.55-3.56
What if a party disputes a margin call?	3.57-3.60
Margin parameters to be agreed between parties before trading	3.61

4 Best practice in managing the life cycle of a repo

Exercising a ‘mini close-out’ in response to a failure to deliver on the Repurchase Date	4.1-4.3
Coupon, dividend and other income payments on collateral	4.4-4.6
Dealing with the resetting of a coupon on floating-rate collateral in a sell/buy-back	4.7
Exercising permissions to substitute collateral	4.8-4.10
The issuance of termination notices to counterparties	4.11-4.12
Confirmation and affirmation of post-trade amendments and updates to the agreed terms of a repo and the exercise of options	4.13-4.14

Annex I Understanding repo and the repo market

Annex II Glossary of repo terminology

Annex III Example of a mini close-out notice

Annex IV Forms of confirmation in Annex II of the GMRA

Preface

ICMA's European Repo and Collateral Council (ERCC) was first established in December 1999, as the European Repo Council (ERC), to represent the cross-border repo market in Europe.

Membership of ICMA's ERCC is open to those ICMA members who transact repo and/or manage collateral in Europe. Currently, there are around 100 members comprising the vast majority of firms who are actively involved in this market.

A key role of ICMA's ERCC has been to develop consensus solutions to issues arising in a rapidly evolving marketplace, consolidating and codifying best market practice and working to standardise repo documentation. The Global Master Repurchase Agreement (GMRA), supported by annually-updated legal opinions in respect of over 60 jurisdictions, is the predominant standard master agreement in the cross-border repo market and many domestic markets.

ICMA's ERCC also plays a significant role in nurturing the growth and wider use of the repo market in Europe, among both banks and their customers, by providing education and market information. In addition, ICMA has been conducting a semi-annual survey of the European repo market since 2001. During this period, this survey has become regarded as the only authoritative indicator of the size, structure, and dominant trends in the European repo market.

The decision to change the name of the ERC to the ERCC was made in 2015 in order to recognise the increasingly intimate relationship between repo and collateral and the ERC's substantial focus on collateral. The repo market is the main means by which collateral is sourced, priced and circulated. Repo desks are increasingly regarded as collateral desks. Moreover, since the financial crisis of 2007, the importance of collateral has grown significantly and the ERC had been increasingly focused on working with the authorities to create an efficient collateral market. While the name change was not expected to presage a dramatic shift in the nature or role of the ICMA ERCC, it has served to sharpen the focus of the ICMA ERCC on collateral and also helps to ensure that there is recognition in the official sector, and amongst the public, of the ERCC's mandate to work on collateral. The ERCC's work will continue, but over time new groups of member representatives may be formed to more directly tackle applicable collateral topics and challenges.

Martin Scheck

Chief Executive
International Capital Market Association (ICMA)

Godfried De Vidts

Chairman
ICMA International Repo and Collateral Council and ICMA European Repo and Collateral Committee

1 Purpose and scope of the Guide

- 1.1 This Guide is published by ICMA's ERCC. Its purpose is to help foster a fair and efficient European repo market by recommending practices which market experience suggests can help avoid uncertainty or disagreement about transactions, and consequent delay or disruption to repo trading and settlement. With the same purpose in mind, the Guide also codifies market conventions, where this has been thought to be helpful, usually in response to queries from market participants.
- 1.2 The practices set out in the Guide are general recommendations only. Parties to repos are free to agree other terms, where they see fit. It is not necessarily a problem if recommended best practice is not followed, provided the parties recognise the risks to which they may expose themselves as a result.
- 1.3 The Guide has been written to assist staff in ERCC firms, but others may find the Guide helpful. It presupposes some knowledge and experience of how the repo market operates. The Guide is not a repo market training manual, as it focuses selectively on key issues in the trading, management and settlement of repo. However, to assist the reader, Annex I provides a concise description of the functioning of repo and the repo market. Annex II provides a glossary of terminology.
- 1.4 This Guide, published by ICMA's ERCC, supersedes the repo trading practice guidelines published by the ERC over a decade ago, which sought to explain best practices and conventions for the European repo market. It also supersedes the best practices and conventions for repo margining, the codification of floating-rate repo conventions, the recommendation on repo matching as a driver for risk reduction and the recommendation regarding fails in negative interest rate repos.
- 1.5 The Guide applies to both *repurchase transactions* and *sell/buy-backs*, which are both types of repo, but does not apply to *securities lending transactions*.
- 1.6 The focus of the Guide is on trading and post-trade conventions in the cross-border repo market in Europe. It therefore differs in emphasis from codes published or sponsored by regulatory authorities, which have a prudential purpose and are focused on domestic repo markets.
- 1.7 The purpose of the Guide (to help foster a fair and efficient market in repo) is one supported by the regulatory authorities but it is not the practice of regulators to endorse voluntary codes or guidelines. The Guide is not an alternative to official regulatory requirements.

- 1.8 The Guide will be updated from time to time to reflect changes in the repo market in response to economic, monetary, financial, business, regulatory, legal and technological developments. The latest version of the Guide is posted on the ICMA website at www.icmagroup.org/repopguide. ICMA will publicise updates but readers should periodically check the ICMA website to ensure that they are using the latest version of the Guide.
- 1.9 Questions on the Guide, as well as proposals for change or improvement, should be addressed to the ICMA ERCC at the offices of ICMA Ltd at 23 College Hill, London EC4R 2RP or legalhelpdesk@icmagroup.org.
- 1.10 The information contained herein is provided to members of ICMA (“Members”) for general guidance only and should not be relied upon as advice. ICMA does not provide legal or other advice and expressly disclaims any responsibility for the information below. Readers should obtain such legal or other professional advice as appropriate. ICMA makes no representations or warranties, express or implied, as to the accuracy and completeness of any information contained herein.
- 1.11 Neither the ERCC nor the ICMA can act as arbitrator in the event of a dispute between parties to a repo, even where the dispute is about the application of a recommended practice, although ICMA’s ERCC will endeavour to offer further clarification of recommendations, where this is necessary.
- 1.12 Terms used in the Guide which are terms that are defined in the Global Master Repurchase Agreement (GMRA) are indicated by capital initials.

2 Best practice in initiating a repo transaction

Be certain of the identity of your counterparty

- 2.1 A party to a financial transaction is typically one of a number of legal entities within a group, often with similar names. It is essential, for legal, regulatory, credit risk management and operational purposes, that each party to a transaction knows the precise legal identity of its counterparty. If available and widely accepted, it is best practice to use legal entity identifiers (LEI) in Confirmations and affirmations.

Best practice recommendation. Parties should determine the precise legal identity of their counterparty. If available and widely accepted, parties should use legal entity identifiers (LEI) in Confirmations and affirmations.

- 2.2 One party can transact repos with another party under the same GMRA as either a principal (dealing in its own name and for its own benefit) or as an agent (dealing in a client's name and for the client's benefit).¹ The legal and regulatory relationship, and the risk exposure, between two principals is very different to that between a principal and an agent, or between two agents. Parties should therefore make clear to each other, at the point of trade, on what basis they are dealing. In addition, where one party is acting as an agent, they should both have signed the Agency Annex to the GMRA. If both parties are acting as agents, they will have to seek legal advice, as the Agency Annex to the GMRA does not cover transactions between agents.

Best practice recommendation. Each party should make clear to the other, at the point of trade, if it is acting as a principal or an agent.

The need for clear communication

- 2.3 When negotiating by telephone or electronic messaging system, it is essential that the precise terms of a transaction are clearly understood by both parties. On the telephone, there is a tendency towards the use of market slang and, when typing on an electronic messaging system, it is common to try to speed up a conversation by using abbreviations (above and beyond widely-understood conventions such as ISO currency codes). Both practices can lead to confusion. Parties should avoid sacrificing clarity for speed. It is the responsibility of both parties to ensure that they understand fully the terms of a transaction and, where there is any uncertainty, to insist on clarification from the other party. On the telephone, the key economic terms of a transaction should be rehearsed by one of the parties at the end of the conversation. Post-trade checks should also

¹ Note that the name of the client will, for commercial reasons, typically not be revealed to the trading desk of the agent's counterparty. However, the client must be identified to the credit and compliance departments of the counterparty. It is common practice to use a code to identify the client to the trading desk and to supply the credit and compliance departments of the counterparty with the underlying identity on a confidential basis.

be conducted using Confirmations and, where necessary, affirmation (see paragraphs 2.32-2.51).

Best practice recommendation. When negotiating by telephone or electronic messaging system, parties should ensure that they understand fully the terms of a transaction and, where there is any uncertainty, insist on clarification from the other party. On the telephone, the key economic terms of a transaction should be listed by one of the parties at the end of the conversation. Post-trade checks should also be conducted using Confirmations and, where necessary, affirmation.

How to quote the price of a repo

- 2.4 Repurchase transactions are quoted in terms of the repo rate, that is, the percentage per annum rate of return on the Purchase Price to be paid by the Buyer to the Seller on the Repurchase Date (or, in the case of some open repos and floating-rate repos, on interim payment dates). The repo rate should be quoted on the basis of the day count and annual basis convention (also called the day count fraction convention) prevailing in the wholesale money market in the currency of the Purchase Price (notably, in the deposit and forward foreign exchange markets). This is almost always the actual day count and 365-day annual basis (A/365F) or the actual day count and 360-day annual basis (A/360). In the GMRA, the repo rate is called the Pricing Rate. This terminology should be used to identify the repo rate in Confirmations and affirmations between parties using the GMRA.
- 2.5 In the past, sell/buy-backs were always quoted in terms of the forward price of the collateral. Formulae for calculating the forward price are given in the glossary in Annex II. Sell/buy-backs are now often quoted, like repurchase transactions, in terms of the repo rate.

How to quote the Purchase Price

- 2.6 Parties to a repurchase transaction conventionally agree the Purchase Price of fixed-income securities in terms of the dirty or gross price of the collateral (that is, **including** the accrued interest since the last coupon date). The Purchase Price of a repurchase transaction also incorporates any initial margin or Haircut.
- 2.7 Parties to a sell/buy-back have traditionally agreed the Purchase Price of fixed-income securities in terms of the clean or net price of the collateral (that is, **excluding** accrued interest).² However, the sum of money actually paid to the Seller on the Purchase Date is equal to the value of the collateral at its dirty price (clean price plus accrued interest), just as it is for a repurchase transaction. Note, in the remainder of the Guide, the term Purchase Price is used for both

² This convention is implicitly reflected in the Buy/Sell-Back Annex of the GMRA. See paragraphs 2(a)(ii) and 3(f) of the GMRA 2000 and 2011 Buy/Sell-Back Annexes.

repurchase transactions and sell/buy-backs to mean the cash amount calculated using the dirty price of a fixed-income security.

Fixing the Purchase and Repurchase Dates

- 2.8 Parties are able to vary the period between the date on which a repo is agreed (transaction date or T) and the Purchase Date, when cash and collateral are exchanged. Depending on the currency and jurisdiction, parties can agree to schedule the Purchase Date of non-forward repos on:
- the same day as the transaction date (in which case, settlement is said to be 'same-day' or T+0);
 - the next Business Day (called 'next-day' or T+1 settlement);
 - the second Business Day after the transaction date (called 'spot' or T+2 settlement);
 - the third Business Day after the transaction date (T+3 settlement).
- Any Purchase Date later than T+3 is now usually considered a forward repo, whatever the currency (see paragraph 2.17).
- 2.9 The common non-forward settlement period in the repo market has tended to be one Business Day earlier than the common non-forward settlement period in the cash market for the same security. This is because the net cash positions that need to be financed and the net securities positions that need to be covered in the repo market are only known **after** close of business on the cash market transaction date and repos therefore have one less Business Day than cash market transactions to settle.
- 2.10 When the non-forward cash transactions in many European markets settled at T+3 but non-forward repos in the same markets settled at T+2 or earlier, some customers had operational difficulties in delivering securities to settle repos one day faster than required for cash transactions. In such cases, dealers often agreed to settle at T+3. This later repo Purchase Date became known as a 'corporate value date'. After the settlement of non-forward cash transactions moved in 2014 to T+2 in European markets which had previously settled at T+3 (see paragraph 2.11 below), it appears to have remained the convention to use the term corporate value date to describe settlement at T+3. However, parties are advised to check with each other when that term is used.
- 2.11 Until 6 October 2014, the common non-forward settlement period in the cash market for eurozone government bonds was T+3 and, as a consequence, the common non-forward Purchase Date for repos against these securities was T+2 (with the corporate value date being T+3). In 2014, ICMA and other European securities market associations recommended that, with effect from 6 October 2014, their members settle cash transactions in securities in the EEA no later than T+2. This recommendation was made in order to smooth the

implementation in 2015 of a requirement of the EU Central Securities Depositories Regulation (CSDR) that mandates that settlement no later than T+2 for cash, repo and securities lending transactions in ‘transferable securities’ regulated under the second Market in Financial Instruments Directive (MiFID) and executed on ‘trading venues’ regulated under a parallel regulation, MiFIR. Although the T+2 settlement requirement of the CSDR excludes transactions executed in the OTC market and in ‘non-transferable securities’, ICMA and other financial market associations recommended that, in order to avoid the confusion that might be caused by different settlement periods, all non-forward cash transactions in securities in Europe should settle no later than T+2, whether or not subject to CSDR. It was expected that the common non-forward Purchase Date for repos against eurozone government securities would move from T+2 to T+1. For the Purchase Date of forward repos, see paragraph 2.17.

2.12 The Repurchase Date of a repo can be fixed in a variety of ways.

- For fixed-term repos, the Repurchase Date can be agreed in terms of:
 - a specific date; or
 - for maturities which are multiples of one month, the End/End Rule and Modified Following Business Day Convention (see Annex II).
- For open repos, the Repurchase Date is not fixed on the transaction date but can be called at any time by either the Buyer or the Seller, subject to a minimum period of notice to the other party (see paragraph 2.21).

2.13 Business Days.

- The Purchase Date and Repurchase Date of a repo must both be Business Days in the city in which the currency of a repo is to be paid.
- If the city in which the currency is to be paid is different from the city in which the collateral is to be delivered (eg in the case of cross-currency repos), the Purchase Date and Repurchase Date must also be Business Days in the latter city as well.
- The Purchase Date and Repurchase Date of a repo would also have to be a Business Day in more than one city, if collateral has to be delivered between securities settlement systems and/or custodian banks in different cities.

- 2.14 The definition of Business Day in the GMRA does not specify when the Business Day ends.³ This can create uncertainty about when a notice served by one party on another (eg a Default Notice) comes into effect. Notices delivered after the close of business do not take effect until the following Business Day. It is therefore best practice for parties to consider whether to agree the times to be deemed as close of business in the countries in which they are located and in other relevant locations, and to record these times in Annex I of their GMRA or, if that is not practicable, in Confirmations.

Best practice recommendation. It is best practice for parties to consider whether to agree the times to be deemed as being the close of business in the countries in which they are located and in other relevant locations, and to record these times in Annex I of their GMRA or, if that is not practicable, in Confirmations.

- 2.15 In the case of the euro, because public holidays vary between member states, a Business Day has been defined as any day on which the TARGET central bank payments system is open. However, for the purpose of serving notices on counterparties, account needs to be taken of the fact that firms based in different eurozone member states observe different national or regional public holidays. For example, if a party in one eurozone country serves a notice terminating an open repo on a party in another eurozone country on a public holiday in the second country, even though it is a TARGET Business Day, there may be no one working at the offices of the second party who is able to respond in time. It is therefore best practice for parties to agree on whether to include relevant domestic public holidays in the definition of a Business Day in Annex I of their GMRA or, if that is not practicable, in Confirmations.

Best practice recommendation. It is best practice for parties to consider whether to include relevant domestic public holidays in the definition of Business Day in Annex I of their GMRA or, if that is not practicable, in Confirmations.

³ Under the GMRA 2000 paragraph 2(e) and 2011 paragraph 2(f), a Business Day is defined as:

- For repos to be settled at a security settlement system, any day on which that system is open for business;
- For repos to be settled by delivery of securities at a custodian bank, any day on which that bank is open for business, as well as a day on which banks generally are open for business in the city which hosts the central bank payments system for the currency of the Purchase Price or, in the case of the euro, any day on which the TARGET payments system is open (which means any weekday except Easter Friday and Monday, May Day, Christmas, the day after Christmas and New Year's Day).

- 2.16 For non-forward repos, unless otherwise agreed between the parties:
- The day or days **between** but not including the transaction date and non-forward Purchase Date should be a Business Day or Business Days in the city in which the currency of a repo is to be paid.
 - If the city in which the currency is to be paid is different from the city in which the collateral is to be delivered, the day or days between but not including the transaction date and non-forward Purchase Date must also be Business Days in the latter city as well.
 - However, the day or days between the transaction date and non-forward Purchase Date do not have to be a Business Day or Business Days in the city or cities in which the parties are located, if these are different from the cities in which payment and delivery are due, unless the parties agree otherwise.
 - For example, if a London party transacts a euro-denominated repo against a German government bond to be delivered across Euroclear in Brussels with a party in Stockholm for a Purchase Date of T+2, then T+2 has to be a Business Day in London, Stockholm, Brussels and for TARGET, but T+1 only has to be a Business Day in Brussels and for TARGET. The convention for non-forward repos is summarised in the following table.

Table 1: What days should be Business Days in each relevant location?

	location of			
	Party A	Party B	central bank payment system	security settlement system(s)
transaction date (T)	yes	yes	yes	yes
any Business Days between T and non-forward Purchase Date	not necessary	not necessary	yes	yes
Purchase Date	yes	yes	yes	yes
Repurchase Date	yes	yes	yes	yes

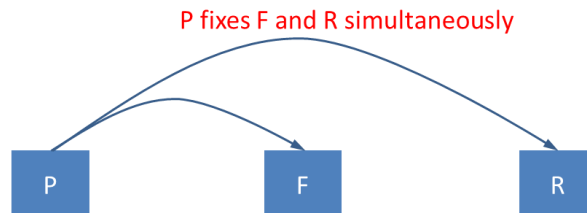
2.17 Forward repos. A forward repo is a transaction with a Purchase Date one Business Day or more after the common settlement date for cash transactions in the same security.

2.18 For forward repos for which the periods from the common non-forward Purchase Date to the forward Purchase Date and to the Repurchase Date are both multiples of one month, there are two methods of fixing the forward Purchase Date and Repurchase Date:

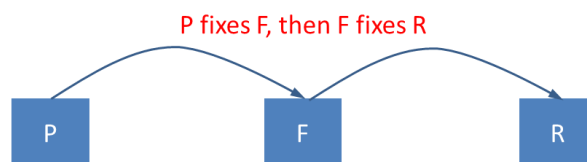
- Method 1 (constant date or simultaneous method). Both dates can have the same day number in the future months as the common Purchase Date for non-forward repos. For example, if the common non-forward Purchase Date is T+1, a 1x2 forward repo would have a forward Purchase Date which is the same date as T+1 but one calendar month later, and a Repurchase Date also on the same date but two calendar months later. For example, the dates for a 1x2 forward repo transacted on Wednesday, 2 September would be:
 - common non-forward Purchase Date, assuming T+1: (Thursday) 3 September
 - 1-month Purchase Date: (Monday) 5 October, as 3 October is on Saturday
 - 2-month Repurchase Date: (Tuesday) 3 November.
- Method 2 (sequential date or knock-on method). The forward Purchase Date can have the same day number in the near future month as the common non-forward Purchase Date, while the Repurchase Date can have the same day number in the far future month as the forward Purchase Date. Using the same example as above (a 1x2 forward repo in a currency in which non-forward repos settle T+1 that is transacted on Wednesday, 2 September), the dates would be:
 - common non-forward Purchase Date, assuming T+1: (Thursday) 3 September
 - 1-month Purchase Date: (Monday) 5 October, as 3 October is on Saturday
 - 2-month Repurchase Date: (Thursday) 5 November.

In contrast to the first method, the Repurchase Date in the second method is fixed by reference to the forward Purchase Date of 5 October, not the common non-forward Purchase Date of 3 September. In other words, under Method 2, the fixing of the Purchase Date has a knock-on effect on the fixing of the Repurchase Date. This would not be the case under Method 1. The two methods are illustrated in the diagram below (where P is the common non-forward Purchase Date, F is forward Purchase Date and R is the Repurchase Date).

- **Method 1** (constant date or simultaneous fixing method)



- **Method 2** (sequential date or knock-on fixing method)



2.19 Method 2 (sequential date or knock-on fixing method) is recommended as best practice, as this ensures that the period between the forward Purchase Date and Repurchase Date will have the same number of days as new non-forward transactions for value on the same Purchase Date. Method 2 is the convention applied elsewhere in the money market.

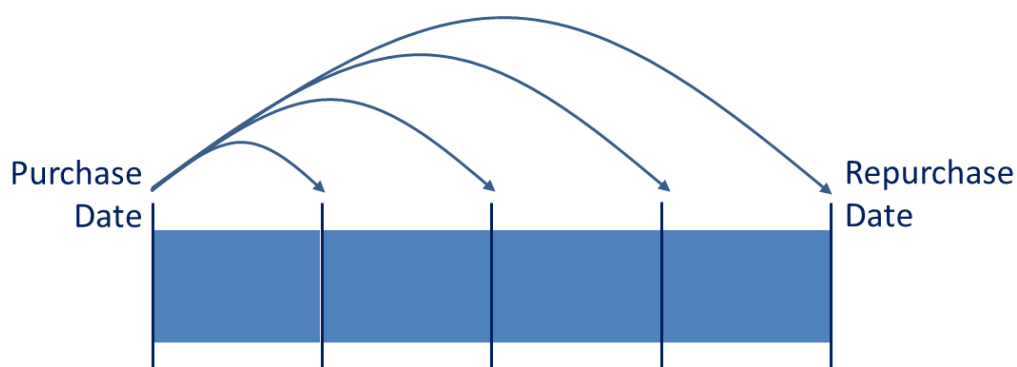
Worked example: fixing forward Purchase Date and Repurchase Date

Consider a 3x6 forward repo in pounds sterling executed on Tuesday, 26 May. In sterling, the common non-forward settlement date is T+0. Assume 26 August is a public holiday in the UK. Therefore:

- 1 The 3-month forward Purchase Date: Tuesday, 27 August (it should have been Monday, 26 August, but as this is a UK public holiday, the date moves under the Modified Following Business Day Convention to the next Business Day).
- 2 The 6-month Repurchase Date is Wednesday, 27 November (this is calculated from the 3-month forward Purchase Date of Tuesday, 27 August).

Best practice recommendation. It is best practice to fix the forward Purchase Date of a forward repo at the same day number in the near future month as the common Purchase Date for non-forward repos and to fix the Repurchase Date at the same day number in the far future month as the forward Purchase Date. Therefore, a change in the fixing of the forward Purchase Date (because it is not a Business Day) would affect the fixing of the Repurchase Date.

2.20 Floating-rate repos. Some floating-rate repos are linked to term interest rate indexes such as LIBOR (other than the overnight or tom/next LIBOR indexes) and EURIBOR. It is convention for such transactions to pay interest at the end of each interest rate period. For example, a repo indexed to 3-month LIBOR would conventionally pay repo interest at the end of every three months. The market convention for fixing future payment dates here is different to Method 2 (sequential date or knock-on fixing method) recommended for fixing the dates of forward repos in paragraph 2.19 above and more like Method 1 (constant date or simultaneous fixing method). For example, for interest rate periods which are multiples of one month, the start of all future periods should have the same day number in future months as the common non-forward Purchase Date, unless a future date is not a Business Day, in which case, the End/End Rule and Modified Following Business Day Convention would apply to this date (but only this date). This convention ensures that the day counts of the second and subsequent interest rate periods are not shortened by the deferral of the starting dates of earlier periods because of the occurrence of non-Business Days. A series of deferrals would have the undesirable effect of progressively compressing periods as one approached the fixed final Repurchase Date. The convention for fixing floating-rate periods is illustrated in the diagram below.



Worked example: fixing interest rate period and Repurchase Dates

Consider a 3-month floating-rate repo indexed to 1-month GBP LIBOR with a Purchase Date of 25 November. Assume the following 25 and 26 February are on a weekend. The Repurchase Date would then be 27 February. Because 25 December is also not a business day, the start of the second interest rate period should be deferred until 26 December (assuming that is a business day). However, the third interest rate period should start on 25 January, assuming this is a Business Day, and not the following day.

2.21 Open repos. In the GMRA, this type of repo is called an ‘on demand’ transaction. An open repo is initiated without fixing a Repurchase Date. Instead, either party may terminate the transaction (in whole or in part) by giving agreed notice to the other. The GMRA states that termination shall ‘occur after not less than the minimum period as is customarily required for the settlement or delivery of money or Equivalent Securities of the relevant kind’ (GMRA paragraph 3(e)). In the case of collateral securities, this implies the common period for the cash market in those securities. However, in the repo market, it is best practice to agree a notice period for the termination of open repos which is at least one Business Day less than the common delivery period in the cash market for the same securities. When negotiating an open repo, it is therefore essential that the parties have the same understanding of what the deadline is (and in which time zone) for giving the notice of termination. If in any doubt, parties should explicitly agree the deadline. Notice given after the deadline will not be effective on the same day, but on the next Business Day. For major classes of security, the recommended delivery periods and deadlines on the publication date of this version of the Guide for giving notice of termination of open repo are set out in Table 2 below. However, it may be possible for parties to extend some of the deadlines below by negotiation.

Table 2: Recommended deadlines for the notification of the termination of open repos

class of security	currency	notice date	deadline time
Eurozone government securities	EUR	T+1	13:00 CET
UK government securities (non-CCP)	GBP	T+0	10:00 GMT/BST
US Treasury securities	USD	T+0	10:00 EST
US Agency securities	USD	T+0	10:00 EST
corporate securities with non-US ISIN	all	T+1	12:00 GMT/BST
corporate securities with US ISIN or CUSIP	all	T+1	15:00 GMT/BST
many emerging market securities with XS ISIN	all	T+1	16:00 GMT/BST
many emerging market securities with US ISIN	all	T+2	17:00 GMT/BST

CET = Central European Time; EST = Eastern Standard Time; GMT = Greenwich Mean Time; BST = British Summer Time

Table 2 is not exhaustive. In the case of securities not listed above, it is best

practice for the parties to agree the delivery period and deadline for serving a termination notice and the acceptable means of communication (which includes the telephone) and to document that agreement in Annex I of their GMRA or, if that is not practicable, in Confirmations. See also paragraph 2.73 below.

Best practice recommendation. It is best for the parties to an open repo to agree the delivery period and deadline for serving a termination notice and to document their understanding in Annex I of their GMRA or, if that is not practicable, in Confirmations, where either is not certain of the delivery period or deadline, or where the collateral is not widely used.

- 2.22 It is possible that a dispute may arise about whether a deadline for the termination of open repos applies to the sending or receiving of a notice of termination. Parties should avoid such disputes by acting reasonably and in good faith. Giving notice to terminate an open repo close to a deadline is not advisable where the operations of one of the parties are not sufficiently automated to allow that party to respond rapidly. It is best practice, if giving notice at a time close to the agreed deadline, to ensure that the other party is aware of the notice. This should be done by telephone, rather than by electronic messaging, so that there is no uncertainty about whether the other party received the notice before the deadline.

Best practice recommendation. It is best practice, when giving notice to terminate an open repo at a time close to an agreed deadline, to ensure that the other party is aware of the notice. This should be done by telephone, rather than by electronic messaging.

- 2.23 Parties need to be sure about when collateral will be returned to the Seller and the Repurchase Price paid to the Buyer following the termination of an open repo. Unless this is specifically documented in Annex I of their GMRA or in Confirmations, the default time under the GMRA will be 'not less than the minimum period as is customarily required for the settlement or delivery of money or Equivalent Securities of the relevant kind' (GMRA 2000/2011 paragraph 3(e)). Parties need to consider whether this provides them with sufficient certainty.

Best practice recommendation. It is best practice for parties to consider whether they need to explicitly agree the delivery period for the return of collateral following the termination of an open repo and to record that agreement in Annex I of their GMRA or, if that is not practicable, in Confirmations.

Negotiating repos with the intention of registering them with a CCP after agreement

- 2.24 Parties may negotiate transactions directly or via a voice-broker subject to those transactions being submitted (“given up”) to and registered by a CCP. In other words, the parties do not intend to contract with each other but only with the CCP. Thus, the party negotiating to sell collateral intends to sell only to the CCP and the party negotiating to buy that collateral intends to buy only from the CCP. In such transactions, it is best practice for the negotiating parties to explicitly agree that they both intend to contract only with the CCP and that no contract will be formed should the transaction not be registered by the CCP, that is, should the CCP refuse or fail (for any reason) to irrevocably agree to become the buyer to the seller and the seller to the buyer on the terms agreed between the original seller and buyer. It is best practice for the parties negotiating the transactions which they intend to be contingent upon acceptance by a CCP to document that intention in Annex I of their GMRA or, if that is not practicable, in Confirmations (whether under the GMRA, if one is in place between the parties, or under another arrangement).

Best practice recommendation. Where transactions are negotiated directly or via a voice-broker but are contingent upon acceptance by a CCP, it is best practice for the parties involved to explicitly agree that they both intend to contract only with the CCP, so that no contract will be formed should the transaction not be registered by the CCP, and document that intention in Annex I of their GMRA or, if that is not practicable, in Confirmations (whether under the GMRA, if one is in place between the parties, or under another arrangement).

Allocation of collateral in a general collateral (GC) repo

- 2.25 In general collateral (GC) repos which have not been executed on an automatic repo trading system and/or are not being managed by a tri-party collateral management system, it is best practice for the Seller to notify the Buyer of the identity of the collateral which he proposes to deliver as soon as possible after execution and no longer than one hour later. Electronic trading and tri-party systems have their own deadlines.

Best practice recommendation. In general collateral (GC) repos in which the Seller selects the collateral to be delivered to the Buyer, it is best practice for the Seller to notify the Buyer of the collateral which he proposes to deliver as soon as possible after execution and no longer than one hour later.

Agreeing the price of collateral

- 2.26 In repos which have not been executed on an automatic GC repo trading system and/or are not being automatically settled across a tri-party collateral management system, it is best practice for the parties to agree the price or

prices to be used to value the collateral as soon as possible after execution and no longer than one hour later or at the same time as the collateral is identified to the Buyer, whichever is sooner. The value for a fixed-income security should include the outstanding accrued interest on that security.

Best practice recommendation. In general collateral (GC) repos in which the Seller selects the collateral to be delivered to the Buyer, it is best practice for the parties to agree the price or prices to be used to value the collateral as soon as possible after execution and no longer than one hour later or at the same time as the collateral is identified to the Buyer, whichever is sooner.

Agreeing permission to substitute collateral

- 2.27 A Buyer in a repo may grant the Seller permission to substitute some or all collateral during the term of the transaction one or more times. This allows the Seller, at any time between the Purchase Date and Repurchase Date, to call for the Buyer to return the original type of collateral in exchange for a substitute. In return for this permission, the Seller will usually agree to pay a higher repo rate. Where there is more than one permission to substitute, the exercise of the second and any subsequent permissions will result in the substitution of previous substitutes. See paragraphs 4.8-4.10 below.
- 2.28 Permission to substitute will typically be agreed at the point of trade of each transaction. It is best practice to record the original number of permissions in the initial Confirmation and/or affirmation of the transaction and to confirm and/or affirm each substitution as it takes place, noting the number of permissions remaining.

Best practice recommendation. It is best practice to record the original number of agreed permissions to substitute collateral in the initial Confirmation and/or affirmation of a transaction and to confirm and/or affirm each substitution as it takes place, noting the number of permissions remaining.

- 2.29 When negotiating permissions to substitute, it is necessary to agree:
- The total number of substitutions to be allowed.
 - The deadline for the Seller to give notice of substitution for earliest delivery.
 - The periods for the return of collateral and the delivery of the substitute.
 - Whether substitute collateral should have at least the same market value or nominal value as the collateral being substituted. In GMRA (8(a)), Market Value is prescribed.

- To the extent possible, what are acceptable and/or unacceptable substitute securities (see paragraph 4.9 below).
- Whether partial substitution will be allowed and whether there is a minimum size of substitution.

Agreeing interest rates for late payments

2.30 The standard provision in the GMRA 2000 (paragraph 12) is that the interest rate on late payments should be the higher of the repo rate on a particular transaction or 1-month LIBOR. However, parties are free to agree another rate. In this case, it is best practice for the parties to agree such a rate before trading and to record this rate in Annex I of their GMRA. In the GMRA 2011, the default rate is the higher of the repo rate on a particular transaction and an agreed 'Applicable Rate', which should be recorded in Annex I. It is best practice for parties to agree an interest rate on late payments that reflects only the need of the party suffering late payment for reasonable economic compensation. The interest rate on late payments should not be used to penalise the other party.

Best practice recommendation. Where parties decide to agree an interest rate to apply to late payments, it is best practice to do so before trading and to record the rate in Annex I of their GMRA. It is also best practice for parties to agree an interest rate on late payments that reflects only the need of the party suffering late payment for reasonable economic compensation. The interest rate on late payments should not be used to penalise the other party.

2.31 Where a late payment by one party has caused the cash account of the other party at an International Central Securities Depository (ICSD) to go into deficit and suffer an overdraft charge, some parties try to pass that charge back to the first party, regardless of the fact that the parties have accepted the standard relevant provision of the GMRA. If parties to a repo wish to be able to pass on overdraft charges incurred because of a late payment by their counterparties, it is best practice (and a legal necessity) to include a supplementary term to this effect in Annex I of their GMRA or, if that is not practicable, in Confirmations. In the case of late payment on negative rate repos, a different problem arises, on which see paragraph 2.58 below.

Best practice recommendation. If a party to a repo wishes to be able to pass on overdraft charges incurred at an ICSD because of a late payment by the other party, it is best practice to do so by including a supplementary term to this effect in Annex I of their GMRA or, if that is not practicable, in Confirmations.

Verifying the terms of transactions

- 2.32 Once a transaction has been agreed, it is best practice for each party to verify that its understanding of the terms of the transaction is the same as that of the other party. A post-trade process of verification should be performed promptly after the execution of a contract, which means as soon as possible on the same day. Prompt same-day verification is required in order to provide the maximum opportunity to correct any mistakes made in recording the terms of a transaction or resolve any disagreements over the agreed terms, if necessary, by agreeing to terminate the transaction, as well as to assist in the detection of fraud. Such promptness is particularly essential in order to be able to verify the details of transactions requiring overnight settlement. The later that mistakes or disagreements are discovered, the more difficult and expensive it will be to repair and reprocess transactions. Until mistakes or disagreements are identified and addressed, the parties will be exposed to unexpected market and liquidity risks. Regulators are pressing for record-keeping to be accurate and complete on the transaction date, in order to improve risk management by firms and to allow more effective prudential supervision. Verification of the terms of a transaction can be done by means of Confirmation and, if necessary, affirmation.⁴
- 2.33 A **Confirmation** is a complete statement of the key economic terms and conditions of a trade plus a list of the required settlement addresses of the parties (their locations or those of their settlement agents as well as settlement account numbers). Parties will exchange Confirmations or, by agreement, only one will send a Confirmation to the other. The recipient of a Confirmation should match the information provided against his own records, identify any mistakes or misunderstandings and inform the sender. Confirmations therefore play a critical role in risk and operations management by ensuring that both parties to a trade have recorded an identical contract, that the trade settles in the right place and, by highlighting any disagreement at an early stage minimise the unexpected exposure and maximise the time to resolve the problem, if necessary, by cancellation.

⁴ Confirmation and affirmation should not be confused with trade-matching. Where parties use custodian banks as settlement agents, the latter will compare the details of instructions for settlement sent by or on behalf of the counterparties, usually on the intended settlement date (S) or the day before (S-1) or close to real-time in the case of ICSD. This process of **trade-matching** or **settlement matching** is intended to ensure that transactions will not fail to settle after they have been entered into the security settlement system at a CSD or ICSD merely because of mismatches between the instructions entered by or on behalf of the parties. It is not good practice for parties to rely on trade-matching at the security settlement system for the verification of the terms of transactions, as this usually reduces the time to correct mistakes or resolve disagreements about the terms of transactions and allows a build-up of risk.

- 2.34 The GMRA envisages that one or both parties will generate and send a Confirmation to the other, and will do so promptly, in writing and (unless otherwise agreed) in English, using one of the forms of communication listed in the agreement (paragraph 14). Confirmations are an integral part of the contract between two parties and, unless promptly queried, constitute (together with the agreement) prima facie evidence of the terms and conditions of a new trade.
- 2.35 Unless both parties exchange Confirmations, the sender could not prove that the other received a Confirmation in the event that there was a disagreement about the terms of a transaction. Where it is agreed that Confirmations will be exchanged, any problem should automatically become apparent to both parties, as both will be expecting to receive a Confirmation. In such circumstances, a party not receiving, or claiming not to have received, a Confirmation by the end of the transaction date could reasonably have been expected to request the other party to resend the Confirmation. Where a party agrees that its counterparty does not have to send a Confirmation, it is good practice for it to affirm at least these transactions. Otherwise, it is exposed to the risk that any queries by the other party may be too late to avoid disputes.
- 2.36 The GMRA lists the essential fields to be included (GMRA 3(b)) and offers a non-definitive form of Confirmation notice (Annex II). The recommended fields are:
- transaction date
 - collateral (including ISIN or other identifying code)
 - nominal value of collateral
 - precise legal identities of the Buyer and Seller
 - Purchase Date
 - Purchase Price
 - currency of the Purchase Price
 - Repurchase Date or confirmation that the transaction is an open repo
 - where the Buy/Sell-Back Annex has been applied, confirmation of whether the transaction is a repurchase transaction or sell/buy-back
 - repo rate (Pricing Rate) in the case of a repurchase transaction or forward price in the case of a sell/buy-back
 - settlement instructions, including the bank accounts of the Buyer and Seller
 - where the Agency Annex has been signed, confirmation of whether the transaction is an agency transaction or between principals and, if it is an agency transaction, which party is the agent and the identity of the principal(s) for whom the agent is acting: the identity of the agent's clients can be revealed in terms of their names or, for reasons of commercial

sensitivity, using a code agreed with the credit, compliance or other non-trading department of the counterparty

- any additional terms.

- 2.37 In addition to contractual obligations and best practice, there may be legal and regulatory requirements applicable to Confirmations. For example, UK regulators require Confirmations to reference the sender's FCA and PRA authorisation; there could be a local legal requirement to obtain consent in order to send Confirmations by e-mail; and banking and data protection law may require a secure method of transmission.
- 2.38 It is recommended that Confirmations should be sent as soon as possible on the transaction date, both for new trades and for material changes to the terms and conditions of existing trades (see paragraph 4.14 below). In addition, subject to applicable laws and regulations, Confirmations should be made through an electronic communication system agreed between the parties or, in the absence of such an agreement, such electronic medium as the party who is under an obligation to confirm may choose, provided that the Confirmations are capable of being promptly and accurately reproduced on paper.
- 2.39 It is best practice for transactions to be confirmed and, if desired, affirmed by the operations departments of the parties, not by their trading desks. This is in order to ensure the proper segregation of functions.

Best practice recommendation. It is best practice for each party to verify that its understanding of the terms of a transaction is the same as the other party's by means of Confirmation and, if necessary, affirmation. Verification should be performed promptly after the execution of a contract, which means as soon as possible on the same day. Subject to applicable laws and regulations, such Confirmation should be made through an electronic communication system agreed between the parties or, in the absence of such an agreement, such electronic medium as the party who is under an obligation to confirm may choose, provided that the Confirmation is capable of being promptly and accurately reproduced on paper. Parties should promptly compare a Confirmation received from the other party with their own records and revert to the other party urgently, on the transaction date, if there are any differences. It is best practice to affirm all transactions where only one party is obliged to send Confirmations. Transactions should be confirmed by operations departments, not by trading desks.

- 2.40 In the case of sell/buy-backs, it is best practice for parties to confirm both legs on the transaction date, rather than confirm the second leg separately from the first leg and to delay the second Confirmation until shortly before the Repurchase Date.

Best practice recommendation. In the case of sell/buy-backs, it is best practice for parties to confirm both legs on the transaction date.

- 2.41 The question arises as to whether bilateral Confirmations are necessary where parties have provided sufficient information to a financial market infrastructure involved in the execution, clearing or collateral management of a repo (ie an automatic trading system, CCP or triparty agent). Where such a financial market infrastructure is in possession of the key economic terms of a trade and has a record of the settlement arrangements between the parties (typically in the form of standard settlement instructions), it would be in a position to match this information and render bilateral Confirmation redundant, which would represent a significant economy for parties.
- 2.42 Table 3 below lists the alternative types of repo and offers an assessment of which types are unlikely to permit delegation of Confirmation to a financial market infrastructure. Each type of repo is a unique sequence of the three stages involved in the creation and consummation of a trade:
- Execution – the negotiation and formation of the contract - was the trade negotiated directly by the two counterparties (possibly with the use of a voice-broker) or traded across an automatic trading system (ATS).
 - Clearing – the netting of offsetting trades - is this process bilateral and subject to a master agreement such as the GMRA, or is the trade cleared across a central counterparty (CCP), either automatically or after a post-execution ‘give-up’ to the CCP.
 - Collateral management – initially, the selection of collateral - is selection agreed bilaterally between the counterparties or has the decision been outsourced to a tri-party agent.

However, financial market infrastructures vary significantly in how they operate. So, where it is indicated in Table 3 that bilateral Confirmation could perhaps be replaced by matching by a financial market infrastructure, parties need to check whether the particular infrastructures which they employ possess and match all the information that is required for bilateral Confirmation.

Table 3: Overview of repo trade initiation chains

Link in trade initiation chain			Description	Do parties have to confirm?	Notes
execution	clearing	collateral management			
direct or brokered	bilateral under master agreement	bilaterally-agreed	Traditional OTC trading. Between two counterparties where trade is negotiated by telephone, by e-mail, on Bloomberg or other automated trading system, through a broker, etc. No CCP is involved and collateral management is down to the parties.	YES	Note that structured trades require bespoke addendums (effectively long form confirmations) that are signed, returned and archived.
direct or brokered	post-trade give-up to CCP	bilaterally-agreed	CCP give-up trades. Direct or brokered trades (as above) but submitted post-trade to a CCP for clearing, e.g. to LCH via ETCMS, to CC&G via MTS. Trade may be conditional on registration by CCP.	NO: provided there is no interval between execution & registration and the CCP cannot refuse to register a trade.	If there is any possibility of the processing of a trade being interrupted before submission to a CCP, there is a risk that the parties could be left with a bilateral trade for which confirmation is always recommended. The same risk applies if a CCP is able to refuse registration, perhaps because the details of the trade received from the parties do not match. Even if trades to be given up to a CCP are executed subject to registration by the CCP, confirmation is still useful in order to be able to discover the reason for any refusal by a CCP.
direct or brokered	bilateral under master agreement	triparty agent	Traditional European triparty repo. Direct or brokered trades (as above) but collateral management mutually delegated to agents such as Euroclear and Clearstream. No CCP involved.	YES	There is a risk that for any trade that is negotiated by telephone or electronic messaging that the parties may not have agreed on all the terms. Note that structured trades, which often employ triparty collateral management, require bespoke addendums (effectively long form confirmations) that are signed, returned and archived.

ATS	bilateral under master agreement	bilaterally-agreed	Sometimes called bilateral electronic trading . Trading on fully automatic platforms (ATS) such as BrokerTec, MTS, Eurex, tpRepo. ATS has no role in instructing settlement. No CCP involved.	NO : provide d power of attorney to instruct settlement is given to the ATS.	If the ATS is given power of attorney to instruct settlement, it will have settlement addresses as well as the terms of the trade, and will therefore be in a position to match all key fields.
ATS	bilateral under master agreement	triparty agent	Electronic triparty repo . Trade negotiated on ATS, which submits to triparty agent for collateral management using power of attorney from parties. No CCP involved, e.g. SIX Repo	NO	
ATS	CCP	bilaterally-agreed	Standard electronic trading, sometimes called anonymous electronic trading . ATS is linked to CCP, which ensures original parties have anonymity. ATS or CCP has power of attorney to instruct settlement.	NO	
ATS	CCP	triparty agent	GC pooling or financing . Trade negotiated on ATS, which is linked to CCP, which is linked to triparty agent. CCP has power of attorney to instruct settlement, e.g. Eurex EGCP, €GC+	NO	

- 2.43 Where a bilateral Confirmation could be replaced by matching by a financial market infrastructure, some customers may still wish to receive Confirmations for their records.
- 2.44 The chart below sets out a decision tree to illustrate the assessment of whether a financial market infrastructure is likely to have and be able to match the same information as would normally be sent in a bilateral Confirmation.
- 2.45 In addition to the bilateral Confirmation or matching of new trades, there are a number of possible post-trade events during the life of a repo that should be bilaterally confirmed or might be matched by a financial market infrastructure. These are summarised in Table 4. The general rule on whether to bilaterally confirm or otherwise match a post-trade life-cycle event is whether it results in a material change in the economic terms of the trade.
- 2.46 Some life-cycle events can result in a new trade. In these cases, it is best practice to cross-reference the terminated and new trades in a bilateral Confirmation of the new trade, using the trade identifier code of the terminated trade.
- 2.47 Some life-cycle events may be confirmed bilaterally using processes and systems that are separate from the process and system that generated the original Confirmation. This is likely to be the case for:
- margin payments, transfers and substitution of margin securities;
 - corporate events;
 - compensatory payments.

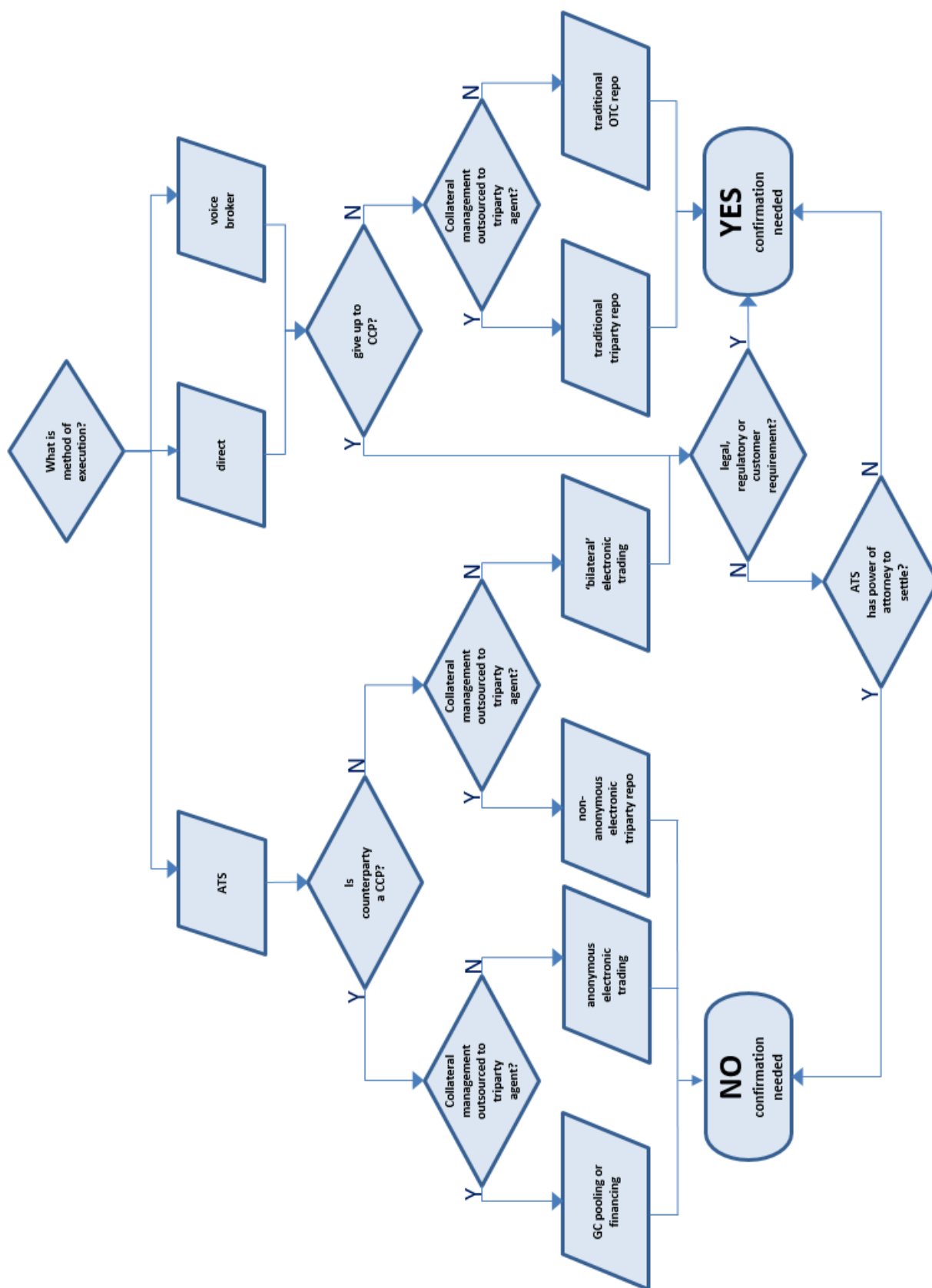


Table 4: Overview of repo trade lifecycle events

Life-cycle event	Is Confirmation required?	Notes
early termination of open, evergreen repo	YES	
extension of extendible repo	YES	
rerating of open, evergreen repos	YES	
increase/decrease of open repo	YES	If this event results in the booking of a new trade, the bilateral Confirmation of the new trade should reference the trade identification code of the terminated traded.
rerating of floating-rate repos	YES	
rerating of index-linked/floating-rate collateral	YES	
rolling a trade (close and reopen)	YES	The bilateral Confirmation of the new trade should reference the trade identification code of the terminated traded.
confirming collateral on forward repo	YES	
Repricing/Adjustment under GMRA 2000 4(j) & 4(k) or GMRA 2011 4(k) & 4(l)	YES	The bilateral Confirmation of the new trade should reference the trade identification code of the terminated traded.
substitution of collateral	YES	If this event results in the booking of a new trade, the bilateral Confirmation of the new trade should reference the trade identification code of the terminated traded.
margin maintenance payments/transfers	NO	Advance notice and subsequent reporting will be provided but this is a different process to Confirmation.
manufactured payments	NO	
corporate events	NO	

Best practice recommendation.

- Repos should always be confirmed bilaterally unless a financial market infrastructure involved in processing trades has sufficient information to match the trade details and settlement addresses, subject to legal, regulatory and customer requirements.
- Post-trade life-cycle events should be confirmed bilaterally where they make a material change to the economic terms of trades.
- Where life-cycle events result in a new trade, it is best practice to cross-reference the terminated and new trades in the Confirmation of the new trade using a trade identifier for the terminated trade.
- Parties should seek to automate the generation and checking of bilateral Confirmations wherever possible.

2.48 **Affirmation** is a process in which (1) one party contacts the other by telephone or e-mail on the transaction date, as soon as possible after the execution of a transaction, in order to secure immediate verification from the other party of at least the key economic terms of a transaction and the settlement addresses, or (2) both parties report batches of transactions to a third-party affirmation service for automatic comparison. Affirmation is usually performed where the prompt checking of all Confirmations is not practicable.

2.49 Because affirmation by telephone or e-mail is a manual process, it is not practicable to affirm all transactions or events. Instead, such bilateral affirmation is applied only to certain counterparties or to riskier transactions. Thus, an affirmed transaction may include riskier collateral, larger size, longer duration, floating-rate repos or complicated structures requiring economic decisions to be made in the future or may be with a riskier counterparty. Automated third-party affirmation services should make it possible to affirm all repos, which could transform the affirmations into Confirmations.

2.50 Typical terms to be affirmed are:

- transaction date
- Purchase Date
- Repurchase Date or whether the repo is open
- collateral (ISIN)
- nominal value of collateral
- market value of collateral
- Purchase Price
- repo rate or (for open and floating-rate repos) interest rate index and spread
- currency of Purchase Price

- counterparty
- buy or sell
- settlement account

- 2.51 Affirmation (like Confirmation) can also be used during the life of a transaction to verify changes. See paragraphs 4.13-4.14 below. Typical changes include:
- refixing the repo rate on a floating-rate repo
 - early termination (eg termination of an open repo, mini close-out, or termination of a transaction where delivery has failed)
 - Repricing or Adjustment of a sell/buy-back
 - change in repo rate (for open repos) or refixing of interest rate or other index (for floating-rate repos and index-linked collateral)
 - ISIN for new collateral after substitution.

Recommended delivery size (shaping)

- 2.52 It is best practice to divide or ‘shape’ instructions for the delivery of a large amount of collateral into smaller deliveries or ‘shapes’, so as to reduce the economic impact of settlement failures. A typical shape in the European market is currently about EUR 50 million or the equivalent in other currencies. However, while partial delivery is helpful in mitigating the economic impact of settlement problems, it does not change the legal obligation on the delivering party to deliver the full agreed amount of collateral. Shaping is therefore different from ‘partialling’, where the parties have agreed to accept partial deliveries in part fulfilment of their contract.

Best practice recommendation. It is best practice to divide instructions for the delivery of large amounts of collateral into ‘shapes’.

Partial delivery

- 2.53 It is best practice for partial deliveries to be accepted in mini close-outs (see paragraphs 4.1-4.2), given that there will be no prospect of further deliveries because of the termination of the transaction.

Best practice recommendation. It is best practice to accept partial deliveries in a ‘mini close-out’ under paragraph 10(h) of the GMRA 2000 or 10(i) of the GMRA 2011.

- 2.54 Where (1) a Seller has failed to complete full delivery to the Buyer on the Purchase Date but the Buyer has not terminated the repo or (2) a Buyer has failed to complete full delivery of collateral to the Seller on Repurchase Date but the Seller has not executed a mini close-out, it is very desirable that the party expecting to receive the delivery should accept partial delivery. Such ‘partialling’ reduces the economic impact of fails on the counterparty as well as on the

liquidity of cash and repo markets. In some securities settlement systems, parties have no choice about accepting partial delivery as the systems automatically partial in the event of delivery failures. Partialling is also encouraged in the European market by the EU Central Securities Depositories Regulation (CSDR). Where there is a choice about accepting partial delivery, it is best practice for parties to agree to do so, provided they would not be disadvantaged by an incomplete delivery (for example, because the Buyer is the intermediary in matching transactions and his other counterparty refuses to partial) and provided that partialling is operationally feasible for both parties. Operational difficulties may arise because a request to partial can only be made once a delivery failure has been discovered and is therefore likely to happen on or shortly before the intended settlement date. The party being asked to accept partial delivery may therefore not have time or the operational capability to reorganise his funding or collateral inventory before the settlement deadline. Or, if the party being asked to accept partial delivery is buying for clients, he may not be able to secure their permission in time. However, market users should make best endeavours to eliminate operational obstacles within their own firm and encourage customers to also accept partial delivery.

- 2.55 If partial delivery is accepted, care must be taken to adjust the relevant records, in particular, where partial delivery is accepted in response to a margin call. It is important to note that agreeing to partial delivery does not remove the rights that parties have under the GMRA to take action in respect of those securities that have not been delivered on time. In particular, agreeing to partial delivery of securities in response to a margin call does not change the fact that the failing party has still committed an Event of Default.

Best practice recommendation. It is best practice for partial deliveries to be accepted whenever there has been a delivery failure, provided that the party expecting delivery would not be disadvantaged by an incomplete delivery and provided that partialling is operationally feasible for both parties. Market users should make best endeavours to eliminate operational obstacles within their own firm and encourage customers to also accept partial delivery.

Anticipating problems that may be caused by low or negative repo rates

- 2.56 When interest rates are generally positive, repo rates can become negative when a particular collateral asset is subject to exceptional demand and/or reduced supply, and goes special. Very low, zero or negative rates become more common when the general level of interest rates (including the GC repo rate) is low. It is also possible for GC repo rates to become negative during a period of financial stress, where the whole basket of general collateral in a particular collateral market is subject to exceptional demand because the underlying

securities, which are typically government securities, are seen by investors as a safe haven. A negative repo rate means that the Buyer (the cash lender) effectively pays repo interest to the Seller (the cash borrower), because the Repurchase Price will be lower than the Purchase Price (see the worked example below). Problems can arise, because the GMRA was designed only with positive repo rates in mind. Parties need to be aware of the potential problems that can be caused by negative repo rates.

Worked example: negative repo rate

Purchase Date	8 August
Repurchase Date	15 August
Repo rate	-0.50%
Purchase Price	EUR 10,000,000

$$\text{Repurchase Price} = 10,000,000 \left(1 + \frac{-0.50 \times 7}{100 \times 360} \right) = 9,999,027.78$$

- 2.57 If a Seller fails to deliver collateral on the Purchase Date of a repo, he will not receive or be able to retain the Purchase Price until he does deliver. However, the Seller will remain obliged to pay the full amount of repo interest to the Buyer at the Repurchase Date, even if he delivers the collateral late and therefore has delayed use of the cash, or even if he never delivers the collateral and therefore never has use of the cash. Having to pay interest without having the full use of cash is a cost that provides an incentive to the Seller to remedy a failure to deliver, as well as providing compensation to the Buyer.
- 2.58 At negative repo rates, however, the automatic cost of failing to deliver collateral becomes a perverse incentive to fail. Given that the repo contract remains in force in the event of a failure to deliver by the Seller (unless the Buyer chooses to terminate the transaction), the Seller is obliged to pay a Repurchase Price to the Buyer on the Repurchase Date but this will now be lower than the Purchase Price which the Buyer was obliged to pay to the Seller on the Purchase Date. Thus, the Seller is rewarded for his failure!⁵ To eliminate the perverse effect of negative repo rates, the ICMA issued a recommendation in November 2004 on behalf of the ERC that, when the Seller fails to deliver on the Purchase Date of a negative rate repo, the repo rate should automatically

⁵ Even at zero or low positive repo rates, there is a perverse incentive on the Seller to fail, inasmuch as a failure to deliver creates a free option on the repo rate. If the repo rate rises before the Repurchase Date, the Seller can cure the fail with collateral borrowed through a separate reverse repo. He will owe interest at the original repo rate on the repo on which he has made late delivery but will receive interest at the new higher rate on the reverse repo.

reset to zero until the failure is cured, while the Buyer has the right to terminate the failed transaction at any time. Subsequently, this recommendation has been included as an optional supplementary condition in Annex I of the GMRA 2011. For parties using the GMRA 2000, it is best practice to adopt the ICMA recommendation by an agreed amendment to the GMRA or, if that is not practicable, by inclusion in Confirmations. For parties using the GMRA 2011, it is best practice to elect to include the supplementary condition in Annex I.

Best practice recommendation. For parties using the GMRA 2000, it is best practice to adopt the ICMA recommendation of November 2004 on failure to deliver in repos at negative rates by an agreed amendment to the GMRA or, if that is not practicable, by inclusion in Confirmations. For parties using the GMRA 2011, it is best practice to elect to include the supplementary condition in Annex I.

- 2.59 Another potential problem caused when a party fails to deliver collateral on a negative rate repo is that the other party will find himself with a larger-than-expected cash balance at his custodian, who may apply rates to the cash that are much more negative than the repo rate. The failed party will also have been deprived of the use of the collateral securities. In these circumstances, some failed parties have sought to pass on to failing parties the cost of having to retain cash at their custodians. However, there is a risk that such costs could prompt some lenders of securities to withdraw from the repo market, thereby damaging liquidity. The problem applies to both purchases and repurchases. In the case of tri-party repos, some tri-party agents introduced the practice of charging the negative interest to the failing party, which avoids the problem of the other party being unfairly penalised for a fail by the first party. However, this may not be the practice at other tri-party agents or at custodians acting as settlement agents for repos in which collateral is managed bilaterally, in which case, parties need to consider how they will deal with the problem. Any claims for compensation should provide proof of the cost. In the case of a failed purchase, the claim for interest should not also be used by the Buyer as an alternative to re-setting the negative repo rate to zero in accordance with the ICMA recommendation of November 2004, now incorporated as an optional provision in the GMRA 2011 (see paragraph 2.58). However, if the Seller is unable to re-set the repo rate to zero before the Repurchase Date, then any negative interest paid in error should be included in the claim by the Buyer.

Best practice recommendation. Where a party is responsible for failing to deliver collateral on a negative rate repo, either the Seller on the Purchase Date or the Buyer on the Repurchase Date, the other party may find himself with a larger-than-expected cash balance at his custodian. If the failed party wishes to claim compensation from the failing party, such a claim should only be accepted upon proof of the cost. In the case of a failed purchase, the claim for interest should not also be used by the Buyer as an alternative to re-setting the negative repo rate to zero, except if the Seller is unable to re-set the repo rate to zero before the Repurchase Date, in which case, any negative interest paid in error should be included in the claim by the Buyer.

2.60 The reinvestment rate on compensatory income payments in sell/buy-backs at negative repo rates. When a coupon is paid on collateral in a sell/buy-back that is trading at a negative repo rate, an issue arises because, in a sell/buy-back, the compensatory income payment owed by the Buyer to the Seller is deferred until the Repurchase Date. In the interim, the Buyer has to reinvest the value of the coupon. The compensatory payment, including reinvestment interest, is then deducted from the Repurchase Price that the Seller would have had to pay in the absence of an income payment on the collateral. The reinvestment rate is agreed between the parties when negotiating the transaction and incorporated in the Repurchase Price. But if (1) a sell/buy-back is terminated before the Repurchase Date because of a default by one of the parties or (2) the exposure on the transaction is calculated for the purpose of repricing (see paragraph 3.49 below), the reinvestment rate used to calculate the value of the compensatory payment is given in the formula for the Sell Back Price (which is equivalent to the Repurchase Price) in the Buy/Sell-Back Annex of the GMRA (paragraph 2(a)(iii)(y)):

$$(P + AI + D) - (IR + C)$$

where:

P	Purchase Price - ie the clean price of collateral in the case of a sell buy/back (see paragraph 2.7 above)
AI	amount equal to Accrued Interest at the Purchase Date, paid under paragraph 3(f) of the Buy/Sell-Back Annex - ie coupon interest accrued on the collateral security since the last coupon date
D	Sell Back Differential (equivalent to repo interest)
IR	amount of any income in respect of the Purchased Securities payable by the issuer on or, in the case of registered Securities, by reference to, any date falling between the Purchase Date and the Repurchase Date - ie coupons, dividends or other income paid during the term of the repo
C	aggregate amount obtained by daily application of the Pricing Rate (repo rate) for such Buy/Sell Back Transaction to any such income from (and including) the date of payment by the issuer to (but excluding) the date of calculation - ie reinvestment income on the compensatory income payment on the sell/buy-back calculated at the repo rate.

- 2.61 Given that, in cases of default and margin calculations for sell/buy-backs, the repo rate is used as the reinvestment rate for compensatory income payments, if that rate is negative, reinvestment will erode the value of the equivalent income payment. If the repo rate is negative solely because the collateral is special, it is not appropriate to use it as a cash reinvestment rate. The rate is negative only because it incorporates an implicit borrowing fee reflecting the specialness of the collateral. Cash reinvestment rates should be close to the GC repo rate or some other money market interest rate for the short-term borrowing or lending of cash. Otherwise, the Buyer is paying a hidden, additional fee. However, unless parties to the GMRA agree to amend this formula, they will be obliged to follow it. Where both parties do not wish to apply negative special repo rates as reinvestment rates, they will need to consider incorporating an agreed amendment to their GMRA or, if that is not practicable, including a supplementary term in their Confirmations, to the effect that, in the case of default or calculation of exposure, the reinvestment rate on compensatory payments in sell/buy-backs is never to fall below an agreed GC repo rate or unsecured money market interest rate. Either way, parties need to be aware of the potential problem and, if they believe it necessary, agree on and record an alternative reinvestment rate.

2.62 Interest on cash margin at negative repo rates. In paragraph 4(f) of the GMRA, parties holding cash margin are obliged to pay interest “at such rate, payable at such times, as may be specified in Annex I...or otherwise agreed between the parties...” When negotiating their GMRA, parties may agree to use the repo rate on the underlying transaction where that transaction is being margined in isolation. However, the parties need to be aware that the repo rate on a particular transaction can turn negative if the collateral goes on special. As argued in the previous paragraph, it can reasonably be claimed that such a rate is no longer representative of the going rate for cash investment. However, a party cannot unilaterally change the rate previously agreed with its counterparty. Parties therefore need to be aware of the potential problem and, if they believe it necessary, agree on and record an alternative rate. In practice, many parties often use the relevant unsecured overnight index for the currency of the Purchase Price.

Best practice recommendation. Parties need to be aware that a problem may arise if they agree to use the repo rate on a particular transaction as the reinvestment rate for compensatory income payments in sell/buy-backs and the interest rate on cash margin, as that rate may turn negative if the collateral in that particular transaction goes on special. They should therefore consider this possibility and, if they believe it necessary, agree on an alternative interest rate. This should be recorded in Annex I of their GMRA or, if that is not practicable, in Confirmations.

2.63 If parties have contractually agreed to use a particular interest rate index as the reinvestment rate for cash margin, income payments in sell/buy-backs or for any other purpose connected with a repo, in the event that the index turns negative, neither party may refuse to apply that rate merely because it has become negative. Dissatisfied parties must seek the express agreement of the other party if they wish to change the reference index. However, in a general negative interest rate environment, there are unlikely to be alternative indices that are still positive. And, while negative interest rates are historically rare, parties must accept that the occurrence of negative rates is beyond the control of their counterparties and that both sides of a transaction are equally likely to have to pay negative rates. It would therefore be unreasonable to insist on receiving positive rates in a negative interest rate environment.

Calculating floating-rate repo interest payments

- 2.64 In the case of floating-rate repos linked to an unsecured overnight interest rate index (OI) or tom/next interest rate index, interest is not paid during the term of the repo but is accrued until the final Repurchase Date. Nor is daily interest compounded. Instead, an arithmetic average is calculated. For a floating-rate repo with a day count of n :

$$\text{Repurchase Price} = \text{Purchase Price} \times \left(1 + \frac{\left(\frac{(R_1 \times D_1) + (R_2 \times D_2) + \dots + (R_n \times D_n)}{n} \right)}{100 \times B} \right)$$

where:

R_1	is the per annum index fixing for day 1
R_2	is the per annum index fixing for day 2
R_n	is the per annum index fixing for day n
D_1	is the number of days to which index fixing R_1 applies (normally 1 for a weekday and 3 for a weekend)
D_2	is the number of days to which index fixing R_2 applies
D_n	is the number of days to which index fixing R_n applies
n	is the number of days in the term of the transaction (ie day count)
B	is the annual basis (ie assumed number of days in the year)

- 2.65 Where the term of a repo crosses one or more non-Business Days, the OI fixing on the last Business Day is applied to the non-Business Day(s). For example, Friday's fixing will be applied to the Saturday and Sunday of a normal weekend.
- 2.66 The Repurchase Price of a floating-rate repo linked to an OI cannot be paid until the final OI is fixed. The problem is that OI are published after close of business, which may be too late to send settlement instructions to the appropriate CSD or ICSD in time for settlement on the Repurchase Date. If the fixing of the OI is **not** too late, then Method 1 (ultimate day crystallisation) below is used. In Method 1, the sequence of EONIA fixings is said to be 'crystallised' into a fixed rate on the Business Day before the Repurchase Date (R-1). Method 1 is best practice.

Worked example of Method 1 for 1W EUR 100 million repo at EONIA flat

	day count	EONIA fixing	EONIA applied	payment	
Thu 01-Dec	1	1.10%	1.10%		
Fri 02-Dec	3	1.05%	1.05%		
Mon 05-Dec	1	1.03%	1.03%		
Tues 06-Dec	1	1.02%	1.02%		
Wed 07-Dec	1	0.95%	0.95%		crystallisation day
Thu 08-Dec				20,138.89	

$$\text{Repurchase Price} = 100,000,000 \left(1 + \frac{\left(\frac{1.10 + (1.05 \times 3) + 1.03 + 1.02 + 0.95}{7} \right) \times 7}{100 \times 360} \right)$$

$$= 100,020,18.89$$

- 2.67 If the fixing of the OI is too late to send settlement instructions to the appropriate CSD or ICSD in time for settlement on the Repurchase Date, then Method 2 (penultimate day crystallisation) below is used. Method 2 has traditionally been used in the cross-border market, where it has not always been possible to send instructions to the CSD or ICSD on the Business Day before the Repurchase Date (R-1, where R is the Repurchase Date) in time for settlement on the Repurchase Date. Instead, the OI fixing on R-2 is also applied to R-1. Method 2 is becoming less common as the efficiency of settlement infrastructure improves.

Worked example of Method 2 for 1W EUR 100 million repo at EONIA flat

	day count	EONIA fixing	EONIA applied	payment	
Thu 01-Dec	1	1.10%	1.10%		
Fri 02-Dec	3	1.05%	1.05%		
Mon 05-Dec	1	1.03%	1.03%		
Tues 06-Dec	1	1.02%	1.02%		crystallisation day
Wed 07-Dec	1	0.95%	1.02%		
Thu 08-Dec				20,333.33	

$$\text{Repurchase Price} = 100,000,000 \left(1 + \frac{\left(\frac{1.10 + (1.05 \times 3) + 1.03 + (1.02 \times 2)}{7} \right) \times 7}{100 \times 360} \right)$$

$$= 100,020,333.33$$

- 2.68 Note that, in the example above of Method 2, the fixing on 7 December is not used as the final fixing. Instead, the fixing on 6 December is repeated. The latter is said to be the 'crystallisation day'.

Best practice recommendation. It is best practice, when calculating the Repurchase Price of a floating-rate repo linked to an overnight index, to apply the rates fixed and published for each and every Business Day, rather than repeating the previous day's fixing for the last day.

- 2.69 It is best practice for parties to record the agreed method of calculating the Repurchase Price of an overnight floating-rate repo in Annex I of their GMRA or, if that is not practicable, in Confirmations.

Best practice recommendation. It is best practice for parties to record the agreed method of calculating the Repurchase Price of an overnight floating-rate repo in Annex I of their GMRA or, if that is not practicable, in Confirmations.

- 2.70 Under Method 2 (penultimate day crystallisation), there will obviously be a discrepancy between the Repurchase Price that is calculated and settled by the parties, and the Repurchase Price that would have been paid had it been possible to apply the correct fixings for each and every day (using Method 1 or

ultimate day crystallisation). Such discrepancies are usually insignificant, particularly for very short-term transactions, and may be written off by the parties. However, for longer-term transactions, this may not be the case and parties may agree to make a retrospective reimbursement for any difference between the actual and correct Repurchase Prices. This should be agreed at the point of trade. It is best practice to document this agreement and the deadline for reimbursement in the Confirmation of the transaction, and for any reimbursement to be made on the Business Day immediately following the Repurchase Date. In any event, reimbursement should be made no later than 30 days after the Repurchase Date. It is also recommended that, where several reimbursements are to be claimed on the same day, they should be claimed in aggregate, rather than separately for each transaction. The aggregate claim per day should not be for less than about EUR 500 or the approximate equivalent in other currencies.

Best practice recommendation. Where the Repurchase Price of a floating-rate repo indexed to an overnight index has to be calculated before the fixing and publication of the final rate and the parties decide to make retrospective reimbursements for any difference between the actual and correct Repurchase Prices, it is best practice to document this agreement and the deadline for reimbursement in the Confirmation of the transaction, and for any reimbursement to be made on the Business Day immediately following the Repurchase Date, but no later than 30 days afterwards. Where several reimbursements are to be claimed on the same day, a single aggregate claim should be made, rather than separate claims for each transaction. The aggregate claim per day should not be for less than about EUR 500 or the approximate equivalent in other currencies.

- 2.71 If a tom/next (TN) index is used instead of an OI, because a TN rate is fixed one day in advance of the day to which it applies, there is no problem about sending the necessary settlement instructions to the relevant CSD or ICSD in time for the repurchase to be made on the Repurchase Date. Therefore, only Method 1 (ultimate day crystallisation) should be used.
- 2.72 Some floating-rate repos are linked to term indexes such as LIBOR (other than the ON or TN LIBOR indexes) and EURIBOR. In contrast to repos linked to OI or TN indexes, it is convention to pay the repo rate at the end of each floating interest rate period. For example, a repo indexed to 3-month LIBOR would conventionally pay repo interest at the end of every three months. The convention for fixing the Repurchase Dates of floating-rate repos is described in paragraph 2.20 above).

Calculating open repo interest payments

- 2.73 An open repo rate will not change unless and until the parties agree a new rate. Either party may propose a change in the rate. Agreement to update the repo rate (often called ‘rerating’ the repo) must be made before the agreed deadline for termination of the transaction (see paragraph 2.21 above) in order for the change in rate to take effect as soon as possible. Parties should have in place procedures to monitor the repo rates being applied to open transactions in order to ensure that these rates are current. It is therefore best practice to regularly update repo rates on open transactions.

Best practice recommendation. It is best practice to monitor the rates being applied to open repos and to regularly update those rates.

- 2.74 It is best practice to confirm or affirm agreed changes in the repo rate on open transactions (see paragraphs 2.51 above and 4.13-4.14 below).

Best practice recommendation. It is best practice to confirm or affirm changes in the repo rate on open repos.

- 2.75 Unless otherwise agreed, the interest on an open repo accrues daily until payment without compounding.

Worked example: calculating the interest on an open repo

Consider an open repo with a Purchase Price of EUR 10 million that runs from Tuesday, 6 August, to the following Thursday, 15 August (seven business days but nine calendar days). The initial repo rate is 0.75% but this is changed on Monday to 0.55%. The total interest due on the repo is:

$$= 10,000,000 \left(\frac{0.75 \times 1}{100 \times 360} + \frac{0.75 \times 1}{100 \times 360} + \frac{0.75 \times 1}{100 \times 360} + \frac{0.75 \times 3}{100 \times 360} + \frac{0.55 \times 1}{100 \times 360} + \frac{0.55 \times 1}{100 \times 360} + \frac{0.55 \times 1}{100 \times 360} \right) = 1,708.33$$

- 2.76 In the case of open repos that run for extended periods, it is best practice to monitor the repo interest that has accrued and to ensure that the amount of accrued interest is kept within acceptable limits by means of occasional payments. Payments of accrued repo interest (sometimes referred to as the “cleaning up” of accrued interest) can be triggered in a number of ways. One party can request the other to make a payment. Alternatively, one party can terminate and, with the agreement of the other party, simultaneously re-arrange the transaction (permitting a pair-off between the old and new repos).

Calling a rerate may also be a way to trigger a payment if, as is common practice, when negotiating the repo, the parties agreed to clean up interest when rrating.

Best practice recommendation. In the case of open repos that run for extended periods, it is best practice to monitor the repo interest that has accrued and to ensure that the amount of accrued interest is kept within acceptable limits by means of occasional payments.

Best practice recommendation. It is best practice to periodically settle accrued interest for open repos that run for extended periods in order to prevent incorrect accruals.

Netting

2.77 'Netting' is the term commonly used to describe the process of reducing the size of credit exposures, as well as the flows of payments and transfers between two parties by offsetting opposite and simultaneous obligations to make payments in the same currency or deliveries of the same security. Netting reduces the size of:

- payment and settlement flows and therefore the cost and risk of settlement;
- balance sheets, depending on applicable accounting rules, which may impact regulatory metrics including those for some liquidity ratios, e.g. NSFR;
- the credit and liquidity consequences of default by a counterparty (when obligations to make payments or transfers of securities will be accelerated, obligations to transfer securities will be converted into monetary values and all sums will be converted into the same currency).

In some circumstances, the use of netting for operational and settlement risk management purposes may reinforce netting rights for legal purposes (e.g. set-off in insolvency).

2.78 Netting in the repo market works by means of the legal device of 'set off', in which the obligations of one party to another are extinguished to the extent of the first party's obligations to the second party. Set off is a feature of some statutory insolvency regimes but participants in the repo market prefer contractual set off (called 'close-out netting'). Contractual set off is implemented through the use of robust legal agreements such as the GMRA, which achieves bilateral netting between the two parties, or by agreement to clear transactions through a CCP, which achieves multilateral netting between

all members of the CCP. Netting is essential for the efficiency and stability of the repo and other financial markets. It is the basis on which collateralisation works at the level of individual repos, whereby the risk of lending cash (securities) is offset by the value of the collateral (cash) received in exchange. It also reduces (1) the risk within a repo book by offsetting opposite exposures across multiple transactions with the same counterparty and (2) across different types of transactions between the same parties, eg between the post-default close-out amounts under the GMRA and under an ISDA Master Agreement. As new or increased regulatory charges add to the balance sheet cost to banks and securities dealers of extending credit and liquidity, the ability of firms to transact repo with each other and with customers increasingly depends on the maximum use of netting. It is therefore best practice for parties to co-operate to maximise both bilateral and multilateral netting opportunities.

- 2.79 An important example of netting to reduce the cost and risk of settlement is the ‘pair-off’. This is the action of netting instructions for payments of cash and transfers of securities for repos, reverse repos that are not managed by a tri-party agent and cash transactions, where those transactions are with the same counterparty, of the same currency, against the same security held at the same custodian or depository, by agreement with that party to eliminate or reduce the cash payments and securities transfers required for settlement. Pair-offs are particularly helpful when rolling over a transaction.

Best practice recommendation. It is best practice for parties to co-operate to maximise both bilateral and multilateral netting opportunities. This includes the use of pair-offs to reduce settlement cost and risk.

- 2.80 Although netting to reduce settlement cost and risk is envisaged in the GMRA (paragraphs 6(h) and 6(i)) where opposite payments in the same currency or transfers of the same security occur on the same date, in some circumstances, a party may not wish to net opposite payments or transfers, for example, because it needs to show flows into and out of separate accounts. In such exceptional circumstances, paragraph 6(h) and 6(i) may need to be made subject to express agreement between the parties by means of an amendment to the GMRA. Note that such an amendment applies only to the netting of payments and transfers: it does not remove the contractual right to net in the event of a default by the other party.
- 2.81 Note that paragraphs 6(h) and 6(i) do not preclude use of securities settlement systems operating on a real-time gross settlement (RTGS) basis. While instructions sent to such securities settlement systems will be settled

individually (gross) as they are accepted by the securities settlement system (in real time), the instructions from the parties or their agents can be the result of the netting of opposite payment and settlement obligations due on the same day.

3 Best practice in margining repo

Fixing an initial margin or Haircut

- 3.1 Initial margins and Haircuts are alternative ways to risk-adjust the value of collateral sold in a repurchase transaction in order to try to anticipate the loss of value that may be experienced if the collateral has to be liquidated following an event of default by the counterparty. Both amounts are therefore used to fix the expected liquidation value of collateral.
- 3.2 An initial margin can be defined as a percentage or a ratio. As a percentage, an initial margin is calculated as:

$$\left(\frac{\text{Market Value of collateral}}{\text{Purchase Price}} \right) \times 100$$

This means that a **percentage** initial margin is expressed relative to 100% and that an initial margin of 100% means there is no initial margin. An initial margin **ratio** is calculated as:

$$\left(\frac{\text{Market Value of collateral}}{\text{Purchase Price}} \right)$$

Worked example: applying an initial margin

A repo with a Purchase Price of EUR 20 million subject to an initial margin of 105% or 1.05 would require collateral of:

$$20,000,000 \times 1.05 = 21,000,000$$

Collateral worth EUR 20 million is repoed out subject to an initial margin of 105% or 1.05. The Purchase Price would be:

$$\frac{20,000,000}{1.05} = 19,047,619.05$$

In the GMRA, initial margin is called Margin Ratio (see paragraph 2(z) of GMRA 2000 and 2(bb) of GMRA 2011).

3.3 A Haircut is defined as:

$$\left(\frac{\text{Market Value of collateral} - \text{Purchase Price}}{\text{Market Value of collateral}} \right) \times 100$$

This means that a Haircut is expressed as the percentage difference between the Market Value of collateral and the Purchase Price of the repo.

Worked example: applying a Haircut

Collateral worth EUR 20 million is repoed out subject to a Haircut of 5%. The Purchase Price would be:

$$20,000,000 \times (1 - 0.05) = 19,000,000$$

A repo with a Purchase Price of EUR 20 million subject to a Haircut of 5% would require collateral of:

$$\frac{20,000,000}{(1 - 0.05)} = 21,052,631.58$$

3.4 Because an initial margin is expressed relative to the Purchase Price, while a Haircut is a percentage of the Market Value of collateral, the arithmetic of initial margins and Haircuts is slightly different. For example, an initial margin of 102% is not equivalent to a Haircut of 2%, but to one of 1.961% (ie 100/102%). The difference can become substantial for high initial margins and deep Haircuts.

3.5 In repos which are not being managed by a tri-party collateral management system initial margins and Haircuts are agreed at the point of trade, in which case, it is best practice to record the initial margin or Haircut in Confirmations and, where necessary, verify by affirmation. Initial margins and Haircuts can be agreed in advance of trading and recorded in Annex I of the GMRA.

Best practice recommendation. It is best practice to record the initial margin or Haircut in writing. If agreed at the point of trade, an initial margin and Haircut should be recorded in the Confirmation and, where necessary, verified by affirmation.

3.6 A party should be able to accommodate requests to apply initial margin to some repo transactions and Haircuts to other repos with the same counterparty.

- 3.7 Once agreed for a particular transaction, the initial margin or Haircut should be fixed for the full term of that transaction.
- 3.8 Note that it may be necessary, in the case of asset-backed securities (ABS), to apply a special type of haircut called a Pool Factor to reduce the dirty or gross price of the security in the event it has suffered a Pool Factor Distortion, that is, where the principal has been written down to reflect the insufficiency of underlying asset values or cashflows (see 10(f)(ii)(A) of GMRA 2011).
- 3.9 A margin call should be made when one party has a Net Exposure to the other (see section 4(c) of GMRA 2000 and 2011). A Net Exposure arises when the aggregate exposure of one party to another exceeds the aggregate exposure of the second party to the first. The aggregate exposure of each party is equal to the sum of the exposures on each transaction still outstanding with the other party (each individual exposure is called a Transaction Exposure - see paragraph 2(ww) of GMRA 2000 and 2(xx) of GMRA 2011) plus any income due from the other party but unpaid (ie compensatory payments) plus Net Margin still held by one of the parties.
- 3.10 Transaction Exposure for the purpose of margining is calculated by marking each transaction to market. The mark-to-market calculation depends on whether the transaction is subject to an initial margin or to a Haircut.

Where collateral is subject to an initial margin:

$$\text{Transaction Exposure} = \left(\text{Repurchase Price} \frac{\text{initial margin}}{100} \right) - \text{Market Value of collateral}$$

Where collateral is subject to a Haircut:

$$\text{Transaction Exposure} = \text{Repurchase Price} - \left(\text{Market Value of collateral} \left(1 - \frac{\text{haircut}}{100} \right) \right)$$

- 3.11 It is market practice that the Market Value of collateral securities should include accrued interest up to but excluding the margin delivery date. This is different to the provision in the GMRA.

$$\text{Market Value of collateral} = \text{nominal value} \left(\frac{\text{clean price} + \frac{\text{coupon} \times \text{day count}}{\text{annual basis}}}{100} \right)$$

Calculating a margin call

- 3.12 It is market practice that the Repurchase Price should be calculated for the day on which margin is due to be delivered (the margin delivery date), provided this is not later than the Repurchase Date. In other words, the day count for the repo rate should be the number of days up to but excluding the margin delivery date. This is different to the provision in the GMRA.

$$\text{Repurchase Price} = \text{Purchase Price} \left(1 + \frac{\text{repo rate} \times \text{day count}}{100 \times \text{annual basis}} \right)$$

- 3.13 The day count and annual basis for the calculation of Repurchase follows the convention in the wholesale money market in the currency of the Purchase Price (notably, the deposit and forward foreign exchange markets). This is almost always A/365F or A/360.
- 3.14 The day count and annual basis for the calculation of the accrued interest in the Market Value of collateral follows the bond market convention for the relevant currency and security (eg actual/actual for all eurozone and most other government fixed-income securities).

Worked example: applying an initial margin to calculate the required collateral value for a given Purchase Price

today	Thursday, 1 March 2012
Purchase Date	Monday, 5 March 2012
Repurchase Date	Monday, 12 March 2012
1-week repo rate	1.00% (A/360)
Purchase Price	EUR 25 million
Repurchase Price	25,004,861.10
collateral	2% DBR 4-Jan-2022 (A/A, note 2012 is a leap year)
clean price	101.79
days accrued	61
dirty price	102.123333333
initial margin	102%

$$\text{required Market Value of collateral} = 25,000,000 \times \frac{102}{100} = 25,500,000.00$$

Worked example: applying an initial margin to calculate the Purchase Price for a given Market Value of collateral

today	Thursday, 1 March 2012
Purchase Date	Monday, 5 March 2012
Repurchase Date	Monday, 12 March 2012
1-week repo rate	1.00% (A/360)
collateral	2% DBR 4-Jan-2022 (A/A, note 2012 is a leap year)
collateral amount	EUR 25 million nominal
clean price	101.79
days accrued	61
dirty price	102.123333333
Market Value of collateral	25,530,833.33
initial margin	102%

$$\text{Purchase Price} = \frac{25,530,833.33}{\frac{102}{100}} = 25,030,228.75$$

Repurchase Price 25,035,095.73

Worked example: applying a Haircut to calculate the Purchase Price for a given Market Value of collateral

today	Thursday, 1 March 2012
Purchase Date	Monday, 5 March 2012
Repurchase Date	Monday, 12 March 2012
1-week repo rate	1.00% (A/360)
collateral	2% DBR 4-Jan-2022 (A/A, note 2012 is a leap year)
collateral amount	EUR 25 million nominal
clean price	101.79
days accrued	61
dirty price	102.123333333
Market Value of collateral	25,530,833.33
Haircut	2%

$$\text{Purchase Price} = 25,530,833.33 \left(1 - \frac{2}{100} \right) = 25,020,216.66$$

Repurchase Price 25,025,081.69

Worked example: applying a Haircut to calculate the required collateral value for a given Purchase Price

today	Thursday, 1 March 2012
Purchase Date	Monday, 5 March 2012
Repurchase Date	Monday, 12 March 2012
1-week repo rate	1.00% (A/360)
Purchase Price	EUR 25 million
Repurchase Price	25,004,861.10
collateral clean price	2% DBR 4-Jan-2022 (A/A, note 2012 is a leap year)
days accrued	101.79
dirty price	61
Haircut	102.123333333
	2%

$$\text{required Market Value of collateral} = \frac{25,000,000}{\left(1 - \frac{2}{100}\right)} = 25,510,204.08$$

- 3.15 In the interval between a margin call being made by one party and margin being delivered by the other, the calculation of Net Exposure should assume that margin will be delivered.
- 3.16 It is currently considered best practice (but see paragraph 3.21 below) for the calculation of Net Exposure to include all transactions between two parties for which:
- the transaction date is today or earlier; and
 - the Repurchase Date is today or later.
- 3.17 Under Purchase Date valuation, the intention is that the inclusion of new or maturing transactions should be based on actual rather than assumed settlement. However, this practice requires parties to have the ability to confirm settlement before making or responding to a margin call.
- 3.18 For the purposes of Purchase Date valuation, where firms cannot confirm settlement before making or responding to a margin call, the most prudent approach is to assume settlement on the Purchase Date but not on the Repurchase Date. In other words, transactions should be automatically included in the calculation of Net Exposure on both their Purchase Date and Repurchase Date. This asymmetry of treatment is justified by the fact that settlement

What transactions are included in the calculation of the Net Exposure of non-forward repos?

failures on the Repurchase Date are more common than on Purchase Dates and maturing transactions have larger Transaction Exposures than new transactions.

- 3.19 Where margin is paid or delivered for value on T+1 and T+2, the inclusion of repos in the calculation of Net Exposure up until their Repurchase Dates means that the contribution of each transaction to Net Exposure will be longer and will tend to increase margin. Any excess margin delivered as a result of this practice will be eliminated by the next margin call. It is sometimes argued that the inclusion of repos in the calculation of Net Exposure up until their Repurchase Dates means that some margin may be paid or delivered after the Repurchase Dates of the transactions generating the margin, which is not logical. However, the alternative is not to margin for collateral price movements over the last one or two Business Days of a transaction, which is likely to be a greater risk than extending the duration of margining. Parties need to decide where the balance of risk should lie. Paying or delivering margin for value on T+0 will significantly reduce the size of the problem.

Worked example: what transactions to include in the calculation of Net Exposure under Purchase Date valuation

Today is Thursday, 1 March 2012. You wish to calculate Net Exposure and, if necessary, make a margin call on counterparty ABC. Consider the following outstanding repo transactions with ABC:

<u>Transaction Date</u>	<u>Purchase Date</u>	<u>Repurchase Date</u>	<u>Type</u>	<u>Include?</u>
	1-Dec-11	1-Mar-12	3M	yes
	2-Feb-12	2-Mar-12	1M	yes
	9-Feb-12	9-Mar-12	1M	yes
	16-Feb-12	23-Feb-12 (failed)	1W	yes
	27-Feb-12	5-Mar-12	1W	yes
	23-Mar-12	25-Jun-12	forward	yes
27-Feb-12	28-Feb-12	6-Mar-12	1W	yes
29-Feb-12	1-Mar-12	2-Mar-12	ON	yes
1-Mar-12	2-Mar-12	5-Mar-12	TN	yes
1-Mar-12	5-Mar-12	5-Apr-12	1M	yes

3.20 Under the GMRA, a party with a Net Exposure has the right to (1) call for margin or (2) call for the early termination and replacement of a transaction (Repricing or Adjustment, commonly called ‘repricing’ in the European repo market --- see paragraph 3.49 below). However, under the terms of the standard agreement, this right can be exercised only on or after the Purchase Date. Such Purchase Date valuation is current market practice in Europe, except for repos cleared by CCPs, which calculate credit exposures from the transaction date. However, margining only from the Purchase Date allows credit exposure to build up. Exposures before the Purchase Date take the form of a replacement cost. If one party defaults before the Purchase Date, before the Purchase Price and collateral have been exchanged, given the assumption that defaulted transactions will be replaced, the other party may have an exposure to loss arising from adverse changes in the repo rate and in the Market Value of the collateral between the transaction date and Purchase Date. This replacement cost may become significant in the case of forward repos. Another consideration is that regulatory capital charges apply and the impact on regulatory leverage and liquidity ratios will be from the transaction date. Current best practice could therefore be improved, particularly in the case of forward repos, to begin the process of calculating Net Exposure and, where necessary, calling for margin or repricing on the transaction date. To include replacement cost would require amendment of the terms of the GMRA. The adoption of valuation and margining/repricing from transaction date is likely to represent a major operational change for many firms and is therefore a medium-term objective for the European repo market.

Best practice recommendation. It is currently best practice in the European repo market, particularly in the case of forward repos, to begin the process of calculating Net Exposure and, where necessary, calling for margin or repricing on the transaction date.

Margining failed purchases

3.21 The failure of the Seller to deliver collateral on the Purchase Date of a transaction does not automatically terminate the contract with the Buyer (nor is it an Event of Default under the GMRA, unless the parties had opted to include failure to deliver when they negotiated their agreement and the Buyer exercises his right under paragraph 10(g)(iii) of the GMRA 2000 or 19(h)(iii) of the GMRA 2011.

- Unless and until the Seller remedies the fail, he will have a short position in the collateral, that is, he is at risk of a fall in the clean price of collateral security and will accrue an income loss at the coupon rate. In addition:
 - If the repo rate on the transaction is positive, the Seller remains liable to pay interest at the agreed repo rate for every day of the fail.

- If the repo rate on the transaction is negative, the Seller will earn the repo rate for every day of the fail, unless the parties have adopted either (1) the ICMA recommendation of November 2004 on failure to deliver in repos at negative rates (see paragraph 2.58) or (2) if they have signed the GMRA 2011, the negative rate provision in Annex I, paragraph (2)(b). These provisions reset the repo rate to zero while there is a fail.
- The Buyer will have the opposite position.
- The above positions will create a Transaction Exposure for one of the parties. Paragraph 10(g)(ii) of the GMRA 2000 and 10(h)(ii) of the GMRA 2011 provide that the Seller shall pay cash margin to the Buyer for any Transaction Exposure that arises during the fail. But there is no obligation on the Buyer to pay margin to the Seller for any Transaction Exposure on the failed transaction.
- However, if the parties have agreed in Annex I, paragraph (l) of the GMRA, that failure to deliver shall be an Event of Default under paragraph 10(a)(ii), there will be no need for margining as any Transaction Exposure will be settled in the close-out.

Margining failed repurchases

- 3.22 If a transaction fails on its Repurchase Date, under Paragraph 10(h)(ii) of the GMRA 2000 and 10(i)(ii) of the GMRA 2011, the Buyer should pay cash margin to the Seller until the failure has been remedied by the Buyer or the transaction has been terminated by the Seller under paragraph 10(h)(iii) of the GMRA 2000 or paragraph 10(i)(iii) of the GMRA 2011 ('mini close-outs' --- see paragraphs 4.1-4.3 below). It is not recommended that the Seller should reciprocate.

What transactions are included in the calculation of the Net Exposure of forward repos

- 3.23 As with non-forward repos, it is also current market practice (which is reflected in the GMRA - see Annex I, Part 2) not to include forward repos in the calculation of Net Exposure until they reach their forward Purchase Dates (and therefore cease to be forward transactions). The rationale has been that, until collateral and cash are exchanged on the forward Purchase Date, the only risk on the transaction which is posed by the possible default of one of the parties is that the non-defaulting party will have to arrange a replacement transaction at a worse Market Value of collateral and repo rate or buy-back price. In other words, until the forward Purchase Date, the risk on a forward repo is an interest rate risk and replacement cost, rather than the credit risk to which a counterparty is exposed from the Purchase Date (the risk of losing principal). Such interest rate risk could be hedged with interest rate risk management instruments rather than collateral.

- 3.24 Under the GMRA, shortly before the Purchase Date of a forward repo (when the interval to the Purchase Date is equal to the minimum period for the delivery of

margin), any credit exposure can be addressed by calling margin or repricing or by the procedure set out in 2(b) of Annex I of GMRA 2000 and 2(c) of Annex I of the GMRA 2011, which allows parties, just prior to the Purchase Date, to adjust the Purchase Price or the number of Purchased Securities in order to eliminate any material difference between the Purchase Price and the required Market Value of the collateral in that particular transaction.

What price is used to value collateral?

- 3.25 Collateral securities must be valued at their dirty or gross prices (ie including accrued interest), rather than their clean or net prices. The number of days used in the calculation of accrued interest should be calculated from and including the last coupon payment date up to but excluding the date on which margin is due to be delivered (the margin delivery date). This is different to the provision in the GMRA.
- 3.26 To value each piece of collateral, the most common practice is to use the middle (clean) price quoted in the Appropriate Market for that security (see 2(c) of GMRA 2000 and 2(d) of GMRA 2011) at the close of business on the Business Day before the date of calculation, or a price dealt at about the same time. The middle price assumes that the Buyer and Seller are equally likely to default. It also avoids generating higher margin calls or triggering repricing where the same security is repoed and reversed between two parties, one at the bid price and the other at the offer price. Alternatively, the parties could agree to use the bid price, which would provide the maximum protection for the Buyer. The Market Value of collateral fixed-income securities should include accrued interest up to but excluding the margin delivery date.
- 3.27 The use of prices at the close on the Business Day before a margin calculation is intended to avoid parties trying to take advantage of intra-day price fluctuations to increase margin calls they are due to receive or decrease margin calls they are due to answer. Such behaviour would be likely to generate disagreement about valuations. Close of business is generally deemed to be a 'neutral' timing. However, in the event of exceptional intra-day collateral price movements, parties can agree to intra-day margin calls, which should use the latest available price.
- 3.28 Disagreement on the prices used in valuing collateral can be avoided if the sources are listed in Annex I of their GMRA. However, this is not always practicable. The most common current practice is for prices to be taken from the internal price database of the margin caller. This will record the prices at which deals have been executed and quotes received from the market by the caller.

- 3.29 In the event of a disagreement about a price which has been proposed by a margin caller, and if no price source has been specified in their GMRA, the parties should agree a price or a price source, negotiating reasonably and in good faith.
- 3.30 When calculating the Repurchase Price (Buy-Back Price) of a sell/buy-back, where the collateral is a fixed-income security and a coupon is paid during the term of the transaction, account has to be taken of the compensatory income payment owed by the Buyer to the Seller. In a sell/buy-back, this is deferred until the Repurchase Date. In the interim, the Buyer is presumed to reinvest the value of the coupon. The compensatory payment, including reinvestment interest, is then deducted from the Repurchase Price that the Seller would have had to pay in the absence of an income payment on the collateral. If the coupon payment date falls on a non-Business Day, the Repurchase Price should assume that the reinvestment of the coupon will start on the next Business Day (see paragraph 4.6 below). The formula for calculating the Repurchase Price of a sell/buy-back for use in repricing calculations where there is an income payment on the collateral is set out in the Buy/Sell-Back Annex of the GMRA (paragraph 2(a)(iii)(y)) (see paragraphs 2.60-2.61 above).
- 3.31 Because the dirty or gross price of a fixed-income security is used to calculate its Market Value, the payment of a coupon will reduce the Market Value of that security and may trigger a margin call. The same principle applies to equity collateral and payments of dividends. It is best practice to monitor forthcoming coupon or dividend payments to ensure smooth management of large margin calls on or by counterparties.

Best practice recommendation. It is best practice to monitor forthcoming coupon or dividend payments to ensure smooth management of large margin calls on or by counterparties.

How often should Net Exposure be calculated and margin called?

- 3.32 Net Exposure should be calculated at least every Business Day. In exceptional circumstances, it should be calculated intra-day.
- 3.33 Margin should be called whenever Net Exposure exceeds an agreed threshold (see the next sub-section).

Exposure thresholds and minimum transfer amounts

- 3.34 Parties to repos often agree a minimum Net Exposure below which they will not call a margin from each other. Once the Net Exposure equals or exceeds this threshold, a margin is called which is sufficient to eliminate the entire Net Exposure. For this reason, the threshold is often called a ‘minimum transfer amount’. However, an exposure threshold and a minimum transfer amount can be different. The former may be used as a trigger for margining and the latter as the minimum amount of margin to be called once the threshold has been exceeded (eg see the US Treasury Market Practices Group’s recommendations on ‘Margining in Agency MBS Trading’). In this case, parties agree to tolerate unsecured Net Exposures up to the threshold and, once that threshold is breached, will not call margin until the excess over the threshold is greater than the minimum transfer amount. For example, if the agreed exposure threshold is 500,000 and the agreed minimum transfer amount is 100,000, a Net Exposure of 580,000 would not trigger a margin call. A Net Exposure of 620,000 would trigger a margin call of 120,000 to take the Net Exposure down to the threshold of 500,000. In the European repo market, exposure thresholds and minimum transfer amounts are generally assumed to be the same and, once the exposure threshold/minimum transfer amount is exceeded, margin is called to completely eliminate Net Exposure. It is best practice for parties to be clear about what is meant by exposure threshold and minimum transfer amount. It is also best practice, where an exposure threshold/minimum transfer amount has been agreed and a Net Exposure then exceeds that amount, to call margin sufficient to eliminate the entire Net Exposure.

Best practice recommendation. It is best practice for parties to be clear about what is meant by exposure threshold and minimum transfer amount. They should be the same but that needs to be made clear. It is also best practice, where an exposure threshold/minimum transfer amount has been agreed and a Net Exposure then exceeds that amount, to call margin sufficient to eliminate the entire Net Exposure.

- 3.35 A Net Exposure below the exposure threshold/minimum transfer amount is an unsecured credit exposure and should be subject to the credit limit for repo.
- 3.36 The exposure threshold/minimum transfer amount should be agreed before trading starts. In practice, parties usually record mutually-agreed exposure thresholds/minimum transfer amounts in their GMRA.

Periodic elimination of Net Exposure below an agreed threshold

- 3.37 Parties who agree exposure thresholds/minimum transfer amounts and record these terms in their GMRA can exercise greater control over their unsecured exposure to each other if they give each other the right to call for any Net Exposure below the agreed threshold to be eliminated regularly (eg at the end of each calendar quarter) or at any other time.

Best practice recommendation. It is best practice for parties who agree exposure thresholds/minimum transfer amounts with each other and record these terms in their GMRA to also agree that either party has the right to call for any Net Exposure below the threshold to be eliminated regularly (eg at the end of each calendar quarter) or at any other time.

- 3.38 A party may prefer not to agree an exposure threshold/minimum transfer amount with another party and thereby commit itself to potentially extending unsecured credit. Instead, it may decide on a confidential exposure threshold/minimum transfer amount (sometimes called a 'soft threshold') that it will observe internally, but will not make that amount known to the counterparty. This will allow it to reduce or eliminate the exposure threshold/minimum transfer amount in the event of concerns arising over the creditworthiness of the counterparty.

Suspension of an agreed exposure threshold and minimum transfer amount

- 3.39 Where an exposure threshold/minimum transfer amount has been agreed, in the case of repurchase transactions, if one party accumulates a Net Exposure to the other while the second party is holding Net Margin, but the Net Exposure is less than the agreed exposure threshold/minimum transfer amount, the first party is typically unable to call back the Net Margin as he is not entitled to make a margin call. However, it is undesirable that any margin should be held other than against an exposure. It is therefore best practice in the circumstances described above for the party holding Net Margin to allow a margin call from the other party notwithstanding the exposure threshold/minimum transfer amount. Of course, the smaller the agreed exposure threshold/minimum transfer amount, the less material is the problem. Where an exposure threshold/minimum transfer amount is recorded in the GMRA, this exception should be an express part of the provision.

What is the deadline for making a margin call?

- 3.40 Margin calls should be made before 14:00 CET. Margin calls made after 14:00 CET should be treated as though they had been made on the next business day.

- 3.41 If a party receiving a margin call wishes to exercise its right to provide securities in order to satisfy a margin call, it must select the issues and notify the other party of the selection before 16:00 CET. If the second party has a problem with the issues selected by the margin-giver, it should promptly inform the first party (see the paragraph below).

Best practice recommendation. It is best practice to make margin calls before 14:00 CET and to select the issues and notify the other party of the selection before 16:00 CET.

Which securities have to be accepted as margin?

- 3.42 Securities offered as margin on repurchase transactions should generally be accepted if they are recognised as general collateral in the repo market or if they have characteristics the same as or better than the collateral originally purchased by the margin-taker (subject to risk management constraints such as collateral eligibility restrictions and portfolio concentration limits). If practicable acceptable margin securities should be listed in the GMRA. Otherwise, the margin-taker should act reasonably and in good faith when offered margin securities.

Should initial margin or Haircut be deducted from margin securities?

- 3.43 If an initial margin or Haircut has been taken from a particular issue of securities used as collateral in a repo with a particular counterparty, it is logical to apply an initial margin or Haircut to that same security if it is to be given as margin. In the GMRA 2011, provision is made for the parties to agree a Haircut (but not an initial margin) on margin securities. Such a Haircut is called Margin Percentage (see section 2(aa) of GMRA 2011). The initial margin or Haircut to be imposed on margin securities could be different from that imposed on the same securities when they were first repoed because of changing circumstances in the interval between the Purchase Date and the margin call.

What is the deadline for delivering margin?

- 3.44 Margin should be delivered within a deadline agreed between the parties. It is best practice to deliver cash margin on the same day as the call is made (T+0). It is also best practice to deliver margin securities on the same day as the call is made (T+0) but the most common practice currently is to deliver margin securities one or two days after the margin calls (T+1 and T+2).

Best practice recommendation. It is best practice to deliver cash margin on the same day as the margin call is made (T+0). It is also best practice to deliver margin securities on the same day as the margin call is made (T+0).

Can margin securities be substituted?

3.45 Securities that have been given as margin by one party can be substituted with the agreement of the other party, who should act reasonably and in good faith in response to such a request.

Interest payments on cash margin

3.46 Interest is due on cash margin, except where such margin is paid because of a failure by the Buyer to return certain collateral securities on the Repurchase Date (see paragraph 3.54 below on Cash Equivalent Amounts and paragraph 2.62 on negative repo rates).

3.47 Interest should be accrued on cash margin at a reference rate plus or minus a spread agreed between the parties. Common reference rates are overnight indexes such as EONIA for euro, SONIA or RONIA for the pound sterling and the Fed Funds Effective Rate for US dollars. Overnight indexes are considered appropriate because of the uncertain duration of margin.

3.48 Interest accruing on cash margin up to but excluding the day on which margin is due to be delivered (the margin delivery date) should be included in the calculation of Net Exposure.

How is “repricing” used to eliminate Net Exposures?

3.49 Under the GMRA, Net Exposures on sell/buy-backs are not eliminated by means of margin. Instead, each transaction is terminated and simultaneously a new transaction is created for the remaining term in which either (1) the Purchase Price of the new transaction is set equal to the new Market Value of the securities or (2) the nominal value of the securities is changed to bring the Market Value at the new market price into line with the original Purchase Price (see 4(j) and 4(k) of the GMRA 2000 and 4(k) and 4(l) of the GMRA 2011 respectively). In method (1), the Repurchase Price of the terminated transaction (as of the termination date) and the Purchase Price of the new transaction should be set off and paid net. In method (2), the amount of the collateral securities of the terminated transaction and the amount of the collateral securities of the new transaction should, if they are the same (see below), be set off and delivered net. These methods are sometimes collectively called ‘repricing’. In the GMRA, however, the first method is called Repricing and the second method is called Adjustment. Repricing and Adjustment can be applied to repurchase transactions.

3.50 Under the Repricing method, accrued repo interest is ‘cleaned up’, ie paid over to the Buyer by not including it in the new Purchase Price.

- 3.51 Whereas margining is applied to transactions in aggregate, Repricing and Adjustment have to be applied to individual transactions. It is usual to reprice or adjust transactions in sequence, starting with the transaction with the highest Transaction Exposure, and continuing until Net Exposure is reduced to an acceptable level.
- 3.52 Under the GMRA, when a transaction is adjusted (ie Method 2), the parties can agree to allow the substitution of the collateral.

When is margin returned?

- 3.53 Cash margin and margin securities held by one party are not automatically returned to the other party under the GMRA when underlying transactions mature, unless the second party specifically requests the return of previous margin when making a subsequent margin call on the first party (see 4(d) of the GMRA). This means that margin can build up on both sides of a bilateral relationship. Only the difference or Net Margin affects the calculation of Net Exposure (see paragraph 3.9 above). Offsetting amounts of margin merely neutralise each other and so are wasted collateral. In order to avoid such a parallel build-up of margin by two parties, it is best practice for parties, when making margin calls, to recall margin previously paid or delivered to the other party.

Best practice recommendation. It is best practice for parties, when making margin calls, to recall margin previously paid or delivered to the other party.

- 3.54 If a party making a margin call requests the return of margin securities delivered to the other party in response to a previous margin call but the other party is unable to return those securities, despite its best endeavours and because of circumstances beyond its control, the GMRA 2011 allows the undelivered margin securities to be substituted, at least temporarily, by means of payment of a Cash Equivalent Amount (see 4(h) of GMRA 2011).

What happens if margin is not delivered?

- 3.55 Failure to deliver margin is not an automatic Event of Default under the GMRA 2000 or Automatic Early Termination event under the GMRA 2011. Under both versions of the GMRA, the non-defaulting party is required to serve a notice in order to trigger a default. If the non-defaulting party chooses not to serve a notice, the defaulting party should nevertheless endeavour to deliver the late margin at the earliest opportunity.

3.56 Delayed payments or deliveries of margin from one party should not be set off against margin calls made on the other party on subsequent days. To do so would encourage the unacceptable practice of trying to avoid a margin call by rolling that obligation forward to see if movements in market prices eliminate a Transaction Exposure.

What if a party disputes a margin call?

3.57 The GMRA does not include a dispute resolution procedure. However, the parties have a general legal obligation to act reasonably and in good faith. They also need to be aware of the potential regulatory consequences of disputed margin calls and recognise that, by engendering uncertainty about the size of exposures and the need for collateralisation, disputed margin calls weaken their own risk management. It will anyway be in their own interests to act reasonably and in good faith if they wish to preserve their professional reputation and the business relationship with their counterparty. Members of ICMA and the ERCC are expected to be conscious of their reputation in the market and of the need to preserve the integrity of the market by resolving disputes as promptly and efficiently as possible, and to do so by acting reasonably and in good faith as well as in a professional manner.

3.58 The parties to a disputed margin call also need to be aware that failure to meet a margin call is a potential Event of Default. On the other hand, the party making a margin call has a duty to act in good faith by promptly making available a copy of its calculations and should be able to substantiate these calculations.

3.59 Queries about margin calls and the response to such queries should be made urgently. The first stage in resolving a margin dispute is for both parties to check the calculation which should therefore be ready to promptly provide a copy of his calculation which should reflect the methodology set out in the GMRA, where this is the underlying legal agreement. Margin disputes can be caused by errors in the calculation of margins and because of differences in the internal rules being applied to margin calculations. For example, parties may be using different price sources to value securities; one party may include accrued interest in the Market Value of collateral only up to the margin calculation date, while the other may include accrued interest up to the margin delivery date (the latter is best practice but different from the GMRA --- see paragraph 3.25 above); or parties may differ in when they introduce new transactions into the margin calculation or when they drop maturing transactions (see paragraphs 3.16-3.21 above). It is therefore important that a party receiving a query about a margin call should be able to detail the assumptions underlying its calculations, other parameters and inputs.

- 3.60 It is best practice for a party disputing the size of a margin call to pay immediately the undisputed portion of the call while trying to resolve the dispute.

Best practice recommendation. It is best practice for a party disputing the size of a margin call to pay immediately the undisputed portion of the call while trying to resolve the dispute. It is also best practice for the party whose margin call is being disputed to be ready to promptly provide a copy of his calculations, which should reflect the methodology set out in the GMRA, where this is the underlying legal agreement, and to detail the assumptions underlying the calculations as well as other parameters and inputs.

Margin parameters to be agreed between parties before trading

- 3.61 In summary, in order to reduce the scope for misunderstandings and margin disputes, it is best practice to agree the following parameters before trading:
- Price sources to be used to value collateral, either routinely or in the event of a margin dispute.
 - Whether the middle or bid rate will be used in the valuation of collateral.
 - In the case of sell/buy-backs, the reference rate and any spread to be used to fix the interest rate at which compensatory (manufactured) payments will be reinvested until the Repurchase Date.
 - Exposure thresholds/minimum transfer amounts, if any.
 - Security issues or classes of security that will be acceptable in margin transfers.
 - Whether initial margin or Haircuts will be applied to margin securities.
 - Deadlines for delivering cash margin and margin securities.
 - The reference rate and any spread to be used to fix the interest rate on cash margin.
 - In the case of sell/buy-backs, whether the Repricing or Adjustment method will be used instead of margining.

4 Best practice in managing the life cycle of a repo

Exercising a 'mini close-out' in response to a failure to deliver on the Repurchase Date

- 4.1 Where the Buyer in a repo fails to deliver collateral to the Seller on the Repurchase Date, the Seller has the right to exercise a 'mini close-out' on that transaction (under paragraph 10(h) of the GMRA 2000 or 10(i) of the GMRA 2011). Note that a mini close-out is different from the 'buy-in' procedure used in the cash market.⁶ Where a Seller decides to trigger a mini close-out (which is an exceptional step - see paragraph 4.3 below), in order to minimise the interval between the mini close-out and a buy-in on any linked cash transaction, it is best practice, for the Seller to serve, as soon as possible, a notice advising the Buyer that he intends to serve a mini close-out notice. This advisory notice should be served on the same day as the fail or as early as possible on the morning of the next Business Day or, if later, as soon as the Seller decides to trigger a mini close-out. The subsequent mini close-out notice should state that, if the Buyer has not delivered the same issue of securities to the Seller by noon of the same day, the Seller will serve a notice confirming execution of the mini close-out by close of business. Examples of an advisory notice and a mini close-out (execution) notice are provided in Annex III (options A and B, respectively).
- 4.2 If a Seller triggers a mini close-out, it is best practice for the Seller to accept partial delivery of the security from the Buyer (see paragraph 2.53 above).
- 4.3 Great caution should be exercised before triggering a mini close-out in the repo market for European securities. This is because the potential cost of a mini close-out in this market is considerably greater than the average return being made on the trading of repos. The risk of facing expensive mini close-outs would be likely to deter many parties from active participation in the repo market, which would seriously undermine market liquidity and raise the cost of transacting. Consider the potential cost of a mini close-out. Assuming that collateral is valued at the middle cash market price in the repo market, but at the offer price for a mini close-out, the cost of a buy-in would be equal to half the bid/offer spread in the cash market. Half the typical cash market bid-offer spread of 10 basis points (on a flat basis) on a EUR 100 million cash transaction in government bonds is worth EUR 50,000, whereas the typical repo market bid/offer spread of 5 basis points (per annum) for a 30-day repo of EUR 100 million of collateral would be worth only EUR 4,167. The mini close-out would also take into account movements in the value of collateral between the Repurchase Date and the date of the mini close-out calculation.

⁶ A mini close-out results in a net settlement of the difference between the Repurchase Price and the Default Market Value of the collateral. A buy-in seeks to arrange an alternative source of supply and provide compensation for any price difference.

Best practice recommendation. It is best practice for the Seller in a repo on which the Buyer has failed to deliver collateral on the Repurchase Date, who wishes to trigger a mini close-out, to serve an advisory notice to the Buyer as soon as possible on the same day as the fail or as early as possible on the morning of the next Business Day or, if later as soon as the Seller decides to trigger a mini close-out. The subsequent mini close-out notice should state that, if the Buyer has not delivered equivalent securities to the Seller by noon of the same day, the Seller will serve by close of business a notice confirming execution of the mini close-out. It is best practice for the Seller to accept partial delivery of the equivalent security from the Buyer.

Coupon, dividend and other income payments on collateral

- 4.4 During the term of a repo, the collateral is the property of the Buyer, which means that all income generated by the collateral is paid by the issuer directly to the Buyer. However, because the value of the collateral within the Repurchase Price is fixed, both the risk and return on collateral in a repo should be retained by the Seller. So, under the terms of a repo contract, the Buyer is obliged to make compensatory income payments to the Seller (often called ‘manufactured payments’) whenever coupon, dividend or other income payments are paid on collateral. On the other hand, if the issuer of collateral fails to make an income payment, the Buyer does not have to make the compensatory payment to the Seller. But if the Buyer has sold the collateral to a third party, he is still obliged to make the compensatory payment. The guiding principle is that the Seller should receive the equivalent of all income payments due on collateral to the same extent that it would have received actual income had it not repoed out the collateral.
- 4.5 In a repurchase transaction, a compensatory income payment from the Buyer is due on the same day as the corresponding income payment by the issuer of the collateral (although current market practice is to wait until the receipt of the payment from the issuer has been confirmed the next day). But in a sell/buy-back, the compensatory payment is deferred until the Repurchase Date, which means that it has to be reinvested by the Buyer between the income payment date and Repurchase Date. The compensatory payment plus reinvestment income is deducted from the Sell Back Price or Repurchase Price. This can cause a problem in a sell/buy-back if the coupon is not paid by the issuer of the collateral. Unless the Buyer has sold the collateral to a third party, he will suffer the loss of the compensation plus reinvestment income, as this will have been deducted from the Repurchase Price he is due to receive, even though he will not have received the coupon. In effect, the deduction means the Seller will receive the compensatory payment (plus reinvestment income), notwithstanding the default by the issuer of the collateral and despite the

intention that he should be the party exposed to the risk of default on the collateral. To prevent such an anomaly, the Repurchase Price of the sell/buy-back needs to be adjusted in such circumstances to reverse the deduction of the compensatory payment and reinvestment income. As there is no provision in the GMRA to do this, such a provision would have to be adopted by parties by means of an agreed amendment to their GMRA or, if that is not practicable, by inclusion in their Confirmations.

4.6 In the event that an income payment on collateral in a sell/buy-back is due to be paid on a weekend or other non-Business Day, the reinvestment period of the compensatory payment should start on the next Business Day (see paragraph 3.30).

Dealing with the resetting of a coupon on floating-rate collateral in a sell/buy-back

4.7 Where a floating-rate security, such as an FRN, is used as collateral in a sell/buy-back, it is possible that the coupon on the security will reset during the term of the transaction. This creates a problem, as the Repurchase Price (Sell Back Price) will have been fixed at the start of the transaction using an assumed future coupon. For example, it may have been assumed, for the sake of simplicity, that the next coupon will be the same as the current coupon. However, the new coupon is very likely to turn out to be different from the current coupon. The question then arises, should the difference between the new and assumed coupons be managed by making (1) a retrospective change to the Repurchase Price (Sell Back Price) or (2) a subsequent interest claim? Market practice tends towards the former method. However, this contradicts the terms of the GMRA Buy/Sell-Back Annex, which does not envisage a retrospective change to the Repurchase Price (Sell Back Price), which means that such a change would not be enforceable under the standard annex. It is recommended that, when using a floating-rate security as collateral in a sell/buy-back, the parties should consider including a supplementary term in Annex I of the GMRA or, if that is not practicable, in Confirmations, to the effect that the Repurchase Price (Sell Back Price) will be changed to reflect the resetting of the coupon.

Best practice recommendation. If the coupon on a floating-rate security being used as collateral in a sell/buy-back is reset during the term of the transaction, it is best practice to anticipate this event by including a supplementary term in Annex I of the GMRA or, if that is not practicable, in Confirmations, to the effect that the Repurchase Price (Sell Back Price) will be changed to reflect the resetting of the coupon.

Exercising permissions to substitute collateral

- 4.8 Ideally, substitution should be performed by means of a simultaneous delivery-versus-delivery (DVD) exchange of the original collateral and substitute collateral; or by simultaneous back-to-back (delivery-versus-payment) DVP deliveries.⁷ However, DVD and simultaneous back-to-back DVP deliveries are often not possible or practicable, in which case, it is market practice for the Seller to deliver the substitute before the Buyer releases the existing collateral. This of course exposes the Seller to credit risk on the Buyer.
- 4.9 Although the Seller may have permission to substitute, the Buyer is not obliged to accept any substitute offered by the Seller. To insist otherwise might jeopardise the validity of the outright transfer of legal title to the collateral from the Seller to the Buyer. The substitute should be at least of the same value and at least of the same quality in terms of credit and liquidity. If a disagreement arises over the acceptability of a particular proffered substitute security, the parties should negotiate reasonably and in good faith. Disputes can be avoided if security issues or classes of security that would be acceptable or which would not be acceptable to the Buyer as substitutes are agreed in advance in writing (see paragraph 2.28 above).
- 4.10 Permission to substitute collateral can be sought not only by the Seller from the Buyer, but parties can agree permissions on margin securities held by either.

The issuance of termination notices to counterparties

- 4.11 Before serving termination notices, including mini close-out notices but not Default Notices, it is best practice, if time allows, to give advance notice to a counterparty, including its repo desk, of your intention to serve a notice. Such courtesy is a matter of good relationship management but it may have the benefit of prompting the counterparty to take urgent action to remedy the underlying problem. Parties should therefore ensure that the department responsible for issuing such notices forewarns their own repo desk of planned termination notices. This may require formal procedures to be put in place, particularly where such operations have been delegated to geographically distant locations. However, a policy of forewarning one's own repo desk does not mean that the desk should be allowed to delay or prevent the issuance of a termination notice.

⁷ Even if back-to-back DVP deliveries are not exactly simultaneous, each is collateralised by cash in its own right.

Best practice recommendation. It is best practice, if time allows, before serving termination notices, other than Default Notices, to give advance notice to a counterparty, including one's own repo desk, of the intention to serve a notice. However, repo desks should not be allowed to delay or prevent the issuance of such notices.

- 4.12 It is best practice to prepare for termination events, including Events of Default and failures to deliver collateral, by drafting templates of termination notices in advance of possible future need. A model form of the notice that should be served on a Buyer to trigger a mini close-out, which has been prepared by the ICMA, is attached at Appendix III.

Best practice recommendation. It is best practice to prepare for termination events, including Events of Default and failures to deliver collateral, by drafting templates of termination notices in advance of possible future need.

Confirmation and affirmation of post-trade amendments and updates to the agreed terms of a repo and the exercise of options

- 4.13 When the agreed terms of a repo are amended or updated after its Purchase Date (eg a floating-rate index is refixed) or an option is exercised (eg the termination of an open repo), it is best practice to promptly confirm or affirm the change. Confirmation and affirmation will constitute prima facie evidence of the amendment, update or exercise of an option in the event of a dispute.⁸ Confirmation and affirmation are particularly important in structured transactions, such as term repos, evergreen and extendible repos and floating-rate repos. Confirmation and affirmation are also particularly important for large (over EUR 50 million or equivalent) or longer-term repos (with an initial term of one year or more), as the consequences of a mistake or disagreement about contractual terms would be greater.

- 4.14 It is best practice to cross-reference Confirmations of post-trade updates to a repo to the Confirmation of the original transaction in order to allow the contractual terms which are being updated to be checked.

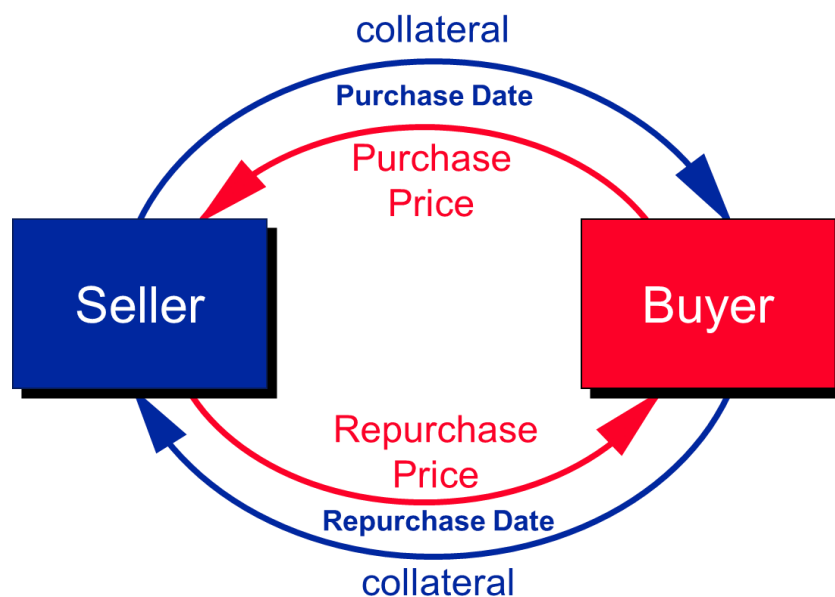
Best practice recommendation. It is best practice to promptly confirm or affirm post-trade amendments or updates to the agreed contractual terms of a repo. Updates should be cross-referenced to the original Confirmation.

⁸ 'Amendments' mean mutually-agreed changes to the original contractual terms of the transaction, such as changes in initial margin or Haircut. 'Updates' mean changes to prices and other contract details envisaged in the original contract, such as the refixing of the rates on floating-rate repos and the allocation and pricing of collateral on forward repos. 'Exercising an option' includes decisions to change the contractual terms which one of the parties is entitled but not obliged to make, such as calling margin, substituting collateral and repricing or terminating open repos.

Annex I --- Understanding repo and the repo market

The legal structure and economic character of repo

1. Repo is a generic term for *repurchase transactions* and *sell/buy-backs*. Repos (along with securities lending) are a type of *securities financing transaction (SFT)*.
2. In a repo, at the start of the transaction (the *Purchase Date*), one party (the *Seller*) sells assets, typically securities, to another party (the *Buyer*) at one price (the *Purchase Price*) and commits to repurchase assets which are *equivalent* to those sold (see paragraph 12.3 below) at a future date or on demand (the *Repurchase Date*) at an agreed or calculable but different price (the *Repurchase Price*). It is market terminology to refer to the assets in a repo as *collateral*, as they can be sold off by the Buyer in order to recover his cash, should the Seller default on his obligation to pay the Repurchase Price on the Repurchase Date (or default on another contractual obligation owed to the Buyer).⁹



3. Although the Seller sells collateral to the Buyer at the start of a repo, his obligation to buy back equivalent collateral in the future means that the Buyer has only temporary possession of the collateral and the Seller has only temporary use of the cash. Therefore, despite a repo being structured legally as a sale and repurchase of collateral, it behaves economically like a secured loan or deposit (ie a loan or deposit against a security interest in assets). The Buyer is

⁹ Legally-speaking, because they have been sold, the assets in a repo are not 'collateral' (which is the traditional term for assets in which a security *interest* has been vested by a borrower to a lender in order to secure a loan).

effectively making a secured loan to the Seller. The Seller is effectively taking a secured deposit from the Buyer.

4. It is market terminology to describe the Buyer as transacting a *reverse repo*. The Seller is simply said to be transacting a repo.
5. The principal uses of repo are (1) the borrowing and lending of cash on a secured basis and (2) the borrowing and lending of securities (in effect, against cash collateral).
6. The difference between the Purchase Price paid by the Buyer on the Purchase Date and the Repurchase Price received by the Buyer on the Repurchase Date is the return to the Buyer on the cash he is effectively lending to the Seller. This return has nothing to do with any coupons, dividends or other income payments that may be paid on collateral during the term of a repo, which are made separately from the payments of the Purchase Price and Repurchase Price (see paragraph 12.7 below).
7. In a repurchase transaction, the difference between the Purchase Price and the Repurchase Price is quoted as a percentage per annum rate of return. In market terminology, this is called a *repo rate*. The return is called *repo interest*.¹⁰ This means that the Repurchase Price of a repo is equal to the Purchase Price plus repo interest.
8. The price of a sell/buy-back has traditionally been quoted as the *forward price* of the security being used as collateral. However, sell/buy-backs are now often quoted in terms of their implicit repo rates. The differences between repurchase transactions and sell/buy-backs are explained in paragraphs 24-27.
9. A fundamental characteristic of a loan or deposit is that the principal sum of money lent by one party to the other on the value date is the same sum that will be repaid at maturity. In a repo, the principal sum effectively being lent by the Buyer to the Seller is the Purchase Price. As the Repurchase Price is equal to the Purchase Price plus repo interest, the principal sum effectively to be repaid in a repo is indeed the same as the principal sum that was lent, confirming that a repo behaves like a secured loan or deposit in all economic respects.

¹⁰ Legally-speaking, this is not correct, as the legal form of a repo is not an interest-paying loan or deposit; the return is just the difference between two prices.

10. The fact that the principal sum effectively being lent in a repo is the same as the principal sum that will effectively be repaid gives rise to a practical problem. The Purchase Price is set by reference to the market value of the collateral at the start of the repo (it will typically be equal to or less than the market value of the collateral - see paragraph 14 below). While the principal sum in a repo does not change, the market value of the collateral does. If the market value falls below the Repurchase Price, the Buyer would not be able to recover his cash by selling off the collateral, should the Seller default. Equally, if the market value of the collateral rises above the Repurchase Price, the Seller would not have enough cash to be able to buy back all his assets, should the Buyer default. These unsecured credit exposures have to be eliminated by means of additional payments of cash or transfers of collateral in the process called *margin maintenance* (see paragraph 14 below).

The importance of transfer of title to collateral

11. It has been explained that repo behaves economically like a secured loan or deposit but is structured legally as a sale and repurchase of securities. There are two reasons for adopting this legal structure.
- 11.1 First, a sale of collateral means that there has been an outright transfer of legal title to the collateral to the Buyer. In other words, the collateral becomes the unencumbered property of the Buyer, giving him the unfettered right to sell off the collateral should the Seller default (or at any time during the term of the repo). Transfer of title contrasts with the traditional method of collateralisation, which is by attaching a security interest to the collateral. Security interests give the secured lender only limited rights to the collateral. He can only sell the collateral upon the default of the other party.¹¹ However, even then, he can only sell if he succeeds in converting his contingent claim on the collateral into outright legal title. The problem is that, because the defaulting party retains property rights in the collateral, the non-defaulting party may have to participate in the liquidation or restructuring of the defaulting party in order to secure his collateral and may have to contest his claim against the liquidator or similar insolvency official and other creditors. In contrast, in repo, the absolute control over collateral given to the Buyer by the transfer of legal title minimises the legal risks arising in a default by the Seller. There is therefore less credit risk in a repo.

¹¹ In the case of a security interest in the form of a pledge, the pledgee cannot sell collateral unless there has been a default by the pledgor or, other than in a default, only if the latter has given the former a right of *re-hypothecation*, in which case, the pledgee can convert the pledge/security interest into a contractual claim to return equivalent assets. Rights of re-hypothecation tend to be limited to relationships between prime brokers and hedge funds.

11.2 Second, an outright transfer of legal title to collateral means that the Buyer has the right to reuse the collateral during the term of the repo, whether or not the Seller defaults. This means he can repo or sell the collateral to a third party at any time (the Buyer only has to make sure he is able to obtain equivalent collateral to return to the Seller by the Repurchase Date). This right of reuse reduces the liquidity risk to which the Buyer is exposed by virtue of having lent his cash, because it means he can liquidate the collateral whenever he needs cash (assuming the collateral is reasonably liquid).

11.3 The reduced credit and liquidity risk to the Buyer means that repo should be a cheaper and more plentiful source of funding than secured loans and deposits.

12. The outright transfer of legal title to collateral in a repo has a number of important consequences for the way that repo functions:

Payments of coupons and dividends

12.1 If, during the term of a repo, a coupon, dividend or some other income is paid by the issuer of the collateral, that payment must be made directly to the Buyer, given that he is the legal owner of the collateral during the term of the repo. However, the Buyer is contractually obliged to make an equal payment to the Seller. See paragraph 12.7 below.

Voting rights and corporate actions

12.2 The voting rights attached to equity being used as collateral belong exclusively to the Buyer, as he is the legal owner of the collateral during the term of the repo. However, under the Equities Annex to the GMRA, the right to take decisions on corporate actions in the case of equity being used as collateral belong to the Seller, provide he gives the Buyer the requisite notice of his decision.

What is 'equivalent' collateral?

12.3 As explained already, the Buyer is only obliged to sell back equivalent collateral securities to the Seller at the end of a repo. 'Equivalent' means collateral that is economically but not legally identical to that purchased at the start. In other words, the collateral to be repurchased is fungible with the collateral sold at the start. The Buyer needs this flexibility in order to be able to exercise his right to reuse the collateral during the term of a repo by repoing or selling the collateral to a third party. If the Buyer sells the collateral to a third party, he is unlikely to be able to recover the same holding of collateral (ie legally identical) in order to be able to return to the Seller on the Repurchase Date but he should be able to buy back the same type of collateral (ie economically identical). Consider the following example. Assume party A buys 10 million of a certificated bond issue (say, certificate 123) through a repo from party B and sells those bonds outright to party C. At the end of the repo, party A will have to buy 10 million of the

same bond issue (certificate 123) outright in order to sell back to party B to close out the repo. Whether party B can buy back from party C or has to buy back from a fourth party, party A is highly unlikely to receive exactly the same certificates. However, he should be able to buy back other certificates of the same issue (eg certificate 129). In other words, he should be able to buy back economically but not legally-identical collateral. And as Party B should be indifferent between different certificates of the same bond issue, there should be no problem in limiting the obligation of the Buyer to returning such equivalent collateral.

12.4 Limiting the obligation of the Buyer to the return of equivalent collateral has practical, rather than just legal, benefits. For example, if party A repos out shares in company ABC to party B and company ABC is then purchased by company XYZ during the term of the repo, what does party B sell back to party A? The answer is equivalent assets, in this case, whatever XYZ paid for ABC.

The Seller retains the risk exposure and return on collateral

12.5 Because the Seller commits to buy back equivalent collateral on the Repurchase Date at a fixed or calculable Repurchase Price, he is exposed to changes in the market price of the collateral during the term of the repo, even though the Buyer is the legal owner. For example, if a Seller repos out a quantity of bonds at a Purchase Price equal to their current market value of 101.50 and commits to repurchase them in one week at a Repurchase Price of 101.55 (= 101.50 plus repo interest of 0.05), he is exposed to the risk that the market price of those bonds may be less than 101.55 at the end of the week, in which case, he will only be able to on-sell them into the market at a loss. Given that the market price of the collateral will be driven largely by the perceived creditworthiness of the issuer, and fluctuations in relative supply and demand in response to economic and financial news, the Seller remains exposed to the credit, liquidity and market risks on the collateral, despite having sold it in a repo.

12.6 The fact that the Seller retains the risk exposure on collateral is essential to the functioning of repo as a financing instrument. All a Seller wants a repo to do is to provide cash to fund the purchase of an asset and take a long position in it. The purpose of the long position is to take the risk on the asset, so it would be pointless if that risk was transferred through the repo. The Buyer, on the other hand, only wishes to make a secure short-term investment of surplus cash, not make an unsecured investment in the asset being offered as collateral (if he wished to invest in the asset, he would buy it for himself). The only purpose of the collateral for the Buyer is to mitigate the credit and liquidity risks in lending cash to the Seller. Consequently, a key principle in the operation of repo is that only the Seller should be exposed to the risks on the collateral.

The consequences of coupon, dividend and other income payments on collateral

- 12.7 If the Seller in a repo is to take the risk on the collateral, he will expect to receive the corresponding return. The return on collateral is paid in various forms.
- The capital gain (loss) from a rise (fall) in the clean price of a fixed-income security or the price of an equity security being used as collateral will automatically accrue to the Seller, given that he has committed to repurchase the security at a fixed or calculable Repurchase Price.
 - The coupon interest that accrues on a fixed-income security during the term that it is being used as collateral will also automatically accrue to the Seller. On the Purchase Date, the Seller receives the Purchase Price, which (assuming no initial margin or haircut - see paragraph 13) is equal to the clean price of the bond plus the accrued interest outstanding on that date. On the Repurchase Date, the Seller pays back the Repurchase Price, which is equal to the Purchase Price plus repo interest, but gets back a bond with the extra coupon interest that has accrued during the term of the repo. For example, if a bond with 100 days accrued interest is repoed out for 7 days, the Seller will pay a Repurchase Price that will include only the original 100 days of accrued interest but will get back a bond with 107 days of accrued interest.
 - If a coupon is paid on a fixed-income security or a dividend is paid on an equity security while it is being used as collateral, the issuer is obliged to pay the coupon or dividend to the Buyer, as he is the legal owner of the security. But the repo contract obliges the Buyer to pay an equal sum of money to the Seller. In the UK, this contractual compensatory payment is often called a *manufactured payment*. In a repurchase transaction, the manufactured payment is due on the same day as the coupon or dividend payment by the issuer. In a sell/buy-back, the manufactured payment is deferred until the Repurchase Date (which means it has to be supplemented by reinvestment interest to compensate the Seller for the delay).

Initial margins, haircuts and margin maintenance

13. If collateral is not very liquid, the Buyer will be exposed to the risk that, if he should have to liquidate that collateral following a default by the Seller, the time it takes to complete the liquidation (on top of the delays in discovering and deciding how to respond to the default) may result in unexpected losses. In order to protect himself against this risk, the Buyer can seek an initial margin or haircut on the collateral, ie setting the Purchase Price below the market value of the collateral. See Chapter 3 on best practice in margining repo.

14. In addition, as explained in paragraph 10 above, the Buyer and Seller are exposed to the risks that the market value of collateral may, respectively, fall below or rise above the Repurchase Price, opening up a credit exposure for one of the parties. In repurchase transactions, any such credit exposures are eliminated by the prompt transfer of margin to the exposed party by the other party, in the form of either a cash payment or a transfer of collateral. In the case of documented sell/buy-backs, a different but equivalent procedure is used. See Chapter 3 on best practice in margining repo.

Permission to substitute collateral

15. A Seller is not entitled to receive equivalent collateral until the Repurchase Date. However, many Sellers are active traders of securities, which means that, unless they restrict their repos to open transactions or very short terms, they take the risk of not being able to trade a security when they wish because it might be out on repo. The Seller can overcome this risk by obtaining from the Buyer permission to substitute collateral (one or more times) at any time during the repo, with an alternative asset that is acceptable as collateral to the Buyer.

16. Permissions to substitute are useful to the Seller but may be inconvenient to the Buyer, who may feel constrained in reusing the collateral because of concern that the Seller might try to exercise his permission and it might prove difficult to buy the collateral back from the market in time to substitute. In order to compensate the Buyer, repos with one or more permissions should pay a higher repo rate than on otherwise equivalent repos.

17. In practice, permission to substitute is rare in the European market outside of tri-party repo (see paragraph 34 below) or some structured repos.

What happens in a default?

18. Under the ICMA Global Master Repurchase Agreement (GMRA) 2000, when an event of default occurs, the non-defaulting party has to serve a Default Notice on the defaulting party, unless the event of default is one of two particular acts of insolvency, in which case, the other party is automatically in default. Once any necessary notice has been served on the defaulting party, except if the event of default is a 'failure to perform other obligations' (in which case, there is a 30-day delay or 'cure period'), the non-defaulting party can 'close out and set off' all the repos it has outstanding with the defaulter that are documented under the same legal agreement. This means that all these transactions are terminated (closed out) and their Repurchase Dates accelerated for immediate settlement. Acceleration means calculating the present values of obligations owed to and by the defaulter, and converting them into the same currency. Then, the net present value of the obligations owed to the defaulting party are netted (set off) against the net present value of obligations owed by the

defaulting party to leave a residual net amount. This residual may be a small net exposure to the defaulter (which has to be pursued by the non-defaulter as an unsecured claim on the defaulter) or a surplus (which has to be returned to the defaulter). Non-defaulters can add reasonable expenses but cannot seek 'consequential damages' from the defaulter, in other words, compensation for downstream losses incurred as a result of the default. However, the GMRA 2000 does allow for recovery of the cost of replacing the defaulted repos or, if justified, rehedging or unwinding hedges.

19. In order to calculate the net present values of obligations owed to and by the defaulting party, the non-defaulting party has to value the collateral held by both parties. The GMRA 2000 offers considerable flexibility to the non-defaulter, in the form of a menu of alternative valuation methods designed to accommodate illiquid collateral. Thus, the non-defaulter has the choice of using:
- prices actually realised on the sale of the collateral or other holdings of the same asset; and/or
 - market quotes; or
 - in cases where dealing is not possible and quotes are unavailable or deemed not to be 'commercially reasonable', his own estimation of 'fair value'.

In order to allow time to get market quotes or dealing prices, or to estimate fair value, the deadline for valuation is five business days after default. However, in exceptional circumstances, fair value can be fixed after this deadline.

20. Under the GMRA 2011, the framework for dealing with a default remains largely unchanged. The two acts of insolvency which, under the GMRA 2000, were automatic events of default are now optional 'Automatic Early Termination' events. For other events of default, in place of a Default Notice, there is a notice to the defaulter of an Early Termination Date fixed by the non-defaulting party (which cannot be earlier than the date on which the notice becomes effective or later than 20 days afterwards). The definition of act of insolvency has also been expanded. And the five-day deadline for valuing collateral is replaced by a requirement to value collateral on or as soon as reasonably practicable after the chosen Early Termination Date.

What happens if a party fails to deliver collateral?

21. In the event of a failure by a Seller to deliver collateral to the Buyer on the Purchase Date, the GMRA (paragraph 10(g)) provides that:
- If the parties so elected when they negotiated their GMRA (2000 or 2011), a failure to deliver collateral would be an event of default but not an automatic one. It is up to the Buyer to serve a notice in order to put the Seller into default and trigger the process of closing out

and netting outstanding repos with the defaulter. Under the GMRA 2000, the notice will be a Default Notice. Under the GMRA 2011, it will be a notice of an Early Termination Date (no earlier than the date on which the notice becomes effective and no later than 20 days afterwards). Putting a counterparty into default is a very serious step, with potential market and systemic implications, and should only be taken by senior management. They need to be sure that the failure to deliver reflects credit problems at the counterparty and not temporary operational problems (at the Seller or its custodian, or within the settlement infrastructure) or market illiquidity beyond the control of the Seller.

- If the Buyer does not put the Seller into default, the Buyer should withhold the Purchase Price from the Seller or, if this has been paid, he should immediately require the Seller to repay or, if necessary, call for cash margin from the Seller (but if the Buyer owes any sums to the Seller, these will be set off against the Purchase Price).¹²
- Unless the Buyer puts the Seller into default, the contract remains in force until the intended Repurchase Date, unless the Buyer terminates the transaction, which he is entitled to do at any time.
- At any time while the transaction remains in force, the Seller will be able to deliver the collateral to the Buyer and is entitled to receive the Purchase Price in exchange.
- Whether or not the Seller makes a late delivery of the collateral, on the Repurchase Date, the Seller will be obliged to pay the Purchase Price to the Buyer and the Buyer will be obliged to pay the Repurchase Price to the Seller. The difference is the repo interest for the full intended term of the transaction. In other words, the Seller will be liable for the full amount of repo interest, even if he delivered the collateral late and therefore only had limited use of the Purchase Price, or even if he never delivered the collateral and therefore never had any use of the Purchase Price.
- If the Buyer terminates the transaction before the Repurchase Date, the Seller will be obliged to pay the Purchase Price to the Buyer and the Buyer will be obliged to pay the Repurchase Price on the date of termination to the Seller.¹³ The difference is the repo interest for the period until termination.

¹² Ideally, the exchange of cash and collateral securities should be delivery-versus-payment (DVP), so a Seller failing to deliver collateral should not receive the corresponding Purchase Price from the Buyer.

¹³ Note that, while the Repurchase Price is normally taken to mean the payment due from the Seller to the Buyer on the Repurchase Date, the GMRA also applies the term to the sum of the Purchase Price and repo interest accrued up to any date during the term of the transaction.

22. In the event of a failure by a Buyer to deliver collateral back to the Seller on the Repurchase Date, the GMRA (paragraph 10(h)) provides that:
- If the parties so elected when they negotiated their GMRA, a failure to deliver collateral would be an event of default but not an automatic one. It is up to the Seller to serve a notice in order to put the Buyer into default and trigger the process of closing out and netting outstanding repos with the defaulting party. Under the GMRA 2000, the notice will be a Default Notice. Under the GMRA 2011, it will be a notice of an Early Termination Date (no earlier than the date on which the notice becomes effective and no later than 20 days afterwards). As emphasised already, placing a counterparty into default is a very serious step, with potential market and systemic implications, and should only be taken by senior management. They need to be sure that the failure to deliver reflects credit problems at the counterparty and not temporary operational problems (at the Buyer or its custodian, or within the settlement infrastructure) or market illiquidity beyond the control of the Buyer.
 - If the Seller does not put the Buyer into default, the Seller should withhold the Repurchase Price from the Buyer or, if this has been paid, he should immediately require the Buyer to repay or, if necessary, call for cash margin from the Buyer (but if the Seller owes any sums to the Buyer, these will be set off against the Repurchase Price).¹⁴
 - Unless the Seller puts the Buyer into default, the contract remains in force until the Buyer delivers or the Seller terminates the transaction, which he is entitled to do at any time.
 - The Seller can trigger a *mini close-out*. This is an informal term used to describe the termination of a failed transaction by the Seller under the terms of paragraph 10(h)(iii) of the GMRA 2000 or 10(i)(iii) of the GMRA 2011. Under this procedure, the Buyer will be obliged to pay to the Seller the difference between (1) the Default Market Value of the collateral due under the failed transaction (all other repos continue in force), as determined by the Seller and (2) the Repurchase Price due to the Buyer. See paragraph 18 above.
23. The mini close-out is the equivalent process in the repo market to the buy-in process used to deal with failed transactions in the cash market. However, while attempts have been made by the ICMA to harmonise the two processes, there

¹⁴ Ideally, the exchange of cash and collateral securities should be delivery-versus-payment (DVP), so a Buyer failing to deliver equivalent collateral should not receive the corresponding Repurchase Price from the Seller.

are still important differences between them. There can be delays of up to four Business Days between a mini close-out and a buy-in, because the valuation of collateral under a mini close-out can take place at any time over the five Business Days following a mini close-out notice, whereas a buy-in occurs at a fixed four Business Days following a buy-in notice. In addition, the methodology applied to the calculation of the payment due to the Seller in a mini close-out is different to that applied in a buy-in by a buyer in the cash market. In particular, a mini close-out can use an estimate of fair market value, whereas a buy-in depends upon an agent purchasing a security from a third party. Therefore, in an illiquid market, a mini close-out can be completed, but a buy-in might not. This means that there is a basis risk where a party has purchased a security in the cash market to deliver to another party on the Repurchase Date of a repo but the cash market seller fails to deliver. If the party consequently fails to deliver on the repo and the other party to the repo (the Buyer) triggers a mini close-out and opts to value the collateral at its fair market value in order to calculate the amount owed by the first party (the repo Seller), the first party would be left with a long position in the cash market. Given the illiquidity of the cash market, the position will not be closed out easily if at all (although some of the market risk might be hedged in the derivatives market).

Repurchase transactions versus sell/buy-backs

24. Repurchase transactions and sell/buy-backs are alternative forms of repo. Sell/buy-backs are economically identical to repurchase transactions and, just as in a repurchase transaction, the collateral in a sell/buy-back is transferred by means of a transfer of legal title.
25. Traditionally, the difference between the two forms of repo was that repurchase transactions were documented under master agreements such as the GMRA and each purchase and repurchase therefore formed a single contract, while sell/buy-backs were undocumented and therefore each purchase and repurchase constituted a separate legal contract. It is not possible to margin undocumented sell/buy-backs or grant permission to substitute to the Seller. In addition, manufactured payments have to be delayed until the Repurchase Date and incorporated into the Repurchase Price. The master agreements governing repurchase transactions set out clear rights of close-out and set-off in the event of default by one of the parties and remedies in the event of a failure to deliver collateral, as well as making provision for initial margins and haircuts, margin maintenance and permission to substitute. In the case of undocumented sell/buy-backs, the lack of documented rights, remedies and provisions means they are legally less robust and less flexible.

26. Undocumented sell/buy-backs are increasingly giving way to the documented version (using, for example, the Buy/Sell-Back Annex of the GMRA) under pressure from regulatory requirements for written legal agreements, margin maintenance and express rights of close-out and set-off. The difference between repurchase transactions and documented sell/buy-backs now rests mainly in the mechanisms used in the latter to eliminate credit exposures due to fluctuations in the market value of collateral. While repurchase transactions use margin maintenance to realign the values of cash and collateral, documented sell/buy-backs achieve the same result through a process of terminating the transaction and simultaneously creating a new transaction for the remaining term to maturity, with the values of cash and collateral realigned, but otherwise on the same terms as the original transaction. This alternative to margin maintenance is helpful in avoiding legal difficulties over margins that arise in many jurisdictions where sell/buy-backs predominate.
27. If coupons, dividends or other income are paid on collateral during the term of a sell/buy-back, there is no immediate compensatory payment. Instead, the Buyer holds the income until the Repurchase Date, during which time, he is expected to reinvest the money. On the Repurchase Date, the compensatory payment (including the reinvestment income) is effectively paid to the Seller by deduction from the Repurchase Price.
28. See Chapter 3 on best practice in margining repo for more information.
29. It has been explained already that the principal uses of repo are (1) the borrowing and lending of cash on a secured basis and (2) the borrowing and lending of securities. Where a repo is being used as a means of borrowing and lending cash, the Buyer will require collateral of acceptable quality but will not specify a particular issue of securities. Across the market as a whole, the pool of generally acceptable collateral is called the **general collateral (GC)** basket. Given that the Seller has some choice about which issue of securities he delivers to the Buyer in a GC repo, GC repos are driven by the supply of and demand for cash, which means there should be a single **GC repo rate** for each currency and term to maturity. As GC repo is a money market instrument, the GC repo rate should be closely correlated with other money market rates, particularly unsecured interbank deposit rates. The spread between the GC repo rate and unsecured money market rates will reflect the credit and liquidity risk premia on unsecured lending.

General collateral and specials

30. At times, potential Buyers will bid in the repo market for a particular issue of securities as collateral. If demand is strong enough, such bidding pressure will force down the repo rate on that particular issue. In other words, competition between potential Buyers will encourage them to offer cheaper cash to potential Sellers in order to get the security they are seeking. When the repo rate quoted on a particular security falls at least about 10 basis points below the GC repo rate for that currency, the security in question is said to have gone **special**. The spread between the GC repo rate and the rate on a special reflects the strength of demand for a particular security and, other things being equal, should be equal to the borrowing fee that would have to be paid to borrow that security in the securities lending market. When the GC repo rate is low and/or the borrowing fee is large, it is possible for specials to trade at negative repo rates.
31. Most very short-term repos in Europe are traded across **automatic repo trading systems (ATS)**. The bulk of such electronically-traded repos are 'cleared' across **central clearing counterparties (CCP)**. A CCP is a specialist intermediary that interposes itself into every transaction registered with it, to become the seller to every buyer and the buyer to every seller. The CCP also nets opposite repos and reverse repos with the same counterparty to produce a single margin call and thereby reduces the credit risk and operational cost of transactions (although CCP are otherwise more expensive because of the size of the initial margins they impose on collateral).
32. Longer-term and structured repos tend to be traded directly between counterparties, using the telephone and electronic messaging systems. Some repos are arranged by agents called **voice-brokers**. Directly-traded and voice-brokered repos can be registered with CCP for clearing after they have been agreed between counterparties.
33. The settlement of repos, and the management of post-trade tasks such as margining and manufactured payments, is usually managed by the operations departments of the counterparties. For settlement, they send instructions to deliver and receive securities to the securities settlement systems (SSS) operated by domestic **central securities depositories (CSD)** or **international central securities depositories (ICSD)**, either directly or via custodian banks acting as settlement agents. ICSD tend to be the preferred securities depository for international investors and global intermediaries.

Market structure and infrastructure

34. However, some parties outsource the settlement and management of certain directly-traded repos to **tri-party repo agents**. Tri-party agents undertake the settlement, custody and post-trade management of repos. Settlement is made by book-entry transfers between accounts on the books of the tri-party agent and so avoids the cost and occasional difficulty of settling in a CSD. The services of tri-party agents include the automatic selection of collateral from the account of the Seller, subject to the predefined collateral requirements of the Buyer, and the subsequent automatic 'optimisation' of collateral.
35. Optimisation means ensuring that the collateral held by the Buyer is always of the lowest quality acceptable to the Buyer (this means the Seller is making the most efficient use of his collateral by using his worst collateral first, while the Buyer is earning the highest return by accepting the riskiest acceptable collateral). Optimisation is achieved by substituting existing collateral with new collateral whenever the Seller purchases a security of lower but still acceptable quality. The tri-party agent will also substitute when the Seller wishes to sell a security he has repoed out as collateral, when collateral is no longer acceptable to the Buyer (eg because of a ratings downgrade) and when collateral is due to make an income payment (which might cause tax problems).
36. Tri-party repo is popular with Buyers who lack the operational capability to settle securities and manage collateral, and for non-government securities, which tend to be less liquid and trade in smaller amounts and so are more expensive to settle at CSD than government securities.
37. Tri-party agents also provide automated collateral management services to **GC pooling systems** (also known as GC financing systems). These are ATS which are connected to CCP and then to tri-party agents. The systems provide markets in GC baskets, which means that each system offers trading in a number of lists of security issues. Users of the system accept that any of the issues listed in a basket that they are trading, which they happen to hold in their account at a CSD or ICSD, may be selected by the tri-party agent for delivery if they are a Seller. Buyers accept that any of these listed issues may be delivered into their account. Users therefore trade on the basis of price, amount and term only, not the identity of the collateral. This makes trading more efficient. The ATS registers repos and reverse repos transacted by each user with the CCP, which sends the net amounts sold or bought by each user to the tri-party agent, which automatically selects the required amounts of listed securities from the accounts of the net Sellers and instructs the CSD or ICSD to deliver them to the accounts of the net Buyers.

Annex II - Glossary of repo terminology

Where terms are used in the Global Master Repurchase Agreement (GMRA), they are indicated by Capital Initials. Reference should always be made to the GMRA for the exact definition of these terms. References to terms defined elsewhere in the glossary are in *italics*.

accrued interest

Part of the *Market Value* of a fixed-income security. On any particular day during the life of a security, accrued interest is the amount corresponding to the share of the next coupon payment which is owed to whoever is recorded as being the owner of the security on that day, but which is not yet due for payment by the issuer (ie accrued but not due). Market Value is equal to the agreed *clean price* of the security times its normal value plus the outstanding accrued interest (see the formula below).

$$\text{market value} = \text{nominal value} \left(\frac{\text{clean price}}{100} + \frac{\text{coupon} \times \text{day count}}{100 \times \text{annual basis}} \right)$$

The clean price of a security plus accrued interest expressed in price terms (as a percentage of the nominal value of the security) gives the *dirty price* (see the formula below).

$$\text{dirty price} = \text{clean price} + \frac{\text{coupon} \times \text{day count}}{\text{annual basis}}$$

Fixed-income securities being used as collateral in the repo market should be valued inclusive of accrued interest (this is called ‘full accrual pricing’, as opposed to ‘flat pricing’).

Adjustment

In the *GMRA*, a method that can be used to eliminate a *Net Exposure* by terminating a *repo* and creating a Replacement Transaction for the remaining term to maturity. The Replacement Transaction will have a new *Market Value of collateral*. This is calculated by adjusting either (1) the *Repurchase Price* on the day of the Adjustment or (2) the original *Purchase Price* of the repo by the *Margin Ratio* or *Haircut*, where one of these applies, and then marginally increasing or decreasing the result to coincide with the closest multiple of the minimum denomination of the security issue being used as collateral.

$$\text{new Market Value} \approx \text{latest Repurchase Price} \times \text{Margin Ratio (1)}$$

or

$$\text{new Market Value} \approx \frac{\text{latest Repurchase Price}}{1 - \text{Haircut}} \quad (2)$$

or

$$\text{new Market Value} \approx \text{original Purchase Price} \times \text{Margin Ratio} \quad (3)$$

or

$$\text{new Market Value} \approx \frac{\text{original Purchase Price}}{1 - \text{Haircut}} \quad (4)$$

The new Market Value is the value of the collateral that the Seller is obliged to deliver to the Buyer under the Replacement Transaction. The Purchase Price of the Replacement Transaction can be equal to either (1) Repurchase Price on the day of the Adjustment or (2) the original Purchase Price (in other words, the cash value of the repo is largely, if not entirely, unchanged). If the new Purchase Price is set equal to the latest Repurchase Price, as the cashflows of the terminated transaction and the Replacement Transaction are netted, the Buyer will not receive an early payment of the repo interest accrued up to the day of Adjustment. If, on the other hand, the new Purchase Price is set equal to the original Purchase Price the Buyer will receive the accrued repo interest. As the collateral transfers of the terminated transaction and the Replacement Transaction are netted where possible, only the differences between the original and new Market Values of collateral will actually have to be transferred. By netting, Adjustment achieves a margin transfer of collateral. Adjustment is an alternative to *Margin Maintenance*. It is designed for *sell/buy-backs* but can be applied to repurchase transactions. The related method of *Repricing* involves changing the Purchase Price rather than the Market Value of the collateral. 'Repricing' is commonly used as a generic term that includes Adjustment. Under the Adjustment method, it is possible for the parties to agree a complete or partial substitution of collateral. See GMRA 2000 paragraph 4(k) and GMRA 2011 4(l).

affirmation

A process in which (1) one party contacts the other by telephone or e-mail in order to secure immediate verification from the other party of the key economic terms of a transaction and settlement instructions or (2) both parties report to a third-party automatic affirmation service, which makes comparisons and identifies mismatches. The function of an affirmation overlaps that of a *Confirmation* but is less comprehensive. See Guide 2.48-2.51.

agency repo

A *repo* executed with a counterparty on behalf of a customer or customers by an agent. For example, a fund manager may transact a *repo* with a dealer on behalf of several pension funds (the *repo* should be allocated among the customers after execution). The risk on the transaction is shared by the customer(s) and the agent's counterparty, but not by the agent. The transaction will be documented under a master agreement, such as the *GMRA*, between the agent and the counterparty. In the case of the *GMRA*, the standard agreement has to be supplemented by the Agency Annex. There will be separate contracts between the agent and his customer(s). The counterparty will need to know the identity of the customer(s) in order to be able to calculate its credit exposure and fulfil regulatory requirements. However, the identity of the customer(s) may not be provided to the front office of the counterparty (for commercial reasons) but to the credit or another department of the counterparty. It is vital, when negotiating a *repo*, to inform the counterparty whether one is transacting as a principal or an agent.

annual basis

The number of days that are conventionally assumed to be in one year for the purpose of calculating the amount of return from an annualised percentage rate of return. The annual basis is conventionally denoted by the letter B and is the denominator of the *day count fraction* (D/B), where the numerator is the *day count* of the term of the transaction. There are often different conventions for the annual basis in the money market and capital market of the same currency.

Business Day

A day on which a transaction can be settled by means of transferring securities and/or making payments of cash. Actions required to fulfil the contractual obligations of a transaction, such as the service of notices, can only be performed on a Business Day. The ability to transfer securities and/or make payments of cash requires that the relevant securities settlement systems (SSS) and/or cash payment systems be open for business. Weekends are therefore not Business Days. Public holidays are also usually not Business Days. However, in the eurozone, cash payments can be made in euros on any day on which the *TARGET* inter-central bank payments system operated by the ECB is open, regardless of whether payments systems are operating in eurozone member states. *TARGET* closes only on New Year's Day, Easter Friday and Monday, May Day, Christmas Day and the day after Christmas Day.

Given that securities may have to be delivered between two SSS or between two custodian banks, and the possibility of *cross-currency repos*, the *Purchase Date* and *Repurchase Date* of a *repo* may have to be a Business Day in more than one city.

Under the *GMRA* 2000 2(e) and 2011 2(f), a Business Day is defined as:

- for repos to be settled at a securities settlement system, any day on which that system is open for business;
- for repos to be settled by delivery of securities at a custodian bank, any day on which that bank is open for business, as well as a day on which banks generally are open for business in the city which hosts the central bank payments system for the currency of payment or, in the case of the euro, any day on which the TARGET system is open.

The *GMRA* does not define what is meant by the close of business. This can be important, as attempts to make transfers or payments, or to serve notices, after the close of business, mean that they will not be initiated or become effective until the next Business Day. It is best practice for parties to agree a time for close of business in the countries in which they operate and record it in Annex I of their *GMRA* or in Confirmations. See Guide 2.13-2.16.

Buyer

In the *GMRA*, this is the party to a repo who buys collateral at the *Purchase Price* on the *Purchase Date* and commits to sell back *equivalent collateral* on the *Repurchase Date* - which will be a fixed maturity or, in the case of *open repo*, on demand - at an agreed or calculable *Repurchase Price*. The Buyer is effectively a lender of cash and is said to be doing a *reverse repo*. Cf *Seller*.

buy-in

A procedure that can be initiated by the buyer of a security in a *cash trade* following a *failure to deliver* that security on time and/or in full by the seller. Under the *ICMA's* Rules and Recommendations (Section 450), a party affected by a *fail* can remedy the problem by arranging to 'buy in' the security from a third party. He has to give the failing party five *Business Days'* notice of his intention to do so (a pre-advice notice on the day of the fail and a buy-in notice two Business Days later). If the failing party does not remedy the fail within five Business Days of the fail, despite notification by the buyer, the affected party appoints an agent to buy in the security in the 'best available market for guaranteed delivery'. Any excess in the cost of the buy-in over the price agreed originally with the failing party is charged to the latter. In a *repo* under the *GMRA*, the equivalent process to a buy-in is a *mini close-out* but there are differences.

buy/sell-back

Another term for a *sell/buy-back*. Strictly-speaking, this is a sell/buy-back from the point of view of the *Buyer*. Sometimes abbreviated to 'buy/sell'.

Cash Equivalent Amount

In the *GMRA 2011*, this is a cash payment that can be called by a party making a *margin call*, who has requested the return of Margin Securities, as part of the required margin, that were delivered to the other party under a margin call that the other party had previously made on the first party, in the event that the other party is unable to return those securities, despite its best endeavours, because of circumstances beyond its control. The Cash Equivalent Amount is intended to temporarily eliminate any consequent increase in *Net Exposure*. See *GMRA 2011* paragraph 4(h).

cash trade

An outright sale or an outright purchase of a security (with no obligation, as in a repo, to buy or sell back that security).

CCP

The acronym for a *central counterparty* or *central clearing counterparty*. A CCP is a specialist intermediary, part of the infrastructure of the OTC market, which interposes itself into every transaction registered with it by its members, to become the seller to every buyer and the buyer to every seller. The CCP then nets opposite transactions with the same counterparty to produce a single *margin call*. *Netting* reduces the credit risk and operational cost of transactions. The CCP is protected by taking initial margins upon the registration of transactions, transferring variation margins between members to eliminate exposures on a daily basis, maintaining its own capital, requiring members to contribute to a default fund and, in the event of a default by one or more members, having the right to share remaining losses among surviving members.

classic repo

Another name for a *repurchase transaction*.

clean price

The price of a fixed-income security as generally quoted in the secondary cash market for that security. It measures the capital value of the security in the secondary market but excludes the *accrued interest* on the security.

clearing

A term which means the *netting* by a third party of opposite mutual obligations between two other parties. Netting can be for operational convenience or to reduce risk. Clearing for operational convenience is performed by custodian banks, *CSD* and *ICSD*, acting as agents, in order to reduce the volumes of transfers of securities and payments of cash needed to settle transactions. Clearing to reduce risk is performed by *CCP*, acting as principals by means of 'novation' or by 'open offer'. Netting by novation as performed by a CCP means the creation of two new contracts from an original. The original contract is that between the parties to a transaction. When this contract is registered with the CCP, the original contract is replaced by two new contracts: a new contract between the seller and the CCP; and a new contract between the CCP and the

buyer. In this way, the CCP becomes the buyer to every seller and the seller to every buyer. Under open offer, when the buyer and seller transact, contracts are automatically and immediately created between each party and the CCP. At no stage is there a contract directly the buyer and seller.

close-out and set-off

A contractual form of *netting* based on the legal technique of set-off (and sometimes called ‘contractual netting’). Under the *GMRA*, the non-defaulting party terminates all transactions outstanding with the defaulter that have been documented under the same agreement (this is ‘close-out’) and all obligations under those transactions are accelerated for immediate settlement. Acceleration requires the calculation of the present values of obligations owed to and by the defaulter, and conversion into the same currency. Then, the net present value of the obligations owed to the defaulting party are netted against the net present value of obligations owed by the defaulting party to leave a residual net amount (this is ‘set-off’). This residual amount may be a small net exposure to the defaulter (which has to be pursued by the non-defaulting party as an unsecured claim on the defaulter) or a surplus (which has to be returned to the defaulter). See *GMRA* paragraph 10.

collateral

Legally-speaking, collateral is an asset or assets owned by a borrower to which a *security interest* has been attached in order to provide security to a lender. As a result, the secured lender is given a property interest in the asset(s) by the borrower which entitles the lender to seize and liquidate the collateral in the event that the borrower defaults. The borrower retains a property interest in the asset(s), which means that, absent a default by the borrower, the asset(s) cannot be sold by the secured lender, unless the borrower has given him a right of *rehypothecation*. Upon the discharge of the debt by the borrower, the secured lender must return a legally identical asset or assets. A *pledge* is a type of security interest in which the asset acting as collateral must be transferred from the pledgor into the possession of the pledgee.

The term ‘collateral’ is used colloquially in the *repo* market to describe the asset or assets sold in a repo. This is not legally correct, as a repo transfers full legal title to the asset(s) from the *Seller* to the *Buyer* for the term of the transaction. The Seller retains no property interest in the asset and the Buyer has the unfettered right to sell the asset to a third party (ie without permission from the Seller).

Collateral Assets (CA)

A type of *collateral* in a categorisation by the BIS Committee on the Global Financial System (CGFS). CA is the broadest of three categories and encompasses all assets that qualify for use in collateralised funding transactions,

such as in covered bonds, agency and private-label mortgage-backed and asset-backed securities. The other CGFS categories are *High Quality Assets (HQA)* and *High Quality Liquid Assets (HQLA)*.

collateral downgrade trade

A combination of (1) a short-term *repo* of one asset or basket of assets from one party to another and (2) a *reverse repo* of another asset or basket of assets of lower liquidity and sometimes lower credit quality by the first party from the second for the same term. The net result is an exchange by the first party of higher quality collateral for lower quality collateral (a downgrade). The difference in quality will be reflected in an enhanced spread between the reverse repo rate being received by the first party and the lower repo rate being paid by the first party. A collateral downgrade trade is an example of *collateral transformation*. A collateral downgrade trade for one party is a *collateral upgrade trade* for the other.

collateral upgrade trade

A combination of (1) a short-term *reverse repo* of one asset or basket of assets from one party to another and (2) a *repo* of another asset or basket of assets of lower liquidity and sometimes lower credit quality by the first party to the second for the same term. The net result is an exchange by the first party of lower quality collateral for higher quality collateral (an upgrade). The difference in quality will be reflected in an enhanced spread between the repo rate being paid by the first party and the lower reverse repo rate being received by the first party. A collateral upgrade trade is an example of *collateral transformation*. A collateral upgrade trade for one party is a *collateral downgrade trade* for the other.

collateral swap

Also known as a *liquidity swap*. An exchange of an asset or basket of assets for another asset or basket of assets of lower liquidity and sometimes lower credit quality, either (1) directly, through a *securities lending* transaction, or (2) via a combination of a *repo* of the lower quality asset or assets and a matching *reverse repo* of the higher quality asset or assets between the same parties. A collateral upgrade trade is an example of *collateral transformation*. It differs from *collateral downgrade* or *upgrade trades* in that it is for longer than one year.

collateral transformation

Exchanging assets of different liquidity and sometimes lower credit quality, usually through *collateral/liquidity swaps* or *collateral downgrade/upgrade trades*, which can be *securities lending* transactions or combinations of *repos* and matching *reverse repos* between the same parties.

Confirmation

A Confirmation is a comprehensive written record (paper or electronic) setting out: the unique economic terms of a transaction (price, term, amount, etc); any ad hoc terms (not already included in or different from those in the *master agreement* between the parties); and settlement addresses (the accounts to which payments and deliveries should be made). It may also have to include terms required by local regulation and law. A Confirmation should be sent as soon as possible after a transaction has been agreed. It should be sent by one party to another or by each party to the other. Parties receiving Confirmations should urgently cross-check in order to identify mistakes in recording the terms or disagreements about what has been agreed. Mistakes or disagreements should be promptly notified by the recipient to the other party and action initiated to resolve the problem. A Confirmation plays a key role in the legal construction of the transaction. Whereas the *GMRA* and Annex I set out the general terms and conditions of the business relationship between the parties, a Confirmation describes the terms and conditions special to the transaction. A Confirmation would be regarded as prima facie evidence of the terms of a transaction, in the event of a disagreement, and ad hoc terms set out in a Confirmation would take precedence for the transaction being confirmed over any conflicting standard terms set out in the master agreement. The function of a Confirmation overlaps that of an *affirmation* but is more comprehensive. The essential terms which should be included in a repo Confirmation are set out in *GMRA* paragraph 3(b) and in Annex II of the *GMRA*. For transactions executed over an automatic repo trading system, traditional Confirmations tend to be substituted by the notifications generated by the trading system. See also Guide 2.33-2.47.

corporate value date

In a *repo*, the *Purchase Date* on which cash and *collateral* are usually exchanged is a money market value date rather than a capital market settlement date. However, where one party (typically a customer) cannot manage this earlier settlement, the value date of the *repo* may be deferred until the capital market settlement date, which is then referred to as a 'corporate value date'. Thus, when non-forward cash transacted settled at T+3, non-forward *repo* would settle at T+2. Although settlement periods have shortened in many markets, it would appear to be market practice to continue to refer to T+3 as a corporate value date.

cost of carry

The difference between the amounts of *accrued interest* and *repo interest* earned over the term of a *repo*. A positive (negative) cost of carry means that a long position in a security will earn more (less) accrued interest than it costs to finance that position by *repoing* out that security.

$$\text{cost of carry} = \left(\text{nominal value} \frac{\text{coupon} \times \text{day count}}{100 \times \text{annual basis}} \right) - \left(\text{Purchase Price} \frac{\text{repo rate} \times \text{day count}}{100 \times \text{annual basis}} \right)$$

credit repo

A *repo* against *collateral* other than government securities. This category usually includes high-quality collateral such as supranational, sovereign and agency securities (SSA).

cross-currency repo

A *repo* of a *Purchase Price* in one currency against *collateral* denominated in another currency.

CSD

The acronym for a *central securities depository*. A CSD is a specialised domestic institution, part of the market infrastructure, which records (1) holdings of domestic securities, by providing accounts for the holders or their agents, and (2) changes in holdings, by means of entries between these accounts (book-entry transfer), rather than by the physical transfer of certificates. Securities may be issued to the CSD or another entity. To allow book-entry transfer, securities are either dematerialised or immobilised. Most CSD are linked to independent cash payment systems. Cf *ICSD*.

day count

The number of days that are conventionally assumed to be in the term of a transaction, from and including the value date up to but excluding maturity, for the purpose of calculating the amount of return from an annualised percentage rate of return. The day count is conventionally denoted by the letter D and is the numerator of the *day count fraction* (D/B), where the denominator is the *annual basis*. There are often different conventions for the day count in the money market and capital market of the same currency.

day count fraction

The ratio of the *day count* (D) to the *annual basis* (B). The day count fraction is used to calculate the amount of return from an annualised percentage rate of return. It is the assumed fraction of the year over which the transaction runs.

$$\text{repo interest} = \text{Purchase Price} \left(\frac{\text{repo rate} \times \text{day count}}{100 \times \text{annual basis}} \right)$$

default

A failure by one party to a transaction to perform one of the obligations to which it is contractually committed and for which the parties have agreed that failure would constitute an *Event of Default*. Events of default include acts of insolvency.

delivery repo

Also known as *deliver-out repo*. A *repo* in which the *collateral* moves from the possession of the *Seller* or its agent to the possession of the *Buyer* or its agent

for the term of the transaction. Delivery is required in some jurisdictions to prove that title to the collateral has been transferred and only delivery repo are covered by the EU Financial Collateral Directive. Cf *hold-in-custody repo* and *tri-party repo*.

dirty price

The price of a fixed-income security including accrued interest, from which the *Market Value* of the security can be directly calculated. Cf *clean price*.

$$\text{dirty price} = \text{clean price} + \frac{\text{coupon} \times \text{day count}}{\text{annual basis}}$$

DVP

The acronym for delivery-versus-payment, which means settlement of the sale or other transfer of a security by means of the simultaneous exchange of that security for cash. Cf *FOP*.

end/end rule

The convention that normally applies in the foreign exchange and money markets (unless specified otherwise) for periods that are multiples of one month and for which the value date is the last *Business Day* of a calendar month. The end/end rule specifies that the maturity is the last Business Day of the calendar month at the end of the period. For example, a 3-month deposit for value on 28 February (in a non-leap year) matures not on 28 May but on 31 May (or, if that is not a Business Day, then the nearest preceding Business Day in May). See also the *Modified Following Business Day convention*.

equivalent

On the *Repurchase Date* or termination date of a repo, the *Buyer* is obliged to return equivalent *collateral* to the *Seller*. Equivalent collateral is economically but not legally identical to that sold to the Buyer on the *Purchase Date*, ie from the same security issue but not the original holding. This flexibility is needed because, during the term of the repo, the Buyer has the right to sell the collateral to a third-party, in which case, it would then have to buy back the collateral from the market in order to settle with the Seller on the *Repurchase Date*. The collateral obtained and returned by the Buyer is very unlikely to be the same holding as that received on the *Purchase Date* but it will be from same security issue, in other words, economically but not legally identical. The use of the term 'equivalent' also allows the legal definition of collateral in a repo to accommodate collateral in the form of equity, which can be transformed during the term of a repo by corporate events such as take-overs, rights issues, etc. The terms 'fungible' and 'same or similar' are sometimes used instead of 'equivalent'.

ERCC

The acronym for the European Repo and Collateral Council (ERCC), which is a regional sub-committee of the International Repo and Collateral Council

established by *ICMA* to represent member firms active in the repo and/or collateral markets in Europe. Among other things, the ERCC provides guidance on the maintenance of the GMRA, publishes this Guide and organises a semi-annual survey of the European repo market. Membership of the ERCC is open to all ICMA members who, among other things, have a dedicated repo and/or collateral management activity. Details of the European repo market survey and the other activities of the ERCC can be found on the ICMA website, www.icmagroup.org.

Event of Default

An event, action or omission which parties to a master agreement accept will constitute a breach of the contract between them. The most important Event of Default is an act of insolvency. Under the *GMRA*, upon an Event of Default occurring, the affected party is provided with remedies, possibly subject to notification of the defaulting party. The GMRA lists a set of standard Events of Default. See GMRA 10.

evergreen repo

An open transaction or a fixed-term transaction where both parties have an option to terminate the transaction on any business day subject to a notice period to terminate that is longer than the conventional or mandated settlement period. Common termination notice periods are 14 or 30 days. Collateral can be substituted by the Seller, with the agreement of the buyer, with the exchange of equivalent and substitute securities taking place after the same period of notice as required for termination

extendible repo

An open transaction or a fixed-term transaction under which:

- the Seller has the option to defer the repurchase date for an agreed further term, subject only to an agreed and short notice period (no more than the conventional or mandated collateral settlement period, ie T+0, T+1 or T+2);
- the Seller can exercise the option to extend either (1) on any business day during the original term or (2) only on certain business days within the original term;
- in an open transaction, the Seller can request a further extension on the repurchase date;
- repo interest is to be paid on (1) the original repurchase date, if the transaction is not extended, and/or (2) the final repurchase date, if the transaction is extended;
- both parties can, on the business day on which notice is given of an extension, request a change (reset) in the repo rate for the additional term to maturity;

- the Seller can, on the business day on which notice is given of an extension, request to substitute the collateral with an alternative acceptable to the Buyer for the additional term to maturity.

Extendibles are described using three numbers, eg 4-3-4.

- The first number is the initial term of the repo in terms of round months (4 months in the case of a 4-3-4). This is the minimum term of the repo.
- The second number gives the number of round months before the repurchase date which fix the date on which the Seller can exercise his option to extend the repo (3 months before the repurchase date in the case of a 4-3-4, which is one month after the purchase date). If the repo is not extended, then there will be another opportunity to extend each month thereafter until the option is exercised or the repo matures unexercised (months 1, 2 and 3 and, in an open transaction, month 4).
- The third number is the number of months for which the repo can be extended (4 months in the case of a 4-3-4 repo).

failure to deliver

The failure by one party to a *cash trade* or *repo* to deliver the full amount of securities or other *collateral* to the other party on the agreed *Business Day*. Failure to deliver therefore includes partial delivery and late delivery. In a *repo*, failure to deliver can occur on the *Purchase Date* (the *Seller* fails) or on the *Repurchase Date* (the *Buyer* fails). Under the *GMRA*, the parties can agree to treat failure to deliver as an *Event of Default*. If failure to deliver is not chosen or, where it is, if default is not actually triggered by the affected party, remedies include early termination or in the case of a failure on the Repayment Date, the calling of a *mini close-out* by the affected party. Otherwise, a repo contract remains in place. Failure to deliver on a *cash trade* may result in a *buy-in*. See the footnote to 4.1 in the Guide.

floating-rate repo

A *repurchase transaction* in which the *repo rate* is periodically refixed by reference to an interest rate index such as EONIA (in the case of EONIA or other *overnight* or *tom/next* index, the repo rate would be refixed daily). The repo rate may incorporate a spread under or over the index (eg EONIA minus 3 basis points). Open repo can be seen as a type of floating-rate repo, given that the repo rate can in principle be refixed every Business Day. Floating-rate repos are term repos in that they are transacted for a term of more than one day. See Guide 2.20.

FOP

The acronym of free-of-payment, which means settlement of a sale or other transfer of a security without a simultaneous exchange of cash. Margin transfers are made FOP. Cf *DVP*.

forward price

The traditional method of quoting *sell/buy-backs*, although many are now quoted in terms of their *repo rate*. The forward rate is the forward break-even price of the *collateral* on the *Repurchase Date* of the repo and is equal to the *Repurchase Price* of the *collateral* minus its *cost of carry*, quoted as a percentage of the nominal value of the collateral. The forward price shows the level above which the *clean price* of a security needs to be trading on the Repurchase Date of a repo for the Seller to make a profit by selling off the collateral when he gets it back at the end of the repo. There are two formulae for the calculation of the forward price.

Formula (1)

$$\text{forward price} = \frac{R - \left(N \times \frac{C \times D}{100 \times B} \right)}{N} \times 100$$

where

R	Repurchase Price
N	nominal value of the collateral
C	coupon on the collateral
D	number of days according to the applicable convention from and including the last coupon payment date to but excluding the Repurchase Date
B	annual basis for the collateral

Worked example: calculating the forward price of a sell/buy-back

Consider a 1-week sell/buy-back against EUR 100 million nominal of the DBR 2½% of 4 January 20XX. The Purchase Date is 23 February 20XX. The security is trading at a clean price of 93.985 and has 89 days of accrued interest. The dirty price is therefore 94.59458904 and the Purchase Price of the sell/buy-back is EUR 94,594,589.04. An equivalent repurchase transaction is quoted at 1.00% and would have a Repurchase Price of EUR 94,612,982.43. The forward price of the sell/buy-back is:

$$\begin{aligned} \text{forward price} &= \frac{R - \left(N \times \frac{C \times D}{100 \times B} \right)}{N} \times 100 \\ &= \frac{94,612,982.43 - \left(100,000,000.00 \times \frac{2.5 \times 96}{100 \times 365} \right)}{100,000,000.00} \times 100 = 93.95544819 \end{aligned}$$

Formula (2)

$$\text{forward price} = \frac{\left(N \times \frac{M}{100}\right) - \left(\left(N \times \frac{C \times D}{100 \times B_c}\right) - \left(P \times \frac{R \times D}{100 \times B_r}\right)\right)}{N} \times 100$$

where

M	clean price of the collateral as quoted in the appropriate <i>cash market</i>
N	nominal value of the collateral
C	coupon on the collateral
D	day count according to the applicable convention from and including the Purchase Date to but excluding the Repurchase Date
B_c	annual basis for the collateral
P	Purchase Price of the sell/buy-back (see the Guide 2.7)
R	repo rate on equivalent repurchase transactions
B_r	annual basis for the repo

Worked example: calculating the forward price of a sell/buy-back

Consider the previous example. The forward price using the second formula is:

$$\begin{aligned} \text{forward price} &= \frac{\left(N \times \frac{M}{100}\right) - \left(\left(N \times \frac{C \times D}{100 \times B_c}\right) - \left(P \times \frac{R \times D}{100 \times B_r}\right)\right)}{N} \times 100 \\ &= \\ &= \frac{\left(100,000,000 \frac{93.985}{100}\right) - \left(\left(10,000,000 \frac{2.5 \times 7}{100 \times 365}\right) - \left(94,594,589.04 \frac{1.0 \times 7}{100 \times 360}\right)\right)}{100,000,000} \times 100 \\ &= 93.95544819 \end{aligned}$$

forward repo

A *repo* with a *Purchase Price* on a forward date (ie after the nearest conventionally-earliest money market value date) and a *Repurchase Price* on a later forward date. See Guide 2.17-2.19.

general collateral (GC)

Where the *Seller* in a repo has some choice about precisely what *collateral* to deliver to the *Buyer*. For example, the *Buyer* may be willing to accept any of a

number of certain government bond issues as collateral. GC repos are therefore driven by the need to borrow and/or lend cash, rather than the precise identity of the collateral, which means there will be a common GC repo rate for each currency and term to maturity.

GC repos constitute money market transactions and the GC repo rate should therefore be highly correlated with other money market rates. The spread between the GC repo rate and unsecured money market rates will reflect the credit and liquidity risk premia on unsecured lending.

GMRA

The acronym for the *Global Master Repurchase Agreement*, which is the *master agreement for repurchase transactions* published by the ICMA. It can be extended to include *sell/buy-backs* by attaching the *Buy/Sell-Back Annex*. The latest edition of the GMRA was published in 2011, and superseded the 2000 edition, which itself superseded the 1995 edition. See www.icmagroup.org.

GMSLA

The acronym for the *Global Master Securities Lending Agreement*, which is the *master agreement for securities lending transactions* published by ISLA. The latest edition of the GMSLA was published in 2010, and superseded the 2000 edition, which itself superseded master agreements such as OSLA. See www.isla.co.uk.

guaranteed delivery

A commitment sought by a Buyer that a Seller is in possession of securities and is therefore certain of his ability to deliver.

Haircut

In the *GMRA*, an agreed percentage discount applied to the *Market Value* of collateral to fix the *Purchase Price* on the Purchase Date of a repo. A Haircut is expressed as the percentage difference between *Market Value* and Purchase Price. In the *GMRA 2011*, a Haircut applied to the *Market Value* of securities being delivered as margin is called a *Margin Percentage*. See Guide 3.3.

$$\text{Haircut} = \left(\frac{\text{Market Value of collateral} - \text{Purchase Price}}{\text{Market Value of collateral}} \right) \times 100$$

High-Quality Assets (HQA)

A type of *collateral* in a categorisation by the BIS Committee on the Global Financial System (CGFS). HQA is the second of three categories and comprises assets that market participants can use to meet collateral demand from derivatives transactions. The other categories are *Collateral Assets (CA)* and *High Quality Liquid Assets (HQLA)*.

High-Quality Liquid Assets (HQLA)

A type of *collateral* in a categorisation by the BIS Committee on the Global Financial System (CGFS). HQLA is the narrowest of three categories and follows the Basel Committee on Banking Supervision in including assets eligible for the Level 1 and Level 2 definitions of assets suitable for the Basel Liquidity Coverage Ratio (LCR). Assets that qualify for the LCR are expected to have low credit and market risk and be easy to value, exchange-listed, traded in active markets, unencumbered, liquid during times of stress and ideally central bank-eligible. The other categories are *Collateral Assets (CA)* and *High Quality Assets (HQA)*.

hold-in-custody (HIC)

A *repo* in which the *Seller* retains possession of the *collateral* even though legal title passes to the *Buyer*. HIC repos have been used where there are practical difficulties or high costs in moving collateral. However, HIC repo exposes Buyers to the risk of ‘double-dipping’ by the Seller, ie the Seller selling the same piece of collateral in more than one repo. In some jurisdictions, the transfer of title to collateral in a HIC repo may be contestable if there is no delivery and HIC repos are not covered by the EU Financial Collateral Directive. Cf *delivery repo* and *tri-party repo*.

ICMA

The acronym for the International Capital Market Association, which represents financial institutions active in the international capital markets worldwide and has members in over 50 countries. ICMA’s market standards and conventions have been pillars of the international debt market for over 50 years, providing the framework of rules governing market practice which facilitate the orderly functioning of the market.

ICSD

The acronym for an International Central Securities Depository. An ICSD is a specialised international bank, part of the market infrastructure, to which international securities (traditional eurobonds) are issued, which provides accounts for holders of these and many domestic securities, and which records changes in holdings by means of entries between these accounts. As they are banks, ICSD provide cash accounts to members and can therefore offer DVP settlement of securities transactions. They also provide *tri-party* services. Cf *CSD*.

Income

In the *GMRA*, coupons, dividends and other non-capital payments made by the issuer of a security.

initial margin

An agreed premium applied to the *Purchase Price* of a repo to determine the required *Market Value* of the *collateral* to be delivered on the *Purchase Date*. It is also applied each day during the term of a repo to the *Repurchase Price* on that day to calculate the Market Value of collateral required in order to meet

the contractual obligation of the parties. If the difference between the Repurchase Price and the current Market Value of collateral is less (more) than the initial margin, the *Buyer (Seller)* has the right to call a margin from the Seller (Buyer). An initial margin can be expressed either as (1) the Market Value as a percentage of the Purchase Price or (2) a ratio of the two amounts. In the *GMRA*, an initial margin is called a *Margin Ratio* and is not expressed as a percentage but as a ratio. A percentage initial margin of 100% means there is no margin. See Guide 3.2.

$$\text{initial margin (percentage)} = \left(\frac{\text{Market Value of collateral}}{\text{Purchase Price}} \right) 100$$

$$\text{initial margin (ratio)} = \left(\frac{\text{Market Value of collateral}}{\text{Purchase Price}} \right)$$

ISLA

The acronym for the International Securities Lending Association, a trade association established in 1989 to represent the common interests of participants in the European securities lending market. ISLA publishes the Global Master Securities Lending Agreement (*GMSLA*). See www.isla.co.uk.

liquidity swap

Another term for a *collateral swap*.

manufactured payment

A term common in the UK for a contractual compensatory payment in a *repo* made by the *Buyer* to the *Seller*, which is triggered by the payment of a coupon, dividend or other *Income* on *collateral* by the issuer to the Buyer (the issuer pays the Buyer because the Buyer has the legal title to the collateral during the term of the repo). In a *repurchase transaction*, the manufactured payment should be made on the same day as and be equal in value to the Income payment. In a *sell/buy-back*, the manufactured payment is deferred until the *Repurchase Date* and should be equal in value to the Income payment plus reinvestment income to compensate for the delay. In a *sell/buy-back*, the manufactured payment plus reinvestment income is deducted from the *Repurchase Price*.

margin

The term usually applied to a cash payment or transfer of collateral made by one party, response to a margin call by the other to eliminate an unintended credit exposure in a transaction between them. Under the *GMRA*, either party is entitled to call margin to eliminate any *Net Exposure*. Known in other markets as 'variation margin'.

Margin Maintenance	Under the <i>GMRA</i> , the process of calling on a repo counterparty to deliver <i>margin</i> , either by making a cash payment or by delivering additional <i>collateral</i> , in order to eliminate a <i>Net Exposure</i> in the portfolio of <i>repos</i> and <i>reverse repos</i> between two parties that have been documented under the same agreement. The calculation of margin calls requires the marking-to-market of the collateral. There is choice of alternative procedures, designed for sell/buy-backs, called <i>Adjustment</i> and <i>Repricing</i> , which achieve the same result. See <i>GMRA</i> paragraph 4.
Margin Percentage	In the <i>GMRA</i> 2011, the term for a <i>Haircut</i> applied to the <i>Market Value</i> of <i>collateral</i> being delivered as <i>margin</i> . See <i>GMRA</i> 2011 paragraph 2(aa).
Margin Ratio	In the <i>GMRA</i> , the term for an <i>initial margin</i> . See <i>GMRA</i> 2000 2(z) and <i>GMRA</i> 2011 paragraph 2(bb).
margin threshold	The <i>Net Exposure</i> below which the parties to a <i>repo</i> may agree not to call a <i>margin</i> from each other. Once the <i>Net Exposure</i> equals or exceeds this threshold, a margin is called which is sufficient to eliminate the entire <i>Net Exposure</i> . For this reason, the threshold is often called a <i>minimum transfer amount</i> .
Market Value	In the <i>GMRA</i> , the value of the <i>collateral</i> for the purposes of <i>Margin Maintenance</i> , calculated using “a generally recognised source agreed to by the parties”. See <i>GMRA</i> 2000 paragraph 2(cc) and <i>GMRA</i> 2011 paragraph 2(ee).
master agreement	A written legal contract between two parties that sets out the terms and conditions governing all transactions between them (unless specifically excluded) in the same financial instrument (eg <i>repo</i>) or class of instrument (eg derivatives) as well as their rights and obligations, including remedies available in an <i>Event of Default</i> . The <i>GMRA</i> is the standard master agreement for cross-border repos. It consists of: (1) the main agreement, which sets out terms and conditions generic to the market and is a framework that should not need to be negotiated or amended; (2) Annex I, which sets out terms and conditions generic to the business relationship between the parties and needs to have various elections recorded and any supplemental terms and conditions added, effectively customising the main agreement, so will need negotiating; (3) other annexes that adapt the main agreement to <i>sell/buy-backs</i> , <i>agency repos</i> and some specific markets and jurisdictions; and (4) <i>Confirmations</i> , which set out the terms and conditions specific to individual transactions. Each year, the <i>ICMA</i> commissions legal opinions on the enforceability in over 60 jurisdictions of the <i>GMRA</i> overall or of key parts such as the <i>close-out and set-off</i> provisions.

Master agreements help to standardise and clarify procedures in a market, adding to operational efficiency and liquidity; they provide legal certainty by setting out the contractual terms and conditions accepted by the parties, which is reinforced where legal opinions are commissioned; and they facilitate risk reduction by providing procedures such as margining, the netting of opposite payments and transfers and, in an Event of Default, close-out and set-off, which are recognised by reductions in regulatory risk capital requirements.

mini close-out

An informal term for the remedy available to the *Seller*, under the *GMRA*, of terminating an individual *repo* on which there has been a *failure to deliver equivalent collateral* by the *Buyer* on the *Repurchase Date*. See Guide 4.1-4.3.

minimum transfer amount

A common term for a *margin threshold*. This term emphasises the point that, when *Net Exposure* reaches or breaches the margin threshold, it should be eliminated.

Modified Following Business Day Convention

This is the rule that is most commonly applied in the foreign exchange and money markets, including the repo market, to determine the maturity of an instrument. The convention is that, for terms to maturity which are multiples of one month, the maturity will fall in the month which is the same number of calendar months after the month in which the value date falls. For example, if the value date of a 3-month transaction is in March, then the maturity will fall three calendar months later, which means in June. Furthermore, the maturity will be the same date as the value date, unless this date is not a *Business Day*, in which case, it will be the next *Business Day* in the same calendar month. However, if the next *Business Day* would fall in the following calendar month, the maturity will be the last *Business Day* in the same calendar month. For example, if the value date of a 3-month transaction is 29 March, the normal maturity would be 29 June. If, however, the 29 June is not a *Business Day*, then the maturity would be 30 June. If 30 June is also not a *Business Day*, then the maturity would be 28 June and so on. See also the *end/end rule*.

Net Exposure

In the *GMRA*, the term for the credit exposure of one party to another on a portfolio of *repos* and *reverse repos* documented under the same agreement. Specifically, the *Net Exposure* is the difference between (1) the aggregate of the *Transaction Exposures* of one party to the other, plus the *Net Income* due to the first party but unpaid, less the *Net Margin*, if any, held by the first party and (2) the aggregate of the *Transaction Exposures* of the other party to the first, plus the *Net Income* due to the other party but unpaid, less the *Net Margin*, if any, held by the other party. If (1) is greater than (2), the first party has a *Net*

Exposure and may make a *margin* call. See paragraphs 2(dd) and 4(c) of the GMRA 2000 and paragraphs 2(ff) and 4(c) of the GMRA 2011.

netting

The process of off-setting mutual obligations between two parties to calculate a net claim or obligation.

one week

The term from and including the value date of a transaction up to but excluding a maturity date seven days later or, if that day is not a *Business Day*, the next *Business Day* thereafter. If the next *Business Day* is in the next calendar month, it still becomes the maturity date. In other words, the following business day convention applies, not the *Modified Following Business Day Convention*.

open repo

A transaction which is terminable on demand and therefore has an uncertain repurchase date until it is terminated. Under the terms of such a transaction:

- Both parties have an option to terminate the transaction on any business day, subject only to an agreed termination notice period. In standard open repo, this is no more than the conventional or mandated collateral settlement period, ie T+0, T+1 or T+2. In the evergreen type of open repo, it is longer.
- Both parties have the right to request a change (rerate) in the repo rate on (1) any business day until the transaction is terminated or (2) any business day within an agreed period during the life of the transaction or (3) at any of an agreed series of dates, subject only to an agreed reset notice period. This reset notice period is usually the same as the termination notice period but does not need to be. If the other party refuses the request or agreement cannot be reached on a new rate, either party can terminate the transaction. It is possible for the repo rate on an open repo to be linked to an ON, TN or SN interest rate index, which means it would change automatically each business day.
- Repo interest is accrued daily without compounding. Accrued interest is to be paid on (1) the final repurchase date, if the transaction is terminated, or (2) an agreed number of days after the last business day of each calendar month, while the transaction continues or (3) on reset dates, if there is an agreed reset schedule

overnight (O/N)

The term from and including today up to but excluding the next *Business Day* or, if that day is not a *Business Day*, the next *Business Day* thereafter. If the next *Business Day* is in the next calendar month, it still becomes the maturity date. In other words, the following business day convention applies, not *the Modified Following Business Day Convention*.

overnight indices (OI)

In many currencies, an interest rate index is calculated and published daily for actual interbank transactions by a selected panel of banks, or recorded by *voice-brokers*, in overnight unsecured deposits over the entire course of several hours. OI are weighted-average rates, where each individual rate is weighted by the total amount of deposits transacted at that rate. The rates that go into an OI are offered rates.

The OI for euro-denominated interbank overnight deposits is called EONIA (Euro Overnight Index Average). EONIA is the volume-weighted average of the rates on all unsecured deposits placed in the interbank market in euros by the EURIBOR panel of banks. It is fixed by the ECB between 6:45pm and 7:00pm CET on each *TARGET* business day. The precise specification for EONIA is available on www.emmi-benchmarks.eu.

pair-off

This is the action of netting instructions for payment of cash and transfers of securities for repos, reverse repos that are not managed by a tri-party agent and cash transactions, where those transactions are with the same counterparty, of the same currency, against the same security held at the same custodian or depository, by agreement with that party to eliminate or reduce the cash payments and securities transfers required for settlement. Pair-offs are particularly helpful when rolling over a transaction.

partialling

The contractual practice of not rejecting delivery of less than the contracted amount of a security purchased in a cash trade or repo. However, a partial delivery does not satisfy the contractual obligation of the seller. It just reduces the adverse economic impact of a failure to deliver the full amount. The seller remains obliged to complete full delivery. Partialling should not be confused with shaping, which is an operational mechanism to reduce the impact of delivery failures, but the purpose of shaping and partialling is the same: to reduce the economic impact of delivery failures.

pledge

A type of *security interest* which is a property interest in an asset, given by a borrower (pledgor) to a lender (pledgee) to secure a debt. This interest gives the secured lender the right to seize and liquidate the asset in the event that the borrower defaults. Until then, the borrower retains a property interest in the asset, which means that the asset cannot be sold by the secured lender, unless the borrower has given him a right of *rehypothecation*. Upon the discharge of the debt by the borrower, the secured lender must return a legally identical asset. Sometimes called a 'pawn'.

Purchase Date

In the *GMRA*, the term for the value date of a *repo*. See Guide 2.8.

Purchase Price

In the *GMRA*, the term for the sum of money paid by the *Buyer* to the *Seller* on the *Purchase Date* of a *repo*. It is equal to the *Market Value* of the collateral less any *Margin Ratio* or *Haircut*. See Guide 2.6.

regular dates or round dates or fixed dates

Maturities of one week, two weeks, three weeks, one month, two months, three months, four months, five months, six months, seven months, eight months, nine months, 10 months, 11 months and one year, or some sub-set (a minimum definition would include only one week, one month, three months, six months and one year). These dates derived from 'brokers' runs', which were the terms for which *voice-brokers* would automatically provide quotes when asked for an indication of prices in the inter-bank forward foreign exchange or deposit markets.

rehypothecation

The right which a pledgor can give to a pledgee to sell or *repo* pledged assets. Without the right, the pledgee can only sell pledged assets in an *Event of Default* by the pledgor. If the pledgee exercises a right of rehypothecation, the pledgor's right to recover the pledged asset is replaced by an unsecured contractual right to receive an *equivalent* asset. Rehypothecation is typically given by hedge funds to their prime brokers in return for cheaper funding.

Repricing

In the *GMRA*, a method that can be used to eliminate a *Net Exposure* by accelerating the *Repurchase Date* of a *repo* and entering into a Repriced Transaction for the same date. The Repriced Transaction will have a new *Purchase Price* that is calculated by applying the latest-available market price of the *collateral* to the original nominal value to calculate a new *Market Value*, to which any agreed *Margin Ratio* or *Haircut* is applied.

$$\text{new Purchase Price} = \frac{\text{new Market Value}}{\text{Margin Ratio}}$$

or

$$\text{new Purchase Price} = \text{new Market Value} (1 - \text{Haircut})$$

The new Purchase Price is the cash amount which the *Buyer* is obliged to pay to the *Seller* in the new transaction. In other words, the Purchase Price is brought into line with the latest Market Value of the collateral. The nominal amount of collateral does not change. As the collateral transfers and cashflows of the terminated transaction and the Repriced Transaction are netted where possible, only the differences between the Repurchase Price on the Repricing date and the new Purchase Price will actually have to be paid (which means that repo interest accrued up to the day of Repricing is paid to the Buyer). By netting,

Repricing achieves a *margin* transfer of cash. By netting, Repricing is an alternative to *Margin Maintenance*. It is designed for *sell/buy-backs* but can be applied to *repurchase transactions*. The related method of *Adjustment* involves changing the Market Value of the collateral rather than the Purchase Price. “Repricing” is commonly used as a generic term to describe both *Adjustment* and the above method. See GMRA 2000 paragraph 4(j) and GMRA 2011 paragraph 4(k).

- repo** The generic term for *repurchase transactions* and *sell/buy-backs*. Repos (along with securities lending) are a type of *securities financing transaction (SFT)*. In a repo, at the start of the transaction (the *Purchase Date*), one party (the *Seller*) sells assets (the *collateral*, which are typically securities) to another party (the *Buyer*) at one price (the *Purchase Price*) and commits to repurchase assets which are *equivalent* to those sold on the Purchase Date at a future date or on demand (the *Repurchase Date*) at an agreed or calculable but different price (the *Repurchase Price*).
- repo interest** The market term for the return to the *Buyer* on the cash he effectively lends through a *reverse repo*. Legally-speaking, however, the term is a misnomer, as the legal form of a repo is not an interest-paying loan or deposit. Rather, the return is just the difference between two securities prices. In the *GMRA*, repo interest is called the Pricing Differential.
- repo rate** The market term for the annualised percentage rate of interest on the cash in a *repo*. Legally-speaking, however, the term is a misnomer, as the legal form of a repo is not an interest-paying loan or deposit. Rather, the return is just the difference between two securities prices. Traditionally, the repo rate was the price of a *repurchase transaction*, but *sell/by-backs* are now often quoted in the same way. In the *GMRA*, the repo rate is called the Pricing Rate. See Guide 2.4.
- repurchase transaction** Also known as a *classic repo*, US-style repo or all-in repo. In some countries, there are also domestic names for this type of repo. A repurchase transaction is a type of repo which is documented under a *master agreement*, in consequence of which, both legs of the transaction form a single contract. Among other things, a master agreement makes provision for: *initial margins* and/or *Haircuts* at the start of a repo; *margin calls* during the term of a repo; the ability of the *Buyer* to grant *permission to substitute collateral* to the *Seller*; the immediate making of a *manufactured payment* to the *Seller* upon the payment of coupons, dividends or other *Income* on the *collateral* during the term of a transaction; and *close-out and set-off* in an *Event of Default* by either party. Cf *sell/buy-back*.

Repurchase Date	In the <i>GMRA</i> , the term for the maturity of a <i>repo</i> . See Guide 2.8.
Repurchase Price	In the <i>GMRA</i> , the term for the sum of money paid by the <i>Seller</i> to the <i>Buyer</i> on the <i>Repurchase Date</i> to buy back <i>equivalent collateral</i> . It is equal to the <i>Purchase Price</i> plus <i>repo interest</i> . This term also applies to the accrued value of the cash due to the <i>Buyer</i> on any day during the term of a <i>repo</i> , that is, the <i>Purchase Price</i> plus accrued return up to that particular date. In the case of <i>sell/buy-backs</i> , the <i>Repurchase Price</i> is net of any <i>manufactured payment</i> due to the <i>Seller</i> following the payment of a coupon, dividend or other <i>Income</i> on the <i>collateral</i> plus reinvestment income to compensate for the delayed payments.
rerate	Market terminology for refixing the <i>repo rate</i> on a <i>floating-rate repo</i> or changing the <i>repo rate</i> on an <i>open repo</i> .
reverse repo	The <i>Buyer's</i> side of a <i>repo</i> . The <i>Buyer</i> is said to 'reverse in' <i>collateral</i> (whereas the <i>Seller</i> is said to 'repo out' <i>collateral</i>).
securities financing transaction (SFT)	The family of financial instruments in which a security is provided against a payment of cash. SFT include <i>repo</i> , <i>securities lending</i> and margin lending but not the collateralisation of derivatives.
security interest	An umbrella term for a property interest in an asset, given by a borrower to a lender to secure a debt. This interest gives the secured lender the right to liquidate the asset in the event that the borrower defaults. Until then, the borrower retains a property interest in the asset, which means that, absent a default by the borrower, the asset cannot be sold by the secured lender, unless the borrower has given him a right of <i>rehypothecation</i> . Upon the discharge of the debt by the borrower, the secured lender must return a legally-identical asset. A common type of security interest is a <i>pledge</i> . Others include charges and mortgages.
securities lending	Securities lending transactions (along with <i>repos</i>) are a type of <i>securities financing transaction (SFT)</i> . In a securities lending transaction, one party (the <i>Lender</i>) transfers title to a security or basket of securities to another party (the <i>Borrower</i>) in exchange for either (1) title to another security or basket of securities or (2) cash (the <i>collateral</i>), and the payment of a fee, and commits to either (1) transfer title to <i>equivalent collateral</i> or (2) repay cash plus an agreed return at a future date or on demand, in exchange for title to a security or basket of securities equivalent to the one it transferred at the start. Despite securities lending counterparties being called Lenders and Borrowers, title to securities is transferred (at least outside the US) as in <i>repo</i> .

Securities lending transactions and repos are analogous instruments in legal and economic terms. The main differences are that: securities lending does not necessarily involve cash (it can be security against security); is generally driven by the demand to borrow specific securities (rather than cash); and tends to be transacted on an open basis. The standard master agreement for securities lending is the *ISLA GMSLA*.

Securities Lending and Repo Committee (SLRC)

A UK-based committee of international repo and securities lending practitioners and representatives of trade organisations, together with bodies such as the UK CSD, UK Debt Management Office, London Stock Exchange and Financial Conduct Authority, chaired and administered by the Bank of England. The committee provides a forum in which developments in the relevant markets can be discussed by practitioners and the authorities. See www.bankofengland.co.uk/markets/Pages/gilts/slrc.aspx.

sell/buy-back

A type of *repo*, different to a *repurchase transaction*. *Sell/buy-backs* are economically identical to *repurchase transactions* and, just as in a *repurchase transaction*, the *collateral* in a *sell/buy-back* is transferred by means of a transfer of legal title. The main differences are that *sell/buy-backs* are not necessarily documented under a *master agreement*. In the case of undocumented *sell/buy-backs*, the two legs of the transaction form separate contracts. Because of this, it is not possible to *margin* undocumented *sell/buy-backs* or grant *permission to substitute collateral* to the *Seller*. Because of the lack of documentation, there is also no express provision for: *initial margins* and/or *Haircuts* at the start or *close-out and set-off* in an *Event of Default* by either party. *Manufactured payments* have to be delayed until the *Repurchase Date* and incorporated into the *Repurchase Price*. Lack of documentation also makes undocumented *sell/buy-backs* legally less robust.

Since 1995, it has been possible to document *sell/buy-backs* using the Buy/Sell-Back Annex of the *GMRA*. Undocumented *sell/buy-backs* are increasingly giving way to the documented version under pressure from regulatory requirements for written legal agreements, margin and express rights of *close-out and set-off*. The difference between *repurchase transactions* and documented *sell/buy-backs* now rests mainly in the mechanisms used in the latter to eliminate credit exposures due to fluctuations in the *Market Value* of collateral. While *repurchase transactions* typically use margin to realign the values of cash and collateral, documented *sell/buy-backs* achieve the same result through the termination of the transaction and simultaneously creation of a new transaction for the remaining term to maturity, with the values of cash and collateral realigned, but otherwise typically on the same terms as the original transaction

(there are two options: *Adjustment* or *Repricing*). These alternatives to margin are helpful in avoiding legal difficulties over margins that arise in some jurisdictions.

Also known as a *buy/sell-back*, *buy/sell* or *sell/buy*. In some countries, there are also domestic names for this type of repo. Strictly-speaking, a *sell/buy-back* involves the borrowing of cash, while a *buy/sell-back* involves the lending of cash (and is therefore equivalent to a *reverse repo*).

Seller In the *GMRA*, the party to a *repo* who sells *collateral* for cash in the form of the *Purchase Price* on the *Purchase Date* and commits to buy back *equivalent collateral* on the *Repurchase Date* - which will be a fixed maturity or, in the case of *open repo*, on demand - at an agreed or calculable *Repurchase Price*. The Seller is effectively borrowing cash. Cf *Buyer*.

set-off A legal technique for the *netting* of mutual obligations between two parties. One party's obligations to another are extinguished to the extent of the other party's mutual obligations to the first party. Another legal technique to achieve netting is by 'novation'. Netting by novation involves the creation of two new contracts (introducing a new party) from a single original contract (this happens at some *CCP*) or the creation of one new contract from two original contracts (this happens in *master agreements*). Set-off occurs in the event of one party defaulting, whereas netting by novation occurs as soon as a deal is transacted.

shaping The operational practice of dividing deliveries of securities into smaller amounts before instructing a securities settlement system, in order to minimise the effect of any settlement failures. Some securities settlement systems automatically shape deliveries. A standard 'shape' in the European repo market is currently 50 million. See Guide 2.52. Shaping should not be confused with partialling, where the buyer gives up his contractual right to refuse an incomplete delivery, but the purpose of shaping and partialling is the same: to reduce the economic impact of a failure to deliver.

short dates Maturities that are one month or less in the future.

short-selling A sale in a *cash trade* of securities that are not owned by the seller. The seller should borrow the securities in order to be able to fulfil his commitment to deliver those securities to the buyer. He can do this in the *repo* or *securities lending* markets. The short-seller will then have to purchase the securities at a later date in order to return to the seller/lender in the *repo* or *securities lending* transaction. In the meantime, he is exposed to the risk of a rise in the price of

the security (as well as any positive *cost of carry*) and the risk that it may not, in practice, be possible to buy the security because of market illiquidity. Short positions may be established in order to hedge long positions in similar securities or related derivatives, or to arbitrage. Short-selling with no intention of delivering is called 'naked short-selling'. In the EU, there are restrictions on short-selling under the Short Selling Regulation.

special collateral

Collateral on which the *repo rate* is materially below the *GC repo rate* for the same term. This differential is caused by the demand for a particular piece of collateral which is manifest in offers of cheap cash from potential *Buyers* in the *repo* market. Cf *GC repo*.

spot-next (S/N)

The term from and including the spot value date up to but excluding the next *Business Day* or, if that day is not a *Business Day*, the next *Business Day* thereafter. If the next *Business Day* is in the next calendar month, it still becomes the maturity. In other words, a following business day convention applies, not *the Modified Following Business Day Convention*.

substitution of collateral

The permission that may be given by the *Buyer* to the *Seller*, during the negotiation of a *repo*, to recall *equivalent collateral* during the term of the transaction and substitute collateral of equal quality and value that is reasonably acceptable to the *Buyer*. See GMRA paragraph 8 and Guide 2.27-2.29.

synthetic repo

A combination of instruments to replicate the risk/return of a *repo*. A synthetic repo is constructed from a *cash trade* and derivatives such as a total return swap, a futures contract or a combination of options. The derivative(s) replace the repurchase leg of a repo. Synthetic repos are entirely off-balance sheet (whereas a repo leverages the balance sheet of the *Seller*).

TARGET

The acronym for the Trans European Automated Real Time Gross Settlement Express Transfer system. This is a real-time gross settlement system operated by the ECB for large-value cash payments in euros between the national central banks of the eurozone. It is used to settle the money market operations of the ECB and large-value payments between the domestic payments systems of the eurozone. It was upgraded to TARGET2 (T2) in 2007.

T2S

The acronym for TARGET 2 Securities. This is the real-time gross securities settlement system for euro-denominated securities being built by the ECB. It will connect *CSD*, *ICSD* and custodian banks, as well as investors who wish to be connected directly. T2S will be connected to T2, to allow *DVP* settlement.

term repo	‘Term repo’ has a number of related meanings. It is commonly used in the market to describe transactions with a maturity beyond one Business Day but is sometimes applied to all fixed-term transactions (as opposed to <i>open repo</i>). However, in a legal context, ‘term repo’ is often used to describe <i>repo</i> with terms of one year or more. These longer-term repos are often used in <i>collateral swaps</i> . They are structured and floating-rate, and have deep <i>Haircuts</i> and enhanced ‘rights’ of <i>Substitution</i> .
terminable on demand	Of an <i>open repo</i> , in which either party has the right to terminate the transaction by providing due notice.
tom-next (T/N)	The term from and including the next Business Day up to but excluding the following <i>Business Day</i> or, if that day is not a <i>Business Day</i> , the next Business Day thereafter. If the next Business Day is in the next calendar month, it still becomes the maturity date. In other words, a following business day convention applies, not the <i>Modified Following Business Day Convention</i> .
trade-matching	The comparison of settlement instructions from two parties to a transaction by a custodian bank acting as securities settlement agent for one or both, or by a <i>CSD</i> or <i>ICSD</i> , in order to ensure that the settlement of that transaction across a securities settlement system at a <i>CSD</i> or <i>ICSD</i> will not fail because of differences in the instructions from the two parties. Cf <i>affirmation</i> and <i>Confirmation</i> .
trade repository	A specialised institution, part of the infrastructure of the over-the-counter (OTC) market, to which market users report the details of their transactions in a particular instrument or class of instruments, and/or the resulting positions, typically to satisfy regulatory requirements. The repository stores these data and provides access to supervisors and certain other official agencies to assist the regulation of individual firms, the supervision of markets and the monitoring of systemic risk. The repository will also publish aggregated statistics in order to enhance market transparency for users.
Transaction Exposure	In the <i>GMRA</i> , this is the difference between the <i>Repurchase Price</i> (adjusted by any <i>initial margin</i>) on the date of the calculation and the <i>Market Value</i> of the collateral (adjusted by any <i>Haircut</i>) on the same day. In other words, Transaction Exposure measures the current credit exposure or mark-to-market exposure of one party to another. See <i>GMRA 2000</i> paragraph 2(ww) and <i>GMRA 2011</i> paragraph 2(xx).
transfer of title	The transfer of the full property rights to an asset from one party to another. The result is that the new owner has the unfettered right to do what he wishes

with the asset and the right to all benefits of ownership (eg coupons). In repo, transfer of title takes place through a true sale of the asset. Cf *security interest*.

tri-party repo

A *repurchase transaction* in which a third-party agent (who is the custodian bank for both the parties) undertakes the settlement, custody and post-trade management of the transaction. Settlement is made by book-entry transfers between accounts on the books of the agent and so avoids the cost of settling across a CSD. The services of *tri-party* agents include the automatic selection of *collateral* from the account of the *Seller*, subject to the collateral eligibility criteria predefined by the *Buyer*, margining, management of *manufactured payments* and the automatic 'optimisation' of collateral. Optimisation means ensuring that the collateral held by the Buyer is always of the lowest quality acceptable to the Buyer (this means the Seller is making the most efficient use of his collateral, while the Buyer is earning the highest return). Optimisation is achieved by substituting existing collateral with new collateral whenever the Seller purchases a security of lower but still acceptable quality. The tri-party agent will also substitute when the Seller wishes to sell a security he has repoed out as collateral, or when collateral is no longer acceptable to the Buyer (eg because of a ratings downgrade) or when collateral is due to make an *Income* payment that might cause tax problems. Cf *delivery repo* and *HIC repo*.

two weeks

The term from and including the value date of a transaction up to but excluding a maturity date 14 days later or, if that day is not a *Business Day*, the next Business Day thereafter. If the next Business Day is in the next calendar month, it still becomes the maturity date. In other words, a following business day convention applies, not *the Modified Following Business Day Convention*.

three weeks

The term from and including the value date of a transaction up to but excluding a maturity date 21 days later or, if that day is not a *Business Day*, the next Business Day thereafter. If the next Business Day is in the next calendar month, it still becomes the maturity date. In other words, a following business day convention applies, not *the Modified Following Business Day Convention*.

voice-broker

An agent who matches parties, typically financial intermediaries, who wish to transact financial instruments. The voice-broker collects prices from customers willing to quote and broadcasts the best bid price and the best offer price back to all his customers, without revealing who is quoting these prices (pre-trade anonymity). When genuine interest is expressed in one of these prices, the voice-broker puts the party expressing interest in touch with the party quoting the price and the two parties settle the transaction between themselves. The voice-broker is not a principal intermediary in the transaction and earns a

commission rather than a bid/offer spread. Although voice-brokers originally broadcast prices over dedicated loudspeaker systems installed in customers' offices, they now tend to broadcast prices on screens.

Annex III - Example of a mini close-out notice

Form of mini close-out notice to be served under paragraph 10(f)/(h)

To:

From:

Date:

Dear Sirs

**Subject: [PSA/ISMA Global Master Repurchase Agreement 1995]
[TBMA/ISMA Global Master Repurchase Agreement 2000]¹ dated _____
(the "Agreement")
[Repurchase] [Buy/Sell]¹ Transaction (reference number: _____)
(the "Transaction")**

Seller:

Buyer:

Purchase Date:

Repurchase Date:

Purchased Date:

Purchased Securities (including ISIN):

Terms defined in the Agreement have the same meaning in this letter.

You have failed to deliver Equivalent Securities on the Repurchase Date for the Transaction.

[Option A²

We hereby notify you that if you do not deliver Equivalent Securities by _____ we will serve notice on you under paragraph 10[(f)][(h)]³ (iii) of the Agreement terminating the Transaction in accordance with that paragraph.]

[Option B⁴

In accordance with paragraph 10[(f)][(h)]³(iii) of the Agreement, we hereby declare that the Transaction be terminated immediately in accordance with paragraph 10(c) of the Agreement.

We will determine the amount of the Repurchase Price and the Default Market Value of the Equivalent Securities in accordance with paragraph 10(c) as at the date on which this notice is given. For this purpose the Default Valuation Time is [_____]].

[For the avoidance of doubt, we are not treating the failure to deliver Equivalent Securities as an Event of Default under paragraph 10(a)(ii) of the Agreement and this notice does not constitute a Default Notice.

This notice does not constitute a waiver of our right to serve a Default Notice in respect the failure to deliver Equivalent Securities.⁵

We reserve all our right to exercise any other remedy under the Agreement including, without limitation, the right to serve a Default Notice in respect of any Event of Default that may occur under the Agreement.
Yours faithfully

¹ Delete as appropriate

² Option A: notice of intention to exercise rights under mini close-out

³ Delete as appropriate; sub-paragraph (f) for the GMRA 1995 and (h) for the GMRA 2000

⁴ Option B: notice terminating the transaction under mini close-out

⁵ Include only for GMRA 2000 where the parties have specified that paragraph 10(a)(ii) applies

Annex IV - Forms of confirmation in Annex II of the GMRA

Form of Confirmation in Annex II of the GMRA 2000

Form of Confirmation

To:
From:
Date:
Subject: [Repurchase][Buy/Sell Back]* Transaction
(Reference Number:)

Dear Sirs,

The purpose of this [letter]/[facsimile]/[telex], a "Confirmation" for the purposes of the Agreement, is to set forth the terms and conditions of the above repurchase transaction entered into between us on the Contract Date referred to below.

This Confirmation supplements and forms part of, and is subject to, the Global Master Repurchase Agreement as entered into between us as of [] as the same may be amended from time to time (the "Agreement"). All provisions contained in the Agreement govern this Confirmation except as expressly modified below. Words and phrases defined in the Agreement and used in this Confirmation shall have the same meaning herein as in the Agreement.

1. Contract Date:
2. Purchased Securities [state type[s] and nominal value[s]]:
3. CUSIP, ISIN or other identifying number[s]:
4. Buyer:
5. Seller:
6. Purchase Date:
7. Purchase Price:
8. Contractual Currency:
- [9. Repurchase Date]:*
- [10. Terminable on demand]:*
11. Pricing Rate:
- [12. Sell Back Price:]*
13. Buyer's Bank Account[s] Details:
14. Seller's Bank Account[s] Details:
- [15. The Transaction is an Agency Transaction. [Name of Agent] is acting as agent for [name or identifier of Principal]]:*
- [16. Additional Terms]:*

Yours faithfully,

* Delete as appropriate

Form of Confirmation in Annex II of the GMRA 2011**Form of Confirmation**

To:
From:
Date:
Subject: [Repurchase] [Buy/Sell Back]* Transaction
(Reference Number:)

Dear Sirs,

The purpose of this [letter] [facsimile], a “Confirmation” for the purposes of the Agreement, is to set forth the terms and conditions of the above repurchase transaction entered into between us on the Contract Date referred to below.

This Confirmation supplements and forms part of, and is subject to, the Global Master Repurchase Agreement as entered into between us as of [] as the same may be amended from time to time (the “Agreement”). All provisions contained in the Agreement govern this Confirmation except as expressly modified below. Words and phrases defined in the Agreement and used in this Confirmation shall have the same meaning herein as in the Agreement.

1. Contract Date:
2. Purchased Securities [state type[s] and nominal value[s]]:
3. CUSIP, ISIN or other identifying number[s]:
4. Buyer:
5. Seller:
6. Purchase Date:
7. Purchase Price:
8. Contractual Currency:
- [9. Repurchase Date]:*
- [10. Terminable on demand]:*
11. Pricing Rate:
- [12. Sell Back Price]:*
13. Buyer's Bank Account[s] Details:
14. Seller's Bank Account[s] Details:
- [15. The Transaction is an Agency Transaction. [Name of Agent] is acting as agent for [name or identifier of Principal]]:*
- [16. Additional Terms]:*

Yours faithfully,

* Delete as appropriate



ICMA Zurich
T: +41 44 363 4222
Dreikonigstrasse 8
CH-8002 Zurich
Switzerland

ICMA Limited, London
T: +44 20 7213 0310
23 College Hill
London EC4R 2RP
United Kingdom

ICMA Paris
T: +33 1 70 17 64 72
62 rue la Boetie
75008 Paris
France

ICMA Hong Kong
T: +852 2531 6592
Unit 3603, Tower 2,
Lippo Centre
89 Queensway Admiralty
Hong Kong