ICMA European Repo Council

A Guide to Best Practice in the European Repo Market

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Preface

This Guide to Best Practice in the European Repo Market (the "Guide") is the latest important documentary contribution by the ICMA European Repo Council (ERC) towards building and sustaining a fair n orderly and efficient repo market. The ICMA ERC has been the industry's representative body for over almost 20 years. Membership is open to those ICMA members who transact repo business in Europe. The ICMA ERC currently has about 70almost 80 members, comprising the vast majority of firms actively involved in this market. The discussions that take place at the ICMA ERC meetings underpin the strong sense of community and common interest that characterises the professional repo market in Europe.

A key role of the ICMA ERC has been to consolidate and codify best market practice and forge consensus solutions to new issues emerging in this rapidly-evolving marketplace. This includes the standardisation of 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.

The ICMA ERC also plays a significant role in nurturing the growth and wider use of the repo market in Europe, particularly among both banks and their customers, by providing education and market information. In addition, the ICMA bi-annual survey of the European repo market has become established over more than a decade as the only authoritative indicator of market size and structure, and dominant trends.

This Guide supersedes the repo trading practice guidelines published by the ICMA on behalf of the ERC over a decade ago. This was its the ICMA ERC's first initiative to comprehensively explain best practices and conventions for the European repo markets. A separate ICMA ERC set of guidelines, updated in 2012, elaborated best practices and conventions for repo margining. (This has been incorporated into this guide as Annex II). Complementing these two sets of guidelines, other repo documentation published by the ICMA on behalf of the ERC has included a codification of floating-rate repo conventions; a recommendation on repo matching as a driver for risk reduction; and a recommendation regarding fails in negative interest rate repos. This Guide pulls together and updates these previous ICMA publications. As the market develops, the Guide itself will continue to be updated. It is very much a 'living' document. This July 2015 version is the first update since the Guide was originally published in March 2014.

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1   Purpose and scope of the Guide

1.1   This Guide is published by the European Repo Council (ERC) of the International Capital Market Association (ICMA). Its purpose is to help foster a ~~smooth and orderly~~fair and efficient market in repo in Europe by recommending practices which market experience suggests can help avoid uncertaint~~ies~~y or disagreement~~s~~ about transactions, and consequent delay~~s~~ 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 member firms of the ERC, but other firms 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 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~~I~~ provides a glossary of terminology.

1.4   The Guide applies to both *repurchase agreements* and *sell/buy-backs*, which are both types of repo, but does not apply to *securities lending transactions*.

1.5   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 are concerned primarily with the proper conduct and prudent management of business in different domestic repo markets. Nevertheless, the Guide should complement these codes.

1.6   The purpose of the Guide (to help foster a ~~smooth and orderly~~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.

1.7   The Guide will be a 'living' document, in that it will have to 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 most current version of the Guide is posted on the ICMA website at www.icmagroup.org/repoguide. ICMA will publicise updates but users should periodically check the ICMA website to ensure they have the latest version of the Guide.

1.8   Questions on the Guide, as well as proposals for change or improvement, should be addressed to the ICMA ERC at the offices of ICMA Ltd at 23 College Hill, London EC4R 2RP or legalhelpdesk@icmagroup.org.

1.9   The information contained herein is provided to members of ICMA ("Members") for general guidance only and should not be relied upon as advice. Members/Uusers acknowledge that ICMA does not provide legal or other advice and expressly disclaims any responsibility for the information below. Users 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.

1.10   Neither the ERC 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 the ICMA ERC will endeavour to offer further clarification of recommendations, where this may beis necessary.

1.11   Annex II to the Guide sets out the ERC's Repo Margining Best Practices, which give greater detail on initial margins, haircuts and margin maintenance.

1.121.11   Terms from used in the GMRA are indicated by capital initials.

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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, operational and credit risk management purposes, that ~~both parties~~each party to a transaction know the precise legal identity of ~~their~~ 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   A party can transact repos with another under the same Global Master Repurchase Agreement (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 ~~agent-agent~~ 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. ~~When~~ And when typing on an electronic messaging system, it is common to try to speed up conversation by using abbreviations (above and beyond ~~widely~~ widely-understood conventions such as ISO currency codes). Both practices can lead to confusion~~.~~ ~~and parties~~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 ~~where there is any uncertainty~~. On the telephone, the key economic terms of a transaction should be ~~listed~~ rehearsed

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[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 ~~therefore~~ to use a code to identify the client to the trading desk and to supply the credit and compliance departments of the counterparty~~, on a confidential basis,~~ with the underlying identity on a confidential basis.

by one of the parties at the end of the conversation. Post-trade checks should also be conducted using Confirmations and, where necessary, affirmation (see paragraphs ~~2.33 to 2.45~~2.30-2.42).

> **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 ~~where there is any uncertainty~~. 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 agreements 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. 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, the deposit and forward foreign exchange markets). This is almost always actual/365 days (A/365F) or actual/360 days (A/360). In the GMRA, the repo rate is called the Pricing Rate. This term should be used to identify the repo rate in Confirmations and affirmations between parties using the GMRA.

2.5 In the past, ~~S~~sell/buy-backs were~~have~~ traditionally ~~been~~ quoted in terms of the forward price of the collateral. Formulae for calculating the forward price are given in the glossary in Annex ~~III~~II. Sell/buy-backs are now often quoted, like repurchase agreements, in terms of the repo rate.

How to quote the Purchase Price

2.6 Parties to a repurchase agreement 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 agreement 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 ~~the~~ accrued interest), just as it is for a repurchase agreement. Note, in the remainder of the Guide, the term Purchase Price is used for both repurchase agreements and sell/buy-backs to mean the cash amount calculated using the dirty price of a fixed-income security.

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[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 Buy/Sell-Back Annex.

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Fixing the Purchase and Repurchase Dates

2.8   ~~The period between the date on which a transaction is agreed (transaction date, T) and the conventionally-earliest Purchase Date for a repo (other than overnight (ON) or tom/next (TN) transactions) is typically shorter than the conventionally-earliest delivery period in the cash market for the securities being used as collateral. For example, whereas the conventionally-earliest Purchase Date for euro-denominated repos is the spot date or T+2 (that is, two Business Days after the transaction date), the cash markets for eurozone government bonds conventionally deliver on T+3. Non-bank customers sometimes are unable to deliver collateral before the conventional cash market delivery date. Banks can accommodate these customers by extending the period between the transaction date and Purchase Date of repos. Such a delayed Purchase Date is called a Corporate Value Date. For the Purchase Date of forward repos, see paragraph 2.14.~~

2.9   ~~The conventionally-earliest Purchase Date of a repo is the same as that in the wholesale money market for the same currency. However, dealers often seek to shorten the period between the transaction date and Purchase Date, so significant volumes of transactions are negotiated for settlement earlier than conventionally-earliest Purchase Date. In euro, the conventionally-earliest Purchase Date is the spot date or T+2 but substantial business in euro-denominated repo is done for T+1 (next business day settlement) and T+0 (same business day settlement).~~

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 in any currency (see paragraph 2.16).

2.9   The most common non-forward settlement period in the repo market has tended to be one Business Day shorter than the most common non-forward settlement period in the cash market for the same securities. 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 therefore have one less Business Day than the cash market to settle.

2.10   Where non-bank customers in the repo market are unable to deliver securities one day faster than is usually required for cash settlement, dealers can agree to settle repo one Business Day later than the repo market convention, in line with the cash market. This later repo Purchase Date is known as a 'corporate value date'.

2.11   Until 6 October 2014, the most common non-forward settlement period in the cash market for eurozone government bonds was T+3 and, as a consequence, the most 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 EU 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' (automatic trading systems) regulated under a parallel regulation, MiFIR. Although the T+2 settlement requirement of the CSDR excludes transactions executed in the OTC market, ICMA and other 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. It was expected that the most common non-forward Purchase Date for repos against eurozone government securities would move from T+2 to T+1 and that the corporate value date would move from T+3 to T+2. For the Purchase Date of forward repos, see paragraph 2.16.

2.10 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 ~~round date~~ maturities which are multiples of one month, the End/End Rule and Modified Following Business Day Convention ~~and End/End Rule~~ (see Annex III 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 (see paragraph 2.20 17).

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 (SSS) and/or custodian banks in different cities.

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

- For repos to be settled at an SSS, 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).

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 agree the times to be taken deemed as close of business in the countries in which they are located, and in other relevant locations, and record these times in Annex I of their GMRA or, if that is not practical, in Confirmations.

> **Best practice recommendation**. It is best practice for parties 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 record these times in Annex I of their GMRA or, if that is not practical, in Confirmations.

2.12 2.14 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

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[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 an SSS, 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).

based in different 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 ~~or making a margin call~~ on a party in another eurozone country on a public holiday in the second ~~state~~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 practical, in Confirmations.

<mark>**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 practical, in Confirmations.</mark>

2.15   Unless otherwise agreed between the parties~~,~~:

- ~~the~~ The day or days **between** but not including the transaction date and Purchase Date should be a Business Day or 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 Purchase Date must also be Business Days in the latter city as well.
- However, the day or days between the transaction date and Purchase Date do not have to be a Business Day or 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 is summarised in the following table.

~~2.13~~

What days should be Business Days in each relevant location?

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

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Repurchase Date	yes	yes	yes	yes

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2.16   **Forward repos**. ~~A forward repo is a transaction with a Purchase Date later than the conventionally-earliest Purchase Date in the currency of the Purchase Price. For example, the Purchase Date of a forward repo in euros is conventionally T+4 or later. For forward repos for which the periods from the transaction date to the Purchase Date and Repurchase Date are both multiples of one month, there are two methods of fixing these dates:~~ A forward repo is a transaction with a Purchase Date later than the conventional Purchase Date for earliest delivery. In practice, forward repos tend to have Purchase Dates of T+5 (one week) or later and parties to a particular transaction will usually be well aware as to whether it is a forward transaction or not. On occasion, however, a strict definition of a forward repo may be needed. The problem is that a strict definition is complicated by the difficulty of defining 'the conventional Purchase Date for earliest delivery'. For example, prior to 6 October 2014, the conventional Purchase Date for earliest delivery in euro-denominated repos could have been said to be T+2 (notwithstanding that many repos were transacted for settlement at T+1 or even T+0), which made the Purchase Date for forward repos T+3 or later. However, it was possible to extend the delivery period for non-forward repos to T+3, a so-called 'corporate value date' (see paragraph 2.10). On 6 October 2014, many cash markets in European securities anticipated the introduction of the CSD Regulation (CSDR) in 2015 by voluntarily switching non-forward settlement from T+3 to T+2. The bulk of non-forward repo was expected to shift to T+1 in response. However, it is still possible under the CSDR to settle non-forward cash and repo transactions in the EEA later than T+2 provided these are executed OTC (ie off a regulated trading venue). So, post CSDR, where do non-forward repo end and forward repo start in the EEA? The pragmatic answer is that any repo with a Purchase Date on T+5 or later is unambiguously a forward and any repo with a Purchase Date of T+2 or earlier is unambiguously a non-forward. Repo with a Purchase Date of T+3 (eg for corporate value in the OTC market) or T+4 may be the subject of confusion and there should be explicit agreement between the parties as to whether it is to be treated as a forward or not.

> **Best practice recommendation**. For repo with a Purchase Date of T+3, it is best practice for parties to explicitly agree at the point of trade whether these are to be treated as forward repo or not. This agreement should be recorded in Confirmations and, where necessary, affirmation.

~~2.14~~ 2.17   For forward repos for which the periods from the conventional Purchase Date for earliest delivery to the forward Purchase Date and 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 method). Both dates can ~~be~~ have the same ~~date~~ day number in the ~~relevant~~ future months as the ~~conventionally-earliest~~ conventional Purchase Date for non-forward repos. For example, ~~in euro, for which~~if the ~~conventionally-earliest~~conventional Purchase Date ~~is the spot date or T+2~~ is T+1, a 1x3 forward repo would have a forward Purchase Date which is the same date as T+1 but one calendar month ~~after the current spot date~~later, and a Repurchase Date also ~~which is~~on the same date but three calendar months ~~after the current spot date~~later.

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For example, ~~assuming a currency which settles T+2,~~ the dates for a 1x2 forward repo transacted on Wednesday, ~~4~~ 2 September ~~2013~~ would be:

- ~~conventionally-earliest~~conventional Purchase Date for earliest delivery: assuming T+1, this would be (~~Friday~~Thursday) ~~6~~ 3 September
- 1-month Purchase Date: (Monday) ~~7~~ 5 October ~~2013 (,~~ as ~~6~~ 3 October ~~2013~~ 2015 is on ~~Sunday~~Saturday)
- 2-month Repurchase Date: (~~Wednesday~~Tuesday) ~~6~~ 3 November ~~2013~~.

- Method 2 (sequential date method). The forward Purchase Date can ~~be~~ have the same ~~date~~ day number in the ~~relevant~~ first future month as the ~~conventionally-earliest~~ conventional Purchase Date for earliest delivery, while ~~and~~ the Repurchase Date can ~~be~~ have the same ~~date~~ day number in the ~~relevant~~ second future month as the forward Purchase Date ~~Date~~. Using the same example as above (a 1x2 forward repo in a currency in which ~~non-forward repos~~ settles ~~T+2~~ T+1 that is transacted on Wednesday, ~~4~~ 2 September ~~2013~~), the dates would be:
  - ~~conventionally-earliest~~ conventional Purchase Date for earliest delivery: assuming T+1, this would be (~~Friday~~Thursday) ~~6~~ 3 September
  - 1-month Purchase Date: (Monday) ~~7~~ 5 October, ~~2013 (~~as ~~6~~ 3 October ~~2013~~ is on ~~Sunday~~Saturday)
  - 2-month Repurchase Date: (Thursday) ~~7~~ 5 November ~~2013~~.

In contrast to the first method, the Repurchase Date in this second method is fixed by reference to the forward Purchase Date of ~~7~~ 5 October, not the ~~spot value date~~ conventional Purchase Date for earliest delivery of ~~6~~ 3 September. Therefore, under Method 2, ~~a change in the fixing of~~ if the forward Purchase Date is not the same date as the conventional Purchase Date for earliest delivery, because ~~it is not~~of a Business Day, there is ~~would affect~~ a knock-on effect on the fixing of the Repurchase Date. This would not be the case ~~in~~ under Method 1.

2.18 ~~The second method~~Method 2 (sequential date 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. ~~The second method~~Method 2 is the convention applied elsewhere in the money market. ~~It is best practice for parties to specify the use of this convention in Annex I of their GMRA or, if that is not practical, in Confirmations~~.

~~2.15~~

Worked example: fixing interest rate period~~forward Purchase Date~~ and Repurchase Date~~s~~

July 2015

Consider a 3x6 forward repo in pounds sterling executed on Tuesday, 26 May~~February 2013~~. As sterling conventionally settles for earliest delivery on T+0, the transaction is for value on the same day. Assume 26 August is a public holiday in the UK. Therefore:

1   The 3-month forward Purchase Date: Tuesday, 27 August ~~2013~~ (it should have been Monday, 26 August ~~2013~~, but as this is a UK public holiday ~~in the UK~~, ~~so~~ the date moves under the Modified Following Business Day Convention to the next Business Day).

2   The 6-month ~~forward~~ Repurchase Date is Wednesday, 27 November ~~2013~~ (this is calculated from the 3-month forward Purchase Date of Tuesday, 27 August ~~2013~~).

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

~~2.16~~ 2.19   **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 the dates here is different to ~~that described~~ Method 2 (sequential date method) recommended for fixing the dates of forward repos in paragraphs ~~2.14-2.15~~ 2.17 above and more like Method 1 (constant date method). For example, for interest rate periods which are multiples of one month, the start of all future periods should ~~be~~ have the same ~~dates~~ day number in ~~the~~ relevant future months as the Purchase Date, unless ~~that~~ a future date is not a Business Day, in which case, the End/End Rule and Modified Following Business Day Convention ~~and End/End Rule~~ would apply to this date (and 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. ~~This~~ A series of deferrals would have the undesirable effect of progressively compressing periods as one approached the fixed final Repurchase Date.

Worked example: fixing forward Purchase and Repurchase Dates

Consider a 3-month floating-rate repo indexed to 1-month GBP LIBOR with a Purchase Date of 25 November ~~2012~~. Assume the following 25 and 26 February are on a weekend. The Repurchase Date would then be 27 February ~~2013 (because 25 and 26 February 2013 are not business days)~~. Because 25 December ~~2012~~ is also not a business day, the start of the second interest rate period should be deferred until 26 December ~~2012~~ (assuming that is a business day). However, the third interest rate period should start on 25 January, assuming this is a Business Day, ~~2013~~ and not the ~~next~~ following day.

~~2.17~~ 2.20 **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 delivery (GMRA paragraph 3(e)). When negotiating an open repo, it is essential that the parties have the same understanding about what is the customary delivery period for the collateral. It is also essential that they have the same understanding of what the deadline is (and in which time zone) for giving the notice of termination. Notice given after this deadline will not be effective on the same day, in other words, the return of equivalent collateral will not be initiated until the next Business Day. For major classes of security, the current customary delivery periods and customary deadlines for giving notice of termination are set out in the table below. However, these periods and deadlines may change in the future before the Guide can be updated, so users of the Guide need to check that they remain current. ~~that they remain current.~~ Moreover, it may be possible for parties to extend some of the deadlines given below by negotiation. ~~On the other hand, giving notice of termination close to the later deadlines is not advisable where the operations of one of the parties are not sufficiently automated (see paragraph 2.18 below).~~

class of security	currency	delivery	deadline
Eurozone government	EUR	T+1~~2~~	13~~6~~:00 CET
Eurozone corporate	EUR	T+1~~2~~	13~~6~~:00 CET
UK government (non-CCP)	GBP	T+0	14:55 GMT/BST
UK government (CCP)	GBP	T+0	11:00-11:30 GMT/BST
US Treasury	USD	T+0	10:00 EST

In the case of securities not listed above, it is best practice for the parties to agree the delivery period and deadline, 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 practical, in Confirmations. See also paragraph 2.6~~14~~ below.

> **Best practice recommendation.** It is best for the parties to an open repo of less commonly-used collateral 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 practical, in Confirmations.

2.21

~~2.18~~ It is possible that a dispute may arise about whether a deadline applies to the sending or receiving of ~~the~~ a notice of termination. Parties should avoid such disputes by acting reasonably and in good faith. 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 ~~could~~ should be done by ~~giving notice by~~ telephone, rather than by electronic messaging, so that there is no uncertainty about whether the other party received notice before the deadline. Giving notice to

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terminate an open repo close to the deadlines is not advisable where the operations of one of the parties are not sufficiently automated.

~~2.19~~2.22   Parties need to be sure about when equivalent collateral will be returned to the Seller and the Repurchase Price ~~will be~~ paid to the Buyer following a termination. 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.

Allocation of collateral in a general collateral (GC) repo

~~2.20~~2.23   In general collateral (GC) repos which have not been executed on an automatic repo trading system and/or are not being automatically settled across 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.

Agreeing the price of collateral

~~2.21~~2.24   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 15 minutes later~~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.

~~Fixing an initial margin or Haircut~~

2.22   Initial margins and Haircuts may be used to adjust the value of collateral sold in a repo, 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.

2.23   An initial margin can be defined as a percentage or a ratio. As a percentage, an initial margin is calculated as:

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

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:

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

Worked example: applying an initial margin

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).

2.24   A Haircut is defined as:

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

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:

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

2.25   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

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~~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.~~

~~2.26   Initial margins and Haircuts are likely to be agreed at the point of trade, in which case, it is best practice to record the initial margin or Haircut in the Confirmation.~~

<mark>~~**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.~~</mark>

~~2.27   For further guidance on initial margins and Haircuts, see the Repo Margining Best Practices Guide in Annex II.~~

Agreeing rights of substitution

~~2.28~~2.25   A Buyer in a repo may grant the Seller one or more rights to substitute some or all collateral during the term of the ~~repo~~transaction. This permits the Seller, at any time between the Purchase Date and Repurchase Date, to call for the Buyer to return equivalent collateral in exchange for substitute collateral. In return for this right, the Seller will usually agree to pay a higher repo rate. Where there is more than one right of substitution, the exercise of the second and any subsequent rights will result in the substitution of previous substitutes. See paragraphs ~~3.7-3.9~~4.8-4.10~~9~~ below.

~~2.29~~2.26   Rights of substitution will typically be agreed at the point of trade of each transaction. It is best practice to record the original number of rights of substitution in the initial Confirmation and/or ~~–~~affirmation of the transaction and to confirm and/or ~~–~~affirm each substitution, noting the number of rights of substitution remaining.

<mark>**Best practice recommendation**. It is best practice to record the original number of agreed rights of substitution in the initial Confirmation and/or affirmation of a transaction and to confirm and/or affirm each substitution thereafter, noting the number of rights of substitution remaining.</mark>

~~2.30~~2.27   When negotiating rights of substitution, 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 delivery period~~s~~ for the return of the equivalent 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. ~~See 8(a) of~~Under~~ the~~ GMRA (8(a)), Market Value is prescribed.
- To the extent possible, what are acceptable and/or unacceptable substitute securities (see paragraph ~~3.8~~4.9 below).

Agreeing interest rates for late payments

2.~~31~~2.28   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 and 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 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 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 economic compensation. The interest rate on late payments should not be used to penalise the other party.

2.~~32~~2.29   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, ~~the practice has developed of passing~~some parties try to pass that charge back to the first party, regardless of the fact that the parties have accepted the standard 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~~do so by including~~ a supplementary term to this effect in Annex I of their GMRA.

> **Best practice recommendation**. If parties to a repo wish to be able to pass on overdraft charges incurred at an ICSD because of a late payment by their counterparties, it is best practice to do so by including a supplementary term to this effect in Annex I of their GMRA.

July 2015

Verifying the terms of transactions

2.332.30   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 the other party's. 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 ~~give~~ 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. 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]

2.342.31   **Confirmation** is the process of providing a complete record of the commercial terms of a transaction and settlement instructions to the other party. Either~~,~~ the parties exchange Confirmations or, by agreement, one party sends a Confirmation to the other. The provision of a Confirmation allows the recipient to cross-check the sender's record of the terms of a transaction against the recipient's own records. Confirmations can also be used during the life of a transaction to verify changes. See paragraph 4.13-4.14 below

2.352.32   Confirmations play a key role in the legal construction of a 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 specific to the transaction. The content of Confirmations should be consistent with the GMRA and ~~refer to the same terms~~use the same terminology (eg Pricing Rate, not repo rate). Annex II of the GMRA provides a form of Confirmation (which is reproduced in Annex IV to this Guide). A Confirmation would be regarded as prima facie evidence of the terms of a transaction. In the event of a conflict between the terms of such

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[4]   Confirmation and affirmation should not be confused with trade-matching. Where ~~the~~ 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 ~~is called~~of **trade-matching** or **settlement matching** ~~and~~ is intended to ensure that transactions will not fail to settle after they have been entered into the security settlement system (SSS) 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 SSS 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 an unexpected build-up of risk.

Confirmation and the GMRA, the Confirmation shall prevail in respect of that transaction and those terms only. It is best practice therefore for parties to promptly compare a Confirmation received from the other party with their own records and to revert to the other party urgently, on the transaction date, if there are any differences.

2.36~~2.33~~ For transactions executed over an automatic repo trading system, bilateral Confirmations may be substituted by the notifications or records generated by the trading system. ~~Parties~~ However, parties need to ensure that such notifications or records provide the information that would otherwise ~~be~~ have been contained in a Confirmation. If not, Confirmations should still be sent between the parties.

> **Best practice recommendation**. It is best practice for parties who wish to substitute Confirmations with notifications or records generated by an automatic trading system to ensure that such notifications or records provide the information that would otherwise ~~be~~ have been contained in a Confirmation.

2.37~~2.34~~ The essential terms which should be included in a repo Confirmation (which are set out in GMRA paragraph 3(b) and/or Annex II of the GMRA) 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 signed, confirmation of whether the transaction is a repurchase agreement or sell/buy-back
- repo rate (Pricing Rate) in the case of a repurchase agreement 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.

2.38~~2.35~~ Where a party has agreed to send Confirmations, it is best practice that, subject to applicable laws and regulations, such Confirmations 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 the obligation to confirm may choose, provided that the Confirmations ~~is~~ are capable of being promptly and accurately reproduced on paper.

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2.392.36   In the case of sell/buy-backs, it is best practice for parties to confirm both legs ~~of a sell/buy-back~~ 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.

2.402.37   **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 instructions, 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.

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

2.422.39   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

2.432.40   Affirmation ~~is~~ can also be used during the life of a transaction to verify changes ~~in its terms, either an update of a variable term (eg re-fixing the repo rate on a floating-rate repo) or an amendment (eg the early termination of a transaction)~~. See paragraphs ~~3.12~~4.143 below. Typical changes include:
- re-fixing the repo rate on a floating-rate repo
- early termination (eg termination of an open repo, mini close-out, fails)
- Re-pricing or Adjustment of a sell/buy-back

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- change in repo rate (for open repos) or re-fixing of interest rate index (for ~~open and~~ floating-rate repos)
- ISIN for new collateral after substitution.

2.44 2.41   Unless both parties exchange Confirmations, ~~one party~~ 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 ~~would~~ should automatically become apparent to both parties, as both will be expecting to receive a Confirmation. ~~A~~ 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 re-send 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 ~~(but best practice is the affirmation of all transactions)~~. Otherwise, it is exposed to the risk that any queries by the other party may be too late to avoid disputes.

2.45 2.42   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 the 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 trading desks.

Recommended delivery size

2.46 2.43   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 such 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 and the other party is within its rights to decline a partial delivery. 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

2.47<u>2.44</u>   It is best practice for partial deliveries be accepted in mini close-outs <u>(see paragraphs 4.1-4.2)</u>, given that there will be no prospect of further deliveries because of the termination of the transaction.

<mark>**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.</mark>

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

2.48<u>2.45</u>   Repo is the only instrument where rates of return can become negative in normal market conditions. Repo rates become negative when a particular collateral asset is subject to exceptional borrowing demand in the repo market and/or reduced supply, and goes on 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 <u>by investors</u> 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 these <u>potential</u> problems.

Worked example: negative repo rate

Purchase Date   8 August 2012
Repurchase Date   15 August 2012
Repo rate   -0.50%
Purchase Price   EUR 10,000,000

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

2.49<u>2.46</u>   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 use of cash is a cost that provides an incentive to the Seller to remedy a failure to deliver<u>,</u> as well as providing compensation to the Buyer.

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2.502.47   At negative repo rates, 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 ~~which is~~ but this will now be lower than the Purchase Price which the Buyer is 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 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 on failure to deliver for repos at negative rates in Annex I.

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[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 ~~subsequently~~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 ~~cash he receives on~~ repo on which he has ~~just delivered~~made late delivery but will receive interest at the new higher rate on the ~~cash he gives on the~~ reverse repo.

2.51 2.48 **The reinvestment rate on ~~equivalent~~ compensatory income (manufactured) 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 ~~equivalent~~ compensatory income payment owed by the Buyer to the Seller is deferred until the Repurchase Date. ~~and, i~~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. T~~t~~he reinvestment rate is agreed between the parties 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 calculating a margin call, the reinvestment rate used to calculate the value of the compensatory payment~~The reinvestment rate~~ 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)):

$$\left(P + AI + D\right) - \left(IR + C\right)$$

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 ~~this~~ 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 or dividends 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 ~~equivalent~~ compensatory income payment at the repo rate on the sell/buy-back

2.52 2.49 Given that, in cases of default and margin calculations, the repo rate ~~(C)~~ is used as the reinvestment rate for ~~equivalent~~ compensatory income payments, if that rate is negative, reinvestment will erode the value of the equivalent income payment. But, if the repo rate ~~(C)~~ is negative solely because the collateral is special, it would not be appropriate to use it as a cash reinvestment rate. It is negative only because it incorporates an implicit borrowing fee for the collateral that reflects the specialness of this collateral. Cash reinvestment rates should be close to the GC repo rate or some other money market 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

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both parties do not wish to apply negative reinvestment rates under any circumstances, they will need to consider ~~This does not make sense. The repo rate is negative only because it implicitly incorporates a borrowing fee for the collateral that reflects the specialness of the collateral. Cash reinvestment rates should be close to the GC repo rate or some other money market rate for the short-term borrowing or lending of cash. Otherwise, the Buyer is paying a hidden, additional fee for borrowing a special. It is best practice for parties to adopt~~ incorporating an agreed amendment to their GMRA or, if that is not practicable, includ~~e~~ing a supplementary term in their Confirmations, to the effect that, in the case of default or margin calculations, the reinvestment rate on ~~manufactured~~ compensatory payments in sell/buy-backs is never to fall below zero~~, unless they are content with that possibility, or they are willing to accept a negative reinvestment rate should the general interest rate level, as represented by the relevant GC repo rate or official policy rate, also become negative~~. ~~Otherwise, they could agree an alternative reinvestment rate to the repo rate.~~Either way, parties need to be aware of potential problems and, if they believe it necessary, agree on and record an alternative reinvestment rate.

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2.532.50 **Interest on cash margin at negative repo rates**. ~~Parties to a repo should agree the interest rate to be paid on cash margin before trading and record that rate in Annex I of their GMRA. If parties choose to apply the repo rate on the transaction being margined, a problem will arise should that rate become negative.[6] As above, it is best practice for parties to adopt an agreed amendment to their GMRA or, if that is not practicable, include a supplementary term in their Confirmations, to the effect that the reinvestment rate on cash margins is never to fall below zero, unless (1) they are content with that possibility, or (2) the general interest rate level, as represented by the relevant GC repo rate or official policy rate, is also negative. Otherwise, they could agree an alternative interest rate on cash margin to the repo rate.~~ Under 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 or a GC repo rate for portfolios of transactions being margined in aggregate. However, the parties need to be aware that the repo rate on a particular transaction can turn negative because the collateral is on special. It can reasonably be claimed that this 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 potential problems and, if they believe it necessary, agree on and record an alternative rate. In practice, many parties use the relevant overnight index.

> **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~~It is best practice for parties to adopt agreed amendments to their GMRA or, if that is not practicable, include supplementary terms in their Confirmations to the effect that the reinvestment rates on (1) manufactured payments in sell/buy-backs and (2) cash margins are never to fall below zero, unless (1) they are content with that possibility, or (2) the general interest rate level, as represented by the relevant GC repo rate or official policy rate, is also negative. Otherwise, they should agree an alternative reinvestment rate to the repo rate~~.

Calculating floating-rate repo interest payments

2.542.51 In the case of floating-rate repos linked to an overnight interest rate index (OI) or a tom/next ~~(TN)~~ interest rate index~~es~~ (TN), interest is not paid during the term of the repo but is accrued until the final Repurchase Date. Nor

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[6] ~~This circumstance does occur but should not be common, as most parties margin against the net exposure of their outstanding repos with each other, which means that the rate on a particular repo is not relevant. Instead, they agree a general money market rate, usually an overnight index such as EONIA.~~

is ~~the~~ daily interest compounded. Instead, an arithmetic average is calculated. For a floating-rate repo with a day count of n:

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

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)

~~2.55~~2.52   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.

~~2.56~~2.53   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 <u>not</u> too late, then Method 1 below is used. Method 1 (ultimate day crystallisation) 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%		
Tue 06-Dec	1	1.02%	1.02%		
Wed 07-Dec	1	0.95%	0.95%		crystallisation day
Thu 08-Dec				20,138.89	

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

$$= 100,020,138.89$$

2.57~~2.54~~   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 below is used. Method 2 (penultimate day crystrallisation) 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 ~~the next day~~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~~3~~,333.33	

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

=100,020~~3~~,333.33

~~2.58~~2.55   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". 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). In Method 2, the sequence of EONIA fixings is said to be crystallised into a fixed rate two Business Days before the Repurchase Date (R-2).

> **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 a previous day's fixing for the last day.

~~2.59~~2.56   It is best practice 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~~confirm in writing the method of calculating the Repurchase Price of a floating-rate repo ahead of trading~~.

> **Best practice recommendation**. It is best practice 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~~confirm in writing the method of calculating the Repurchase Price of a floating-rate repo linked to an overnight index ahead of trading~~.

2.60 2.57   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 OI 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 will tend to 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. Such a term 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 later. 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.

2.61 2.58   If a 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 (see 2.56 ultimate day crystallisation) should be used.

2.62 2.59   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 2.16 2.19 above).

2.63 2.60   ——Floating-rate repos require the monitoring and recording of floating-rate indexes, sometimes over extended periods. In order to avoid operational error, it is best practice to confirm or affirm a new floating rate ahead of the period to which it will apply (see paragraph 2.43 2.40 above).

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> **Best practice recommendation**. In the case of floating-rate repos, it is best practice to confirm or affirm a new floating rate ahead of the period to which it will apply in order to avoid operational error.

Calculating open repo interest payments

2.64 2.61   When an open repo is transacted, a repo rate close to the overnight rate will be agreed by the parties. That 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 're-pricing' the repo) must be made before the agreed deadline for termination of the transaction (see paragraph 2.17 2.20 above) in order for the change in rate to take effect on the next Business Day. It is best practice to confirm or affirm such changes (see paragraphs 2.40 above and 3.12-3.14 4.13-4.14 below).

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

2.65 2.62   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:

$$= 10{,}000{,}000 \left(\begin{array}{c} \dfrac{0.75 \times 1}{100 \times 360} + \dfrac{0.75 \times 1}{100 \times 360} + \dfrac{0.75 \times 1}{100 \times 360} + \dfrac{0.75 \times 3}{100 \times 360} + \\[2ex] \dfrac{0.55 \times 1}{100 \times 360} + \dfrac{0.55 \times 1}{100 \times 360} + \dfrac{0.55 \times 1}{100 \times 360} \end{array} \right) = 1{,}708.33$$

2.66 2.63   As open repos may run for extended periods, it is customary to make regular periodic payments on continuing transactions. This Where two parties frequently transact open repos, periodic payments are usually made is typically done monthly, usually typically within a few days after the end of each calendar month and in aggregate for all open repos between the same parties running during the calendar month. Parties to open repos should agree the interest payment frequency and payment date for payment when negotiating such transactions and record these operational details in Annex I of their GMRA or, if that is not practical practicable, in Confirmations.

~~3   Best practice in margining repo~~

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 agreement 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:

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

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:

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

Worked example: applying an initial margin

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:

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

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:

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

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 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, affirmations.

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, affirmed.

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 Initial margins and Haircuts can be agreed in advance of trading and recorded in Annex I of the GMRA or can be agreed ad hoc at the point of trade and recorded in Confirmations and, where necessary, affirmations. 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 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 insufficiency of underlying asset values or cashflows (see 10(f)(ii)(A) of GMRA 2011).

Calculating a margin call

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 (Transaction Exposure ---see section 2(ww) of GMRA 2000 and 2(xx) of GMRA 2011) plus any income due from the other party but unpaid (ie manufactured payments and interest payments) plus Net Margin still held by the first party.

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.

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3.11   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.

(a)   where the collateral is subject to an initial margin

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

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

3.12   The Repurchase Price should be calculated for the day on which margin is due to be delivered (the margin delivery 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.

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

3.13   The Market Value of collateral securities should include accrued interest up to but excluding the margin delivery date.

Worked example: applying an initial margin to calculate the required collateral value

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
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%

$$\text{required Market Value of collateral} = 25{,}000{,}000 \text{x} \frac{102}{100} = 25{,}500{,}00000$$

Repurchase Price   25,004,861.10

Worked example: applying an initial margin to calculate the 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)
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%

$$\text{Purchase Price} = \frac{25,530,83333}{\frac{102}{100}} = 25,030,22875$$

Repurchase Price	25,035,095.73

(b)   where the collateral is subject to a Haircut

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

Worked example: applying a Haircut to calculate the 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)
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%

$$\cancel{\text{Purchase Price} = 25,530,83333 \left(1 - \frac{2}{100} \right) = 25,020,21655}$$

$$\text{Purchase Price} = 25,530,83333 \left(1 - \frac{2}{100} \right) = 25,020,21666$$

Repurchase Price	25,025,081.69

Worked example: applying a ~~h~~Haircut to calculate the required collateral value

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
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
Haircut	2%

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

Repurchase Price	25,004,861.10

3.14 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 actual/365 days (A/365F) or actual/360 days (A/360).

3.15 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).

What transactions are included in the calculation of Net Exposure?

(a)   general rule

3.16 The calculation of Net Exposure should include all transactions between two parties for which:
- the Purchase Date is today or earlier; and
- the Repurchase Date is today or later.

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

3.19   Transactions which fail on their Purchase Date should be removed from the calculation of Net Exposure on next business day and not included until the failure has been remedied by the Seller or the transaction has been terminated by the Buyer.

3.20   Transactions which fail on their Repurchase Date should continue to be included in the calculation of Net Exposure until the failure has been remedied by the Buyer or the transaction has been terminated by the Seller, as the transaction will continue to have a Transaction Exposure.

3.21   Where margin is paid or delivered for value on T+1 and T+2, the inclusion of repos up until their Repurchase Date means that margin may be paid or delivered after the Repurchase Date. This may appear odd but the alternative is not to margin for collateral price movements over the last one or two Business Days of a transaction, which is a greater risk than overextended collateralisation. Any excess margin delivered as a result of this practice will be eliminated by the next margin call. Paying or delivering margin for value on T+0 may not entirely eliminate this problem, as margin will still be paid or delivered on the day (Repurchase Date) that the underlying Transaction Exposure disappears and is unlikely to then be returned until the next Business Day. However, T+0 margin will fully significantly reduce the size of the problem.

3.22   It is currently not market practice to include transactions in the calculation of Net Exposure between their Transaction Date and Purchase Date. The rationale is that, if the Seller fails to deliver collateral on the Purchase Date, provided the Buyer has not paid the Purchase Price to the Seller, the Buyer will only have an interest rate risk, similar to the counterparty risk on a derivative, sometimes called a 'replacement cost', rather than the type of credit risk to which a counterparty is exposed once an exchange of cash and collateral has actually taken place (the risk of losing principal). Such a risk could be hedged with interest rate risk management instruments rather than collateral. However, CCPs require such exposures to be collateralised.

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> **Worked example: what transactions to include in the calculation of Net Exposure**
>
> 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:
>
> | transaction date | Purchase Date | Repurchase Date | type | include? |
> |---|---|---|---|---|
> | | 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 | no |
> | 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 | no |
> | 1-Mar-12 | 5-Mar-12 | 5-Apr-12 | 1M | no |

(b)   forward repos

3.23   It is also currently 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 is the same as that applied ~~to~~ in paragraph 3.22 above to non-forward transactions: until collateral and cash are exchanged on the forward Purchase Date, the only risk on the transaction that 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 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, similar to the counterparty risk on a derivative, sometimes called a 'replacement cost', rather than the type of 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. However, CCPs require such exposures to be collateralised.

3.24   By the time of the Purchase Date of a forward repo, a Net Exposure is likely to arise because the required Market Value of the collateral (taking account of any initial margin or Haircut) will almost certainly have diverged from the

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Purchase Price. Rather than mitigating this credit risk by margining, parties can opt to use the procedure set out in 2(b)(ii) of Annex I of GMRA 2000 and 2(c)(ii) of Annex I of the GMRA 2011, which allows parties to defer identification (and Confirmation) of the issue or issues of securities to be delivered as collateral until two Business Days prior to the forward Purchase Date. Until then, the collateral is described only by a generic reference to a type or class of securities, for example, the issuer or class of issuer, or maturity or range of maturities. This means that the Market Value of the collateral can be adjusted shortly before the forward Purchase Date to match the Purchase Price (taking account of any initial margin or Haircut).

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).

3.26   Because the dirty or gross price of a collateral 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.

3.27   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 and call, 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 where the same security is repoed and reversed between two parties. It also avoids generating higher margin calls where the same security is repoed and reversed between two parties. 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.

3.28   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

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collateral price movements, parties can agree to intra-day margin calls, which should use the latest available price.

3.29 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 this party.

3.30 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.

3.31 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 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. 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 margin 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 also paragraphs 2.48-2.49 above).

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 acceptable threshold (see the next sub-section).

Margin thresholds and minimum transfer amounts

3.34 Parties to repurchase agreements 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, the latter term is best used to define the minimum size of a margin call (which will usually be the same as the threshold but could differ).

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3.35   A Net Exposure below the margin threshold and minimum transfer amount is an unsecured credit exposure and should be subject to the credit limit for repo.

3.36   The margin threshold and minimum transfer amounts should be agreed before trading starts. In practice, parties usually record mutually-agreed margin thresholds and minimum transfer amounts in their GMRA.

3.37   A party may prefer not to agree a minimum transfer amount with another party and thereby commit itself to potentially extending unsecured credit. Instead, it may decide on a confidential margin threshold and minimum transfer amount that it will observe internally, but will not make that amount known to the counterparty. This will allow it to reduce or eliminate the margin threshold and minimum transfer amount in the event of concerns arising over the creditworthiness of the counterparty.

What is the deadline for making a margin call?

3.38   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.

3.39   If a party receiving a margin call wishes 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?

3.40   Securities offered as margin on repurchase agreements should 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. It is best practice to specify acceptable margin securities in their GMRA. If this is not practicable, the margin-taker should act reasonably and in good faith when offered margin securities.

Should initial margin or Haircut be deducted from margin securities?

3.41   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. However, 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. In the GMRA 2011,

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provision is made for a Haircut (but not an initial margin) on margin securities. Such a Haircut is called Margin Percentage (see section 2(aa) of GMRA 2011).

What is the deadline for delivering margin?

3.42 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 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).

Can margin securities be substituted?

3.43 Securities given as margin by one party to a repo 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

3.44 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 3.56 below).

3.45 Interest should be accrued on cash margin at a rate indexed to a reference rate agreed between the parties plus or minus an agreed spread. Common reference rates are overnight indexes such as EONIA for EUR, SONIA or RONIA for GBP and Fed Funds Effective for USD. Such overnight indexes are considered appropriate because of the uncertainty about the duration of margin.

3.46 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.

3.47 The consequences of negative interest rates on cash margin are discussed in paragraph 2.50.

How is "repricing" used to eliminate Net Exposures?

3.48 Net Exposures on sell/buy-backs and many repurchase agreements are not eliminated by means of margin. Instead, the 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). 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

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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.

3.49   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.

3.50   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.

3.51   Under the GMRA, when a transaction is adjusted, the parties can agree to allow the substitution of the collateral.

How are forward repos margined?

3.52   By the time of the Purchase Date of a forward repo, a Net Exposure is likely to arise because the required Market Value of the collateral (taking account of any initial margin or Haircut) will almost certainly have diverged from the Purchase Price. Rather than by margining, this credit risk can be mitigated 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. Alternatively, margining can be avoided by using the mechanism described in paragraphs 3.23-3.24 above of deferring identification (and Confirmation) of the issue or issues of securities to be delivered as collateral until two Business Days prior to the forward Purchase Date.

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 unless the second party specifically requests the return of previous margin when making a margin call on the first party.

What happens if margin is not delivered?

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

3.55 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.

3.56 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).

Margin parameters to be agreed between parties before trading.

3.57 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.
- Margin thresholds and minimum transfer amounts.
- 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.

~~3~~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

~~3.1~~   4.1   Where the Buyer in a repo fails to deliver equivalent 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).[7] Where a Seller decides to trigger a 'mini close-out' (which is an exceptional step --- see paragraph ~~3~~4.3 below), in order to minimise the interval between the 'mini close-out' and a buy-in on the 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. The advisory notice should be served on the same day as the fail or as soon as the Seller decides to trigger a mini close-out, if that is later, but otherwise as early as possible on the morning of the next Business Day. 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 a mini close-out notice by close of business. An example of an advisory and mini close-out notice is provided in Annex II~~V~~ (options A and B, respectively).

~~3.2~~   4.2   If a Seller triggers a mini close-out, it is best practice for the Seller to accept partial delivery of the equivalent security from the Buyer (see paragraph ~~2.47~~2.44 above).

~~3.3~~   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 banks 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 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. In addition, the mini close-out would have to take into account movements in the value of collateral between the Repurchase Date and the date of the mini close-out calculation.

Best practice recommendation. It is best practice for the Seller in a repo on which the Buyer has failed to deliver equivalent collateral on the Repurchase Date, who

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[7] Note that a mini close-out is different from the 'buy-in' procedure used in the cash market. The former results in a net settlement of the difference between the Repurchase Price and the Default Market Value of the collateral. The latter seeks to arrange an alternative source of supply and provide compensation for any price difference.

Coupon, dividend and other income payments on collateral

3.44.4 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 Repurchase Price is fixed or calculable, 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 equivalent compensatory income payments to the Seller (often called 'manufactured payments'). On the other hand, if the issuer does not make an income payment due on collateral, the Buyer does not have to make the equivalent compensatory payment to the Seller. 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.

3.54.5 In a repurchase agreement, an equivalent equivalent compensatory income payment from the Buyer is due on the same day as the corresponding income payment by the issuer of the collateral. But in a sell/buy-back, the equivalent compensatory income 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 equivalent compensatory income payment plus reinvestment income is deducted from the Sell Back Price or Repurchase Price (see paragraph 2.51 above). This can cause a problem if, in practice, the coupon is not paid to the Buyer by the issuer of the collateral in a sell/buy-back (ie there is a default by the issuer). The Buyer will suffer the loss of the equivalent compensatory income 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 equivalent compensatory income payment (plus reinvestment income), despite the intention that he should be the party exposed to the risk of any 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 equivalent income 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 an agreed amendment to their GMRA or, if that is not practicable practical, by inclusion in their Confirmations.

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3.64.6 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 ~~equivalent~~ compensatory income payment should start on the next Business Day.

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 set 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 likely to turn out to be different from the assumed 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 appears to contradict 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 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 practical, in Confirmations, to the effect that the Repurchase Price (Sell Back Price) will be changed to reflect the resetting of the coupon.

Exercising agreed rights of substitution

3.74.8 Ideally, substitution should be performed by means of a simultaneous delivery-versus-delivery (DVD) exchange of the equivalent collateral and substitute collateral; or by back-to-back (delivery-versus-payment) DVP deliveries.[8] However, DVD and even back-to-back DVP deliveries are often

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

not possible or practicable, in which case, it is usual 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.

3.84.9 Although the Seller may have an agreed right of substitution, 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 2.302.27 above).

3.94.10 Rights of substitution can be sought not only by the Seller from the Buyer, but parties can agree rights of substitution on margin securities held by either.

The issuance of termination notices to counterparties

3.104.11 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 prompt the counterparty to take urgent action to help remedy the underlying problem. Banks 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, this does not mean that the repo desk should try to delay or prevent the issuance of a termination notice.

Best practice recommendation. It is best practice, if time allows, before serving termination notices, other than Default Notices or in the case of the termination of an open repo, to give advance notice to a counterparty, including their own repo desk, of the intention to serve a notice. However, repo desks should not try to delay or prevent the issuance of such notices.

3.114.12 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 IIIV.

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

3.124.13   When the agreed terms of a repo are amended or updated after its Purchase Date, or an option is exercised, it is best practice to promptly confirm of or affirm the change. Confirmation or and affirmation will constitute prima facie evidence of the amendment, or update or exercising of an option in the event of a dispute.[9] Confirmation and affirmation areis particularly important in structured transactions, such as term repos, evergreen repos and floating-rate repos. Confirmation or and affirmation is 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 terms would be greater.

3.134.14   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 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 terms of a repo. Updates should be cross-referenced to the original Confirmation.

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[9] 'Amendments' mean mutually-agreed variations changes toin the original contractual terms of the transaction, such as changes in initial margin or Haircut. 'Updates' mean events changes to prices and other contract details envisaged in the original contract, such as the payment or transfer of margin, the substitution of collateral, re-fixing of the rates on floating-rate repos, and the allocation and pricing of collateral on forward repos, the re-pricing of open repos (changing the original repo rate) and the termination of open repos (see paragraph 3.10 above). 'Exercising an option' includes decisions such as calling margin, substituting collateral and re-pricing or terminating open repos.