Interplay between EU ETS Registry and Post Trade Infrastructure

Consolidated Report

January – *2015*

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Interplay between EU ETS Registry and Post Trade Infrastructure: Consolidated Report

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The views expressed in this report represent only the views of the authors and not those of the European Commission.

Contents

Introduction to Consolidated Report

DG Climate Change of the European Commission (DG CLIMA) wished to understand the interplay between the EU Emissions Trading Scheme (EU ETS) registry (known as the single EU ETS registry or the Union Registry) and post-trade infrastructure in the financial markets, and transparency in the carbon market. DG CLIMA awarded Europe Economics and Norton Rose LLP the tender CLIMA.B.1/SER/2012/0026 to conduct the relevant research.

This report contains legal and economic analysis related to how various financial market rules would interact with the EU ETS.

- Task 1 (Sections 2–15 of this consolidated report) includes analysis of how the regulation of post-trade financial services (such as clearing and settlement) could apply to the EU ETS. It also includes a high-level cost-benefit analysis of extending the Financial Collateral Directive to emission allowances. In addition, stakeholder engagement (Task 6) involved a survey and a workshop. A summary of the results is included at Section 15.
- Tasks 2–4 (Sections 16–18) includes analysis of how the pre- and post-trade transparency requirements and the proposals related to systematic internalisation would impact on the EU ETS.
- Task 5 (Section 19) includes analysis of policy proposals for a threshold for information disclosure in the emissions market.

The work on these tasks was conducted in three separate phases:

- Work on the Task 1 report was completed on 22nd August 2013.
- Work on the Tasks 2–4 report was completed on 17th November 2014.
- Work on the Task 5 report was completed on 22nd May 2014.

A report was produced for each phase, which have now been consolidated into this report. Since each report was intended to be readable on a standalone basis, there is a degree of repetition between them. This has not been changed as part of the consolidation into this report. This offers the benefit that each report can still be read on a standalone basis, without undue cross-referencing to other sections.

We also highlight that the research underlying the various reports have not been updated as part of this consolidation into a single report.

Task 1 Report

Europe Economics

1 Executive Summary

1.1 Introduction

Europe Economics and Norton Rose LLP were awarded by DG Climate Change of the European Commission (DG CLIMA) the tender CLIMA.B.1/SER/2012/0026 with respect to the interplay between the EU Emissions Trading Scheme (EU ETS) registry (known as the single EU ETS registry or the Union Registry) and post-trade infrastructure in the financial markets, and transparency in the carbon market.

This final report has been prepared by Europe Economics and Norton Rose Fulbright LLP in respect of Task 1 as set out in the document headed "Specifications to Invitation to Tender CLIMA.B.1/SER/2012/0026 Interplay between the EU ETS registry and post-trade infrastructure in the financial markets, and transparency in the carbon market".

The content of Task 1 has been reproduced below for ease of reference, split into its three Sub-Tasks:

"1. Interplay between the single EU ETS registry, the post-trade infrastructures in the financial markets and legal certainty:

- 1.1 Provide a stock-taking analysis of the interaction between the regulatory regime applicable to the EU ETS single registry on the one hand and the EU regulatory framework (encompassing both existing measures and those still in development) for post-trade market infrastructures in the financial markets. This analysis should identify any significant inconsistencies and gaps and map out those interactions between the two frameworks which are critical to ensuring safe, sound and efficient emissions trading and adequate compliance under the EU ETS.
- 1.2. Provide an analysis of the desirability of possible extension of the Financial Collateral Directive (the FCD) to emission allowances, and thus of allowing clearing houses that accept emission allowances as Collateral (including in the context of the auctioning of emission allowances) to be covered under the safeguards provided for in the FCD, and its impact, including on the clearing houses, market participants, cost of Collateral and liquidity.
- 1.3. Based on the outcome of the analysis, the contractor will provide initial recommendations for further, longer-term development of the regulatory regime of the EU ETS single registry as the central infrastructure to hold and transfer allowances".

We set out below a high level summary of our conclusions and recommendations in relation to each Sub-Task.

1.1.1 Sub-Task 1.1

Based on our detailed analysis set out in this report, our opinion is that the inclusion of EU emission allowances (EUAs) in a number of critical pieces of financial markets legislation, such

as the Markets in Financial Instruments Directive (MiFID) and the FCD in particular, would be a positive development from both a legal and commercial perspective in that treating EUAs in a similar manner to other Financial Instruments (as defined in MiFID and set out in the Glossary of this report) under financial markets legislation in the EU, to the extent possible, would bring a number of benefits for the majority of market participants.

Table 1.2 below summarises our analysis of the interaction between the regulatory regime currently applicable to the Union Registry and the current EU regulatory framework for post-trade market infrastructures in the financial markets, taking into account the provisions of the following pieces of legislation presented in Table 1.1 (as well as considering their implementing measures where appropriate).

Table 1.1: Relevant legislation

Legislation (including proposals and forthcoming initiatives)	Short title used in this report
Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community	**Auctioning Regulation**
Proposal for a Regulation of the European Parliament and of the Council on improving securities settlement in the European Union and on central securities depositories (CSDs) and amending Directive 96/26/EC - Council Compromise text dated 22 October 2012	**CSDR - CSD Regulation**
Regulation (EU) 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories.	**EMIR - European Market Infrastructure Regulation**
Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading and amending Council Directive 96/61/EC, as amended from time to time.	**EU ETS Directive**
Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial Collateral arrangements, as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2002/47/EC on financial Collateral arrangements as regards linked systems and credit claims	**FCD - Financial Collateral Directive**
Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/61/EEC and 93/6/EEC and Directive 200/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC	**MiFID**
Proposal for a Directive of the European Parliament and of the Council on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council (Recast) - Council compromise text dated 13 February 2013.	**MiFID II - Markets in Financial Instruments Directive**
Proposal for a Regulation of the European Parliament and of the Council on markets in financial instruments and amending	**MiFIR - Markets in Financial Instruments Regulation**

Legislation (including proposals and forthcoming initiatives)	Short title used in this report
Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories - Council compromise text dated 13 February 2013.	
Commission Regulation (EU) No 389/2013 establishing a Union Registry for the trading period commencing on 1 January 2013, and subsequent trading periods, of the EU ETS pursuant to the EU ETS Directive 2003/87/EC and Decisions No 280/2004/EC and No 406/2009/ EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011	**Registry Regulation**
Directive 98/26/EC of the European Parliament and of the Council on settlement finality in payment and securities settlement systems as amended by Directive 2002/47/EC.	**SFD - Settlement Finality Directive**
The legislative principles (Principles) relating to a potential harmonisation of the EU legal framework for securities holding and transactions set out in the consultation document dated 5 November 2010 and published by the European Commission in the interests of seeking stakeholders' views on the harmonisation of legislation on legal certainty of securities holding and dispositions	**Securities Law Legislation Consultation**

Table 1.2 also summarises our analysis of the impact of potential future developments in these markets. We note that the Principles set out in the SLL Consultation[1] have not been formally proposed by the Commission and should only be considered to be an indication of some of the issues that the Commission intends to address in any future legislative proposal in this area.

This table summarises the inconsistencies and gaps we have identified in carrying out this analysis and provides high level recommendations for Commission actions to address these issues:

[1] http://ec.europa.eu/internal_market/consultations/2010/securities_en.htm.

Table 1.2: Summary of analysis

Theme	Conclusion	Recommendations
Clearing	There is little inconsistency between EMIR/ MiFIR requirements and the Union Registry arrangements	No action required
Settlement	Unclear how CSDR applies to EUAs if neither Union Registry nor auction platforms' CCPs are CSDs	Commission to clarify relevance of inclusion of EUAs in Article 5.1 of CSDR
Settlement Finality	Need for CCPs' designated systems and finalisation provisions in Registry Regulation to work together	Commission to clarify extent to which Union Registry is a participant in CCPs' systems and standardise timing of entry of transfer orders into CCPs' systems by reference to Registry Regulation
Post Trade Reporting and Transparency	There is little inconsistency between EMIR/ MiFIR requirements and Union Registry arrangements	No action required
Applicability of Principles in Securities Law Legislation Consultation	Unclear exactly how SLL Consultation Principles would apply to EUAs and different conclusions about benefits for different Principles	Commission to decide whether to disapply the Principles for EUAs completely or for certain Principles and whether to incorporate certain Principles in Registry Regulation. Commission should also clarify width of account provider definition and use of intermediaries for holding EUAs

Source: Norton Rose Fulbright Analysis.

While we have not identified significant inconsistencies or gaps in the majority of the legislation, there are several Principles under the SLL Consultation that have no real relevance to EUAs making it unadvisable to apply the entirety of the Principles in the SLL Consultation to EUAs. Our analysis suggests that the inclusion of EUAs under the SLL Consultation would require action to disapply certain of the Principles specifically in relation to EUAs in order to make the Principles in the SLL Consultation work with the existing legislation for (and characteristics of) EUAs. Within the Principles set out in the SLL Consultation there are also several Principles where the issue that the SLL Consultation text seeks to address is already covered by the Registry Regulation (with varying degrees of consistency).

To summarise, our analysis suggests that taking steps to make EUAs subject to the relevant Principles in the SLL Consultation would be unlikely to enhance legal certainty in the market for EUAs. In practice, given that it would not be possible to apply the Principles in the SLL Consultation to EUAs wholesale and it appears likely that it would be potentially problematic to apply the Principles of the SLL Consultation on a piecemeal basis across different types of Financial Instruments and EUAs, we recommend that the Commission should therefore consider adding any of the key Principles set out in the SLL Consultation that have value for

EUAs (such as those relating to the creation, perfection and enforcement of security interests) to the Registry Regulation or other EUA specific legislation.

1.1.2 Sub-Task 1.2

The FCD does not currently extend its legal protections to financial Collateral arrangements relating to the provision of EUAs as Collateral. Our analysis suggests that there is to some degree a causal link between this and, firstly, the reluctance of market participants to currently accept or provide EUAs as Collateral and, secondly, the lack of market solutions or services for EUA collateralisation. Our legal and market analysis suggests that extending the protections of the FCD to cover EUAs could to some extent encourage Collateral takers and Collateral givers to make greater use of emission allowances. For example, increased protections for Collateral takers could encourage entry to or activity on primary and secondary markets by a range of market participants in that it will allow participants more choice in terms of the Collateral they provide. In turn, commentators have noted that this could allow compliance users to make more productive, efficient and economic use of their emission allowances by utilising them as Collateral for trading activity rather than simply holding them effectively dormant in an account until the relevant surrender date and this could also have wider benefits in the market.

The main economic advantage to using allowances as Collateral is the savings to firms of the opportunity costs of raising other Collateral, such as cash and sovereign bonds. We estimate that the possible benefit across the market in terms of the saved costs of raising other Collateral could be around €170 million a year. This figure would increase significantly with any increase in the price of EUAs.

The latest MiFID II proposals envisage bringing spot emission allowances within the scope of financial regulation in the EU by classifying emission allowances as Financial Instruments within the meaning of MiFID. However, separate legislative action will need to be taken to amend the FCD in order to bring EUAs within the scope of the FCD. In addition, our legal and market analysis suggests that certain further legal changes within EU law may need to be implemented in order to address certain other legal issues that may currently discourage market participants from providing or receiving emission allowances as Collateral under Collateral arrangements, such as changes to security arrangements and legal certainty.

Our overall view is that simply extending the FCD to cover EUAs, without seeking to address these other legal issues, would not be sufficient in itself to overcome the current market reluctance to engage in making use of collateralisation opportunities for EUAs. As a result we recommend that the Commission should look into a package of more extensive legal changes. There are also economic issues that may inhibit the acceptance or provision of allowances as collateral, such as the price level and volatility; many of these will depend on market forces to change.

1.1.3 Sub-Task 1.3

Based on our analysis, we set out in Section 10 of this report, a number of initial recommendations for the further, longer-term development of the regulatory regime in relation to EUAs. To summarise these recommendations, based on our analysis set out in this

report, we consider that the current Commission proposals and movements within the EU legislation in the market for EUAs are heading in the right direction. For example, the changes to the previous Article 37 of the Registry Regulation (now Article 40), the proposed changes to the definition of Financial Instruments under MiFID II and the proposals in relation to the SFD are all helpful in addressing certain concerns and issues in the market. As noted above with respect to Sub-Task 1.2, we think that the extension of the FCD to EUAs would be another move towards solving some of the remaining issues in the market.

As well as these changes, we recommend that the Commission should look to put in place a legislative or practical operational solution to the current absence of a satisfactory mechanism to register or enforce a security interest at the Union Registry. Putting in place a market pleasing solution that deals with this problem could help to encourage the productive use of EUAs as Collateral. In addition, we recommend that the Commission should try to resolve or otherwise seek to encourage Member States to resolve the ongoing issues around legal certainty and title in relation to EUAs, i.e. in connection with Article 40 of the Registry Regulation, either through further amendments to the legislation or by providing guidance or encouraging dialogue between the Member States in order to attempt to address market concerns around these issues.

We also consider the scope for adding extra functions to the Union Registry and of involving a private party in its operation.

2 Approach and Assumptions

2.1 Our approach

Before moving to detailed analysis in relation to each of the Sub-Tasks, Section 3 of this report outlines some relevant background to the EU ETS registry system upon which some of the later analysis draws. In particular, we discuss in Section 3 of this report:

- Summary statistics of the EU carbon market.
- The structure of the Union Registry.
- The manner in which allowances are created, allocated and held under the Union Registry.

The following Sections of this report then address each of the Sub-Tasks in turn, in each case providing the detailed analysis together with an executive summary drawing on the key conclusions and recommendations to be taken from the analysis.

In preparing our analysis in relation to each of the Sub-Tasks, we have considered in relation to each Sub-Task the demands of different market participants active in the market for EUAs, for example compliance users, central counterparties (CCPs), clearing members and other market participants. Our approach and methodology in preparing the analysis in relation to each of the Sub-Tasks is discussed below.

2.2 Sub-Task 1.1 (see Sections 4 to 8)

This Sub-Task is focused on mapping the EU ETS regulatory structure against the EU regulatory framework for post-trade market infrastructures in the financial markets. As such, there are certain policy areas which fall outside the scope of the Sub-Task. Those include:

- The pros and cons of inclusion of EUAs as Financial Instruments.
  We consider this a policy area that has been adequately addressed in relation to the MiFID II proposals. Our approach is therefore to assume that EUAs will become Financial Instruments within the meaning of MiFID and we focus on the period once this has occurred rather than the interim period. Please note that certain derivative contracts on EUAs (for example, exchange traded and cleared EUA futures, options, etc.) fall within the current definition of Financial Instruments under MiFID.
- The merit of financial services legislation that is already in place or about to be implemented otherwise than in relation to EUAs.
  For example, we do not discuss the pros and cons of MiFID, EMIR, CSDR, FCD, SFD and the Principles set out in the SLL Consultation in relation to any instruments or Financial Instruments other than EUAs or derivative instruments on EUAs.

This Sub-Task is also limited by the scope of the analysis agreed with the Commission. In particular, whilst we have considered certain issues such as the legal nature of emission allowances, this has been done at a high level and, as such, this report cannot be taken as a comprehensive survey of each Member State's approach to such issues.

For the substantive analysis that we have summarised in this report we have used a thematic approach in order to break down the post-trade environment into each of its critical stages and then compared the infrastructure and regulatory regime in the financial markets against the equivalent regime applying to the EU ETS market.

The figure below presents a simple overview of the post-trade process.

Figure 2.1: Overview of post-trade process

We summarise in the table below each of the key themes/critical stages that we have considered in preparing this analysis (together with a brief description of the processes and the risks/benefits involved at each relevant stage of the post-trade infrastructure). These stages are closely linked to the post-trade processes summarised in Figure 2.1. The table below also sets out the key areas of interface in terms of the relevant EU legislation that we have examined in the analysis under each theme.

Table 2.1: Key themes reviewed in analysis

Theme / stage of post-trade infrastructure	Key EU legislation
Clearing (Section 4) • Process whereby a financial institution (typically a CCP) acts as an intermediary between buyer and seller to a trade • The CCP steps in and ensures the buyer will receive delivery of the purchased item under the trade (i.e. a EUA) and the seller will be paid, in accordance with standards and timings set by the parties (or by the CCP) • CCPs allow for simplification of settlements between multiple buyers and sellers through netting of trade	Auctioning Regulation, Registry Regulation, EMIR and MiFID

Theme / stage of post-trade infrastructure	Key EU legislation
obligations • CCPs centralise counterparty risk to the CCP so parties to the trade are not exposed to one another	
Settlement (Section 5) • Process whereby an item (i.e. a security or EUA) are delivered to the new owner and cash flows the other way, resulting in discharging of obligations under the trade • Typically is a simultaneous exchange for payment of money to fulfil contractual obligations under the trade • Settlement typically takes place a number of days (e.g. T+2) after the trade date (T) but this depends on market conventions / rules • Parties have greater settlement risk where a trade is not cleared or settled through a settlement system • Clearing also facilitates settlement through netting and novation to simplify settlement processes	Registry Regulation and CSDR
Settlement Finality (Section 6) • Legislation and associated processes of settlement systems aimed at reducing the systemic risk associated with participation in payment and securities settlement systems, particularly risk of participant insolvency • Applies to payment and securities settlement systems as well as any participant in such a system, and to Collateral security provided in connection with the participation in a system • Plays an important function of risk reduction and legal certainty in settlement	Registry Regulation and SFD
Post Trade Reporting and Transparency (Section 7) • Financial markets legislation requires trades in certain instruments to be reported to regulators or to trade repositories • Enables regulators to oversee trading and positions	Registry Regulation, EMIR and MiFID
Securities Law (Section 8) • The legal framework for holding securities differs between Member States and as such creates legal uncertainty in relation to cross border transactions and obstacles to the exercise of rights attaching to securities by investors. The SLL aims to make the holding and disposition of securities safer and easier from a legal perspective by ensuring that the core mechanisms of Member States' legal frameworks are compatible for these purposes, even if not identical. • Proposals in the SLL Consultation sought advice from Member States, market participants and other stakeholders, in particular investors, central securities depositories, account providers (credit institutions, investment firms, and others), issuers and investors , on a	Registry Regulation and SLL

Theme / stage of post-trade infrastructure	Key EU legislation
certain number of principles, on which the Commission could base its future legislative proposals in order to improve the EU-wide legal framework	

Source: Norton Rose Fulbright analysis.

An overview of each stage of the post-trade process together with our detailed analysis in relation to each theme / stage of the post-trade infrastructure follows in Sections 4 to 8 of this report.

2.3 Sub-Task 1.2 (see Section 9)

The purpose of this Sub-Task is to identify the legal and commercial advantages and disadvantages of extending the definition of financial Collateral under the FCD to cover emission allowances, taking into account the impact on market participants, including Compliance users, clearing houses/CCPs and other market participants.

Our analysis sets out an overview of the key provisions of the FCD and assesses the applicability of the protections of the current FCD Collateral regime to the particular legal and market characteristics of EUAs. We have assumed for these purposes that the MiFID II proposals for the re-categorisation of EUAs as Financial Instruments for the purposes of MiFID will go ahead.

The key pieces of legislation covered in this Section include the Financial Collateral Directive and Registry Regulation.

2.4 Sub-Task 1.3 (see Section 10)

Our recommendations in relation to Sub-Task 1.3 build upon the analysis in relation to the two previous Sub-Tasks and set out our initial recommendations for the further, longer term development of the regulatory regime of the EU ETS single registry as the central infrastructure to hold and transfer EUAs.

2.5 Glossary of terms

We set out in the Appendix of this report for ease of reference a glossary of the key and commonly used terms in the main body of this report.

3 Introduction to EU ETS Union Registry System and Carbon Market

3.1 The carbon market within the EU: EU ETS

Here we present an overview of the primary carbon market. A more detailed overview of the carbon trading market is presented in Appendix 4.

In 2003, the European Union established the European Union Emissions Trading Scheme (EU ETS) under the Directive 2008/87/EC which aimed to achieve carbon emissions reduction across all Member States in a cost effective way. Since its introduction, the Scheme has accounted for the majority of emissions trading within the global carbon market and is the largest multi-national emission trading scheme in the world.

The EU ETS adopted a cap-and-trade system within which an absolute quantity limit on carbon emissions is set to the installations covered. Trading of allowances between installations is then facilitated under the scheme to enable them to buy or sell the allowances to meet their cap.[2]

The scheme is broken down into three phases of trading and significant changes have been implemented in each trading period to improve the efficiency of the emission trading market.

3.1.1 Phase one (2005 to 2007)

The first trading period, which was also known as the trial period, was dedicated to act as a learning period for emission trading within EU. It included around 12,000 installations responsible for approximately half of all EU carbon emissions.[3] The emission of carbon dioxide in the following sectors was covered in this Phase: power generation, oil refinery, steel, cement and lime, pulp, board and paper.[4]

In this initial period, most of the allowances were issued for free to the companies of installations which led to criticism of "windfall" profits for some operators through the resale of allowances in the market. The total allocation of allowances exceeded actual emissions, due to over-estimation of demand by some Member States, which caused the price of allowances to fall.

The Phase was structured in such a way that banking and borrowing of allowances intra-period was allowed but unused allowances were not permitted to be carried over to the next period, i.e. no inter-period banking.

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2 A.Ellerman, et.al. (2008), "The European Union's Emissions Trading System in perspective", Pew Center – Global climate change.

3 Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".

4 Cameron Mckenna, "Phase III of the EU Emissions Trading Scheme: your Q&A guide", http://www.law-now.com/cmck/pdfs/nonsecured/phase3.pdf.

3.1.2 Phase two (2008 to 2012)

This period coincided with the first Kyoto commitment period, and is often referred to as the "Kyoto Phase", aimed at realising the goals set in the Kyoto Agreement. Significant changes in design were implemented to reduce the price volatility of the market and to reduce carbon emissions in line with the Agreement. The key changes were:[5]

- The overall EU cap was set centrally by EU registry;
- Significant reduction in emission caps: as much as a 25 – 35 per cent lower cap was set in markets in Eastern Europe;
- Inter-banking of allowances to allow excess allowances in Phase Two to be used in the next period; and
- Inclusion of the aviation industry to cover emissions on flights operating in the EU in 2012.

The issue of allowances remained largely free of charge and only around four per cent of allowances were auctioned.[6]

A series of events occurred in Phase Two that raised concerns about the security measures in the EU ETS. These included the VAT fraud and CER recycling in 2009 and 2010 respectively, a wave of cyber-attacks targeted the Registry system of the ETS, and over three million units of allowances being stolen from national registries in early 2011.[7]

A series of changes have subsequently been implemented to strengthen the system. These include the introduction of the Single Registry on behalf of all national registries for the entire EU issuance of allowances and the functions of the ETS, while the functions required under the Kyoto Protocol, such as management of the surrendered units, remain the responsibility of national registries.[8] Also, a common auctioning system for the distribution of allowances has been established to provide equitable access for emitters of all sizes. [9] To address the risk of criminal attacks that occurred in Phase Two, an enhanced registry infrastructure with a number of new security measures has been put into force in this Phase, including stronger and harmonised account checks and transaction security.[10]

3.1.3 Phase three (2013 to 2020)

For Phase Three, emission caps will be set in line with the goal of achieving emissions at 20 per cent below the 1990 level by 2020. The cap is structured with total number of allowances decreasing in a linear manner to meet this target. Phase Three also introduces a significant reduction in the percentage of international credits (CERs/EURs) that can be used to comply with the emissions requirement.[11]

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5 J.Nordby (2011), "Price Relationships between EUAs and Energy and Commodity prices".
6 Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".
7 World Bank, State and Trends of the Carbon Market 2012.
8 Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".
9 World Bank, State and Trends of the Carbon Market 2012.
10 World Bank, State and Trends of the Carbon Market 2012.
11 World Bank, State and Trends of the Carbon Market 2012.

3.2 Summary statistics of the EU carbon market

3.2.1 Emission allowance credits

The Carbon Market is made up of four types of tradable credits under the EU Emissions Trading Scheme (EU ETS). They are:

- EU Allowances (EUAs).
- EU Aviation Allowances (EUAAs).
- Certified Emission Reduction (CERs).
- Emission Reduction Units (ERUs).

The primary trading credit is the EU Allowance (EUA) and one EUA entitles the holder to emit one tonne of carbon dioxide within the valid period of one year.

The EU Aviation Allowance (EUAA), which also entitles the holder to emit one tonne of carbon dioxide within the valid period, has been created specifically for the compliance of aircraft operators and can be surrendered only by aviation operators.[12] Its tradable demand is considerably smaller than that of the other three credits.

Companies can also, within certain limits, submit qualifying credits for emission reductions accomplished outside the European Union in compliance with the ETS. These can be in the form of either a certified emission reduction (CER)[13] or an emission reduction unit (ERU).[14]

CERs are emission credits obtained through the clean development mechanism, which allows emission reductions achieved in less developed country to be credited in a developed country. CERs can be used by companies to offset their carbon usages in compliance with the EU ETS. ERUs can also be used as offsets. As with the EUAs and EUAAs they represent a reduction of one tonne of carbon dioxide relative to a baseline. These assets are produced through the Joint Implementation mechanism which promotes technology transfer between Annex 1 Countries.[15] CERs and ERUs need to be translated into EUAs in order to count for compliance purposes.

In the remainder of this report — to avoid unnecessary repetition — where we refer to emission allowances (or allowances) this should be read as referring to all of these categories. Where the specificity of the instrument is material to our analysis we refer to these instruments individually.

3.2.2 Allocation of allowances

The table below shows the general statistics on the emissions and allowances level in the ETS. All figures shown from 2012 onwards are forecasted by Barclay's commodities research. As shown by the 'net position' figures in the bottom row, there has been an oversupply of

[12] DIRECTIVE 2003/87/EC, Article 12(2a).
[13] An emission credit obtained through the clean development mechanism which allows emission reduction achieved in less developed country to be credited in a developed country.
[14] ERUs do not increase the market supply of allowances.
[15] Carbon 350: http://www.carbon350.co.uk/carbon-assets-and-offsets/erus/.

allowances since 2009 which is forecast to continue. The over-supply of allowances in terms of the difference between allocation and usage is exacerbated by the usage of offsets (ERUs and CERs).

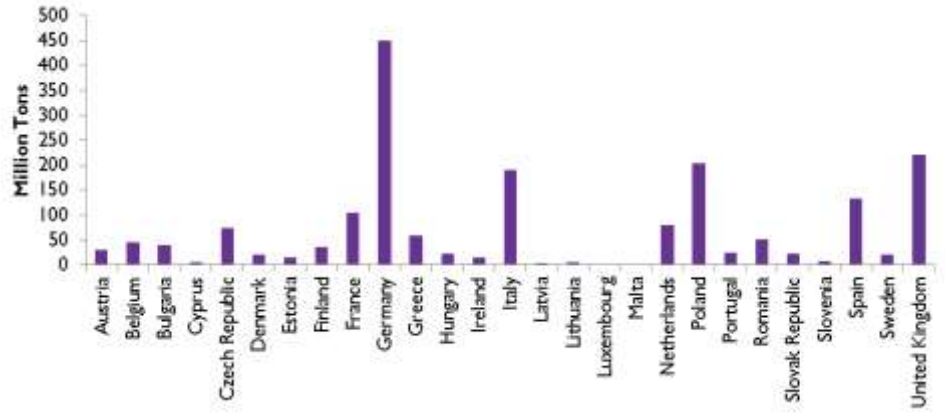
Table 3.1 Overall supply and balance in the EU ETS (in CO2 million tons)

	2009	2010	2011	2012 (F)	2013 (F)	2014 (F)	2015 (F)
EUA Allocation (cap)	2052	2079	2099	2334	2110	2072	2034
Emissions	1882	1937	1893	1952	1951	1957	1962
Emissions - cap	-170	-142	-206	-233	-159	-72	-35
ERU/CER usage	80	135	250	500	300	250	100
Net position (i.e. over-supply)	-250	-277	-456	-733	-459	-365	-241

Source: Europe Economic analysis of Carbon Market Data's company database and Barclay's Commodities Research (2013). EUA allocation includes free allocation plus auctioned volumes.

In 2011, the total number of EUAs allocated across Member States is as shown in the figure below. Installations in Germany account for the largest amount of EUAs followed by the United Kingdom, reflecting the concentration of installations in each Member State.

Figure 3.1: Allocation of allowances by Member State in 2011

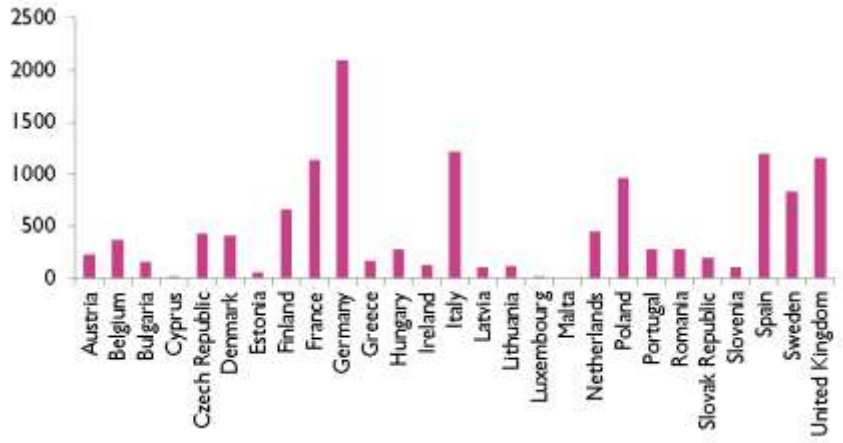


Source: Europe Economics analysis of Carbon Market Data's company database. Amounts refer to allowances allocated for free to installations, as shown in national allocation plans. Allowances allocated via auction are not included.

3.2.3 Installations and aircraft operators

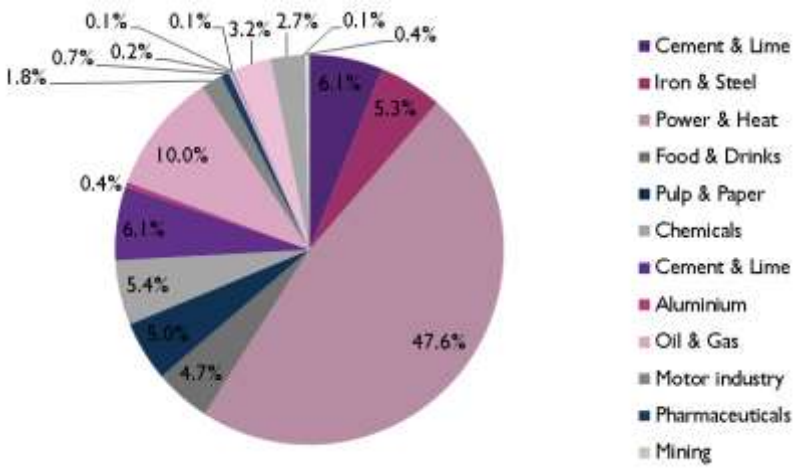
With the aim to reduce carbon emissions within the EU, the ETS has gradually increased the number of installations to be covered with the expansion in sector coverage. By Phase Three, emission caps have been placed on a total number of 13,065 installations located across the Member States. Over 2000 installations are located in Germany, the largest country by number of installations and nearly 48 per cent of all installations are operated in the power and heat industries. The distribution of installations within EU and across sectors is as shown in the figures below.

Figure 3.2: Number of installations per Member State, 2011



Source: Europe Economics analysis of Carbon Market Data's company database.

Figure 3.3: Distribution of installations by sector, 2011



Source: Europe Economics analysis of Carbon Market Data's company database.

The top five companies by emissions are all operated in the power and heat sector and their total emissions represented approximately 22 per cent of overall emissions from the installations covered by the ETS in 2011. The breakdown of emissions by company is as shown in the table below.

Table 3.2: Top five companies by emissions in 2011

Company	Installation count	Allocated allowances 2011 (million tons)	Verified emissions 2011 (million tons)
RWE	146	99	147
E.ON	243	88	97
Vattenfall	167	66	93
Enel	80	69	80
EDF	742	65	65

Source: Europe Economics analysis of Carbon Market Data's company database.

Although not captured within Carbon Market Data's database aircraft operators (i.e. airlines) are a further category of participant.

3.2.4 Other market participants

There are other participants in the EU emissions market in addition to the above.

In the primary market, allowances are traded through the auction process. Direct participants in the auction are installations and aircraft operators, as well as banks and investment firms who are acting on behalf of compliance buyers.

There are a number of other players in the secondary market.

Traders

The majority of market participants are general traders who could be solo traders or companies with memberships registered in different exchanges. There are over 100 emission members of ICE while more than 130 members of Nasdaq OMX.[16] There are three market makers[17] listed on EEX with two for spot trading and one for futures trading.[18] There are over 90 clearing membership registered with the exchanges with majority of international financial service companies operated in multi exchanges, for instance, 24 members are listed on ICE and over 70 members are accessible by the trading participants in CME.[19]

Brokers

Brokers intermediate and facilitate bilateral contracts, bringing together two independent counterparties to a transaction in the emissions market (such as banks, trading houses, commercial enterprises, public utilities and integrated energy businesses). Brokers do not take principal positions and do not, therefore, take the financial risks of the transaction they broker onto their own books.

The role of brokers in the emissions market has been declining with the increase in exchange-trading. Data from the World Bank from 2011 and more recent estimates from market

16 http://www.nasdaqomx.com/commodities/markets/.

17 They are companies which provide quotes for both buy and sell price of the financial instruments.

18 http://www.eex.com/en/Transparency/Exchange%20owned%20data/Market%20Making/Admitted%20Market%20Makers.

19 http://www.cmegroup.com/trading/energy/emissions/.

participants indicate that between 20 and 30 per cent of emissions allowance contracts are traded OTC via brokers. Exchange trading has increased as the market has become more commoditised, with mainly near-date homogenous contracts being traded as opposed to long-term forward contracts that are more bespoke and thus more conducive to trading via brokers. According to the London Energy Broker's Association (LEBA), their brokers do not have a very large role in the carbon market anymore, although some brokers do still find niche markets of products that are not commonly exchange traded, for example options.

CCPs

Central counterparties (CCPs) act as third parties to secondary trades to manage the exposures between buyers and sellers between the times of trade and settlement. The role of the CCP is to protect each party of a trade from the failure of their counterparty.

CCPs have a large role in the secondary emissions market. The majority of secondary trading in the emissions market (spot, daily futures (a proxy for spot contracts) and derivatives) takes place via exchanges, such as ICE, EEX, CME, and Nasdaq OMX, and each exchange clears its trades through a clearing house which acts as CCP to all trades. The two main clearing houses used by exchanges are ICE Clear Europe (for ICE) and European Commodity Clearing (ECC) (for EEX). Other clearing houses are CME Clearing (for CME) and Nasdaq OMX's clearing house.

The exchanges also offer clearing services to OTC participants and as such these associated clearing houses act as CCPs for OTC trades as well. In addition, LCH.Clearnet provides clearing for the global OTC spot and forward emissions markets. Therefore the majority of trades in the secondary emissions market (both on exchange and OTC) are cleared through a CCP. Estimates from market participants and trade associations indicate that only around two per cent of secondary trading in the emissions market is conducted bilaterally with no CCP clearing.[20]

CSDs

A key function of CSDs is to manage counterparty risk involved in the transfer of ownership of financial assets. As the Single Registry does not include a payment function, after a trade between two counterparties the transfer of allowances and the transfer of payment will occur at different times, thus laying risk on the first counterparty to make a transfer. CSDs can manage this risk by offering settlement services to ensure that the exchange of assets and cash happens simultaneously and efficiently (through a process known as delivery versus payment).

The role of CSDs in the emissions market is limited, and we have been informed that it is not common for CSDs to hold accounts in the EU ETS. According to information from the European Central Depositories Association (ECSDA), six CSDs offer a settlement service for the emission rights market:

- Euroclear Bank (Belgium).
- SIX SIS Ltd (Switzerland).
- Cyprus Stock Exchange (Cyprus).
- Central Depository & Clearing Company Inc. (Croatia).

[20] See Appendix 4 for more detail about the secondary market.

- KELER Ltd (Hungary).
- Clearstream Banking (Luxembourg).[21]

Clearstream (the International CSD within Deutsche Börse Group, appears to be the most active CSD in the market. Clearstream offers a Global Emissions Market Access (GEMA) service, a settlement and custody service for carbon emission rights, which acts as a single point of entry, allowing carbon emission rights to be held and settled in the settlement systems of Clearstream Banking Luxembourg.[22] [23]

Despite Euroclear Bank being set up for the settlement and safekeeping of allowances, it appears that this service has not attracted widespread use and there is no recent information available about the service (e.g. Euroclear's website does not make any mention of its activity in the emissions market). The specific CSD service set up in 2008, ClimateSettle, appears no longer to exist. We understand from ECSDA that the KELER service in Hungary is also dormant.

Custodians

Our understanding is that market participants currently make relatively little use of custodians to hold EUAs and, as a result (or perhaps as the cause), there are relatively few custodians offering this as a service. Although one of the reasons for the under-utilisation of custodians for EUA holdings is the relative freedom of access to the Union Registry, the use of custodians for holding EUAs could increase in the future if EUAs become more valuable and if institutional investors want to hold them as part of their portfolios, as not all such persons may want an account at the Union Registry. As mentioned above, Clearstream offers a custody service through its GEMA service.

3.3 Structure of the Union Registry

The Union Registry is established pursuant to Article 19 of the EU ETS Directive and the Registry Regulation to facilitate various processes in relation to emission allowances in the EU ETS. It is a single EU-wide registry that, in conjunction with the EUTL,[24] tracks the allocation, issuance, holding, transfer, surrender and accounting of allowances. The Union Registry was created in 2012 and replaced the previous system of separate Member State registries.

The Union Registry has two main types of accounts: management accounts and user accounts. Management accounts include accounts for administrative functions relating to EU ETS such as surrender and deletion accounts whereas user accounts are operator holding accounts, person

[21] ECSDA member database http://www.ecsda.eu/site/database.html.

[22] http://www.clearstream.com/ci/dispatch/en/kir/ci_nav/1_settlement/020_icsd/050_gema.

[23] Euroclear established a CSD-like service in 2008 called ClimateSettle, through which participants agreed to have Euroclear acting as the custodian of their emissions units. Euroclear held an omnibus account at the (then) UK Registry in which it held all its participants' positions. A trade between any two ClimateSettle participants could be settled within the Euroclear system (with cash and assets transferred simultaneously) rather than requiring a registry transfer. The potential of this service depended on a large number of participants to create a critical mass to enable transactions to take place without registry movements. It is possible that such a mass was not achievable as this service no longer appears to be on offer.

[24] European Union Transaction Log.

holding accounts, aircraft operator holding accounts, trading platform accounts and verifier accounts.

The Union Registry is separate from the registries operated by certain European nations to meet the requirements of the Kyoto Protocol. However, the Union Registry itself serves as a separate Kyoto Protocol registry for the EU as a whole.

The Central Administrator is the administrator of the Union Registry. Its responsibilities include establishing and administering the EUTL. The EUTL is an independent transaction log administered by the Central Administrator. Its function is to check every transaction made in relation to allowances to identify any irregularities in relation to the issue, transfer or allocation of such allowances.

There are also national administrators. The national administrator manages the accounts of a Member State and the accounts under the jurisdiction of that Member State in the Union Registry.

The following Section 3.4 describes the processes for the creation, allocation and holding of allowances and also provides an overview of the auctioning and post-auction framework.

3.4 Creation, allocation, trading and holding of allowances

3.4.1 Creation

The number of EUAs and EUAAs created under Phase III of the EU ETS is determined by the overall caps set in accordance with the EU ETS Directive. In accordance with this, a cap for emissions from power stations and other installations (excluding aircraft operators) has been set for 2013. For each year after 2013, this cap will decrease by 1.74 per cent of the average total quantity of allowances issued annually in 2008-2012. The Commission has calculated that, in absolute terms, this will result in the number of EUAs available for allocation being reduced annually by 37,435,387.

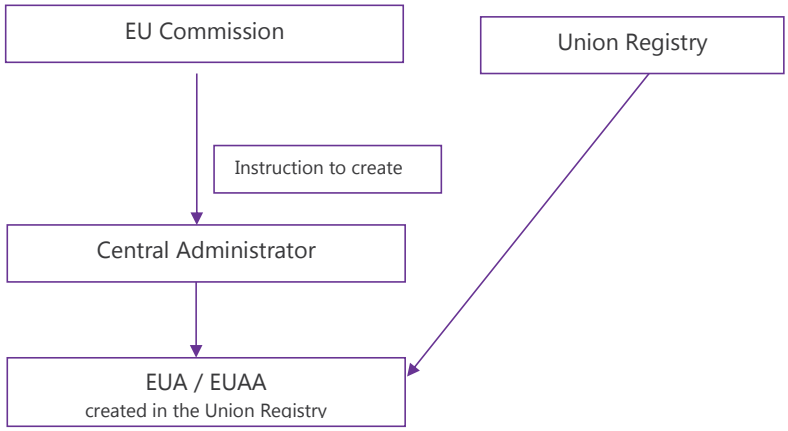
The cap in respect of the aviation sector has been set at 210 million allowances for Phase III. The aviation sector cap remains the same in each year of Phase III.

Cap-setting is a prerequisite to the issuance of allowances, to which we now turn.

Creation (1) issue of allowance

The diagram below illustrates the processes around the creation and issuance of an emission allowance.

Figure 3.4: Processes around creation and issuance of an emissions allowance



Source: Norton Rose Fulbright Analysis.

3.4.2 Allocation

The general principle underlying Phase III is that EUAs that are not allocated free of charge must be auctioned by Member States (Article 10(1) EU ETS Directive). For EUAAs, there is a difference as the aviation EU ETS was only introduced in 2012, and aircraft operators were allocated a substantial number of allowances free of charge. As such, fewer EUAAs than EUAs are to be auctioned in Phase III. The Commission has calculated that, in 2013, more than 40 per cent of EUAs will be sold through auctioning and this is expected to increase in the following years of Phase III.

Where allowances are to be allocated (i.e. free of charge), the Central Administrator transfers them from the EU Total Quantity Account to the EU Allocation Account in accordance with the national allocation tables of a Member State (Article 43 Registry Regulation). The allowances for Phase III are to transfer automatically from the EU Allocation Account to the relevant operator account (Article 56 Registry Regulation) from 1 February 2013.

Similarly, the Central Administrator will transfer allowances from the EU Total Quantity Account that belong to the new entrant reserve to the EU New Entrant Reserve Account (Article 44 Registry Regulation).

The Central Administrator transfers allowances to be auctioned for a particular year of a Phase (on behalf of the auctioneer) from the EU Total Quantity Account to the EU Auction Account (Article 42 Registry Regulation).

3.4.3 Auctioning

As explained above, most allowances during Phase III will be auctioned rather than allocated (other than in respect of EUAAs) and auctioning is therefore a critical element of the primary market. The rules for auctioning or the auctioning process are set out in the Auctioning Regulation. Under Article 4 of the Auctioning Regulation, auctions may list for auctioning EUAs

in the form of either two-day forward contracts (effectively a spot contract) or five-day futures contracts.

3.4.4 Auction platform

The Member States are obliged under the Auctioning Regulation to jointly appoint a common auction platform (CAP) to carry out auctions of allowances. The European Energy Exchange (EEX) has been appointed by the European Commission and 24 Member States as the transitional CAP. However, Germany, the UK and Poland have opted out from the use of common auction platform, with the UK awarding an auction platform licence under Article 30 Auctioning Regulation to ICE Futures (ICE Futures Europe is the auction platform) and appointing ICE Futures as its definitive opt-out platform. EEX is Germany's transitional auction platform (and is expected to be that country's definitive opt-out auction platform — further to entry into force of an enabling listing amendment to the Auctioning Regulation). Finally, Poland will use the EEX platform until it appoints its own platform in due course.

An overview of the auctioning process based on the Auctioning Regulation and EEX and ICE arrangements is set out below.

Pre- Auction

Each Member State has to appoint an auctioneer to hold auctions on the auction platform. The auctioneer is appointed by a Member State to hold auctions on behalf of the Member State. Auctioneers have to meet specific requirements of the relevant exchange before they are eligible to hold auctions on an auction platform. We note that EEX requires its auctioneers to be participants in ECC's designated system — for EEX, the auctioneer must be a "participant" as defined in Article 2(f) of the Settlement Finality Directive (SFD) (being an institution under Article 2(b), a central counterparty under Article 2(c), a settlement agent under Article 2(d), a clearing house / CCP under Article 2(e) or a system operator under Article 2(p)).

The auction platform submits an auction table to the EUTL for each auction calendar (Article 62 Registry Regulation) regarding allowances to be auctioned.

The Central Administrator will transfer the allowances from the EU Total Quantity Account to the EU Auction Account, and then to the auction delivery account of the platform as per the auction tables (Article 64 Registry Regulation). The allowances are held in escrow (for example by ECC Lux, an ECC affiliated entity, on behalf of EEX) until delivery in accordance with the results of the auction.

Auction

Persons eligible to bid directly in the auctions are: compliance users (or business groupings thereof); Investment Firms or credit institutions authorised to bid on their own account or for customers / clients; or public / state bodies that control compliance users (Article 18 Auctioning Regulation), with additional concessions available for Article 2.1(i) MiFID exempt firms which are licensed intermediaries by virtue of legalisation enacted by Member States pursuant to Article 18(2) and Article 59 of the Auctioning Regulation.

Where the auction platform also runs a secondary market,[25] members or participants of such secondary market may participate directly in the auctions provided the requirements set out in Article 18(1) and (2) Auctioning Regulation are met.

ICE requires all auction participants to have an arrangement in place with an ICE Clear Europe Clearing Member or an Exchange Member acting as an Auction-only Access Provider.

The bidder is required to post Collateral before entering into the auction on EEX. The situation differs slightly for ICE because all participants, as clearing members, already have collateral agreements with ICE. These agreements enable them to trade the allowance contracts (either on their own behalf or on behalf of their clients) without having to post collateral specifically for the auction (although each participant must of course have sufficient general collateral posted with ICE before entering into the auction). Bidders may submit their bids for auctioning products (whether futures or the spot / forward contracts) themselves or through their clearing members (Article 18 Auctioning Regulation).

The auctioning platform will determine the bidding windows available, auction dates and volumes of allowances to be auctioned (Article 11 Auctioning Regulation). It will announce the results of each auction it conducts no later than 15 minutes after the bidding window is closed. The auction platform will notify each successful bidder (and the relevant clearing system or settlement system connected to it) of the total number of allowances allocated to the bidder, which tied bids were selected, the payment due and the payment due date.[26]

Post Auction

The critical post-auction processes, set out in the Auctioning Regulation, are summarised below. The post-auction processes for ICE and EEX are very similar. We note that this is a summary only and for full details refer the reader to the respective documents for each auction platform.[27]

The first step in the post-trade process is that the successful bidder (or its clearing member) must transfer the sum for the full contact value to the Clearing House (ECC in the case of EEX and ICE Clear in the case of ICE). For example, ICE requires that full payment is made by the successful bidder by 09:00 the day following the day of the auction.

The auction platform, including the clearing system or settlement system, is then to transfer payments made by bidders to the auctioneers (Article 44 Auctioning Regulation). ICE specifies that this must happen by 19:30 the day following the auction day.

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[25] Discussed in more detail below.

[26] See, for example, EEX (2012) 'Arrangements on primary auctions of emission allowances on the spot market of the European Energy Exchange (EEX) under Commission Regulation (EU) No 1031/2010 and clearing and settlement of such transactions through European Commodity Clearing AG (ECC) and ICE 'Delivery Procedures' https://www.theice.com/publicdocs/clear_europe/rulebooks/procedures/Delivery_Procedures.pdf.

[27] EEX (2012) 'Arrangements on primary auctions of emission allowances on the spot market of the European Energy Exchange (EEX) under Commission Regulation (EU) No 1031/2010 and clearing and settlement of such transactions through European Commodity Clearing AG (ECC) and ICE 'Delivery Procedures' https://www.theice.com/publicdocs/clear_europe/rulebooks/procedures/Delivery_Procedures.pdf.

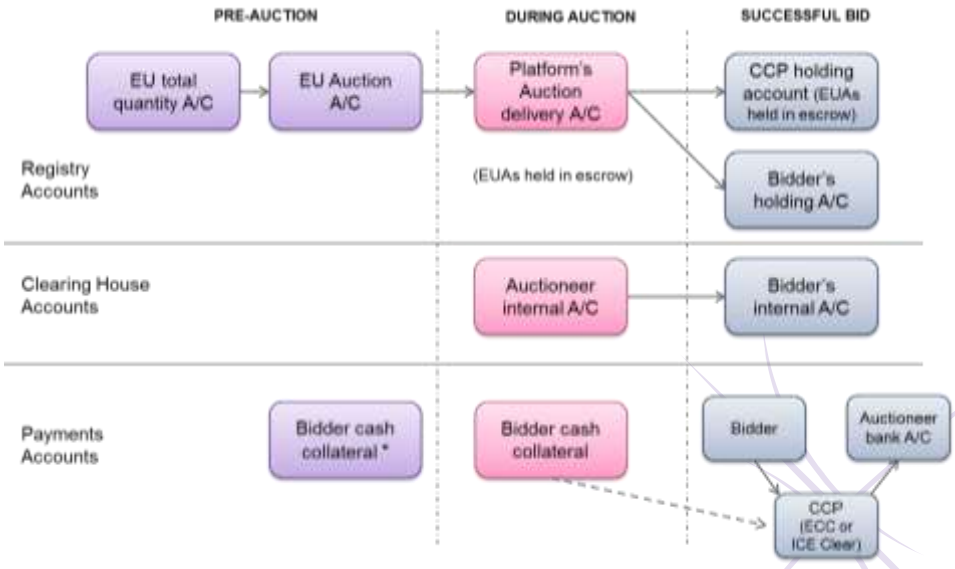
The allowances are then to be transferred to a successful bidder. In the case of EEX, this is from the ECC Lux holding account to the bidder's nominated holding account or to the clearing system or settlement system's holding account to be held in escrow where the clearing system or settlement system acts as custodian for the successful bidder (Article 47 Auctioning Regulation, Article 64 Registry Regulation). The successful bidder must accept late delivery of the allowances where there is a delay in delivery outside of EEX's control (Article 48 Auctioning Regulation). Similarly, in the case of ICE allowances are transferred to the buyers account (the clearing member) from ICE's holding account — ICE specifies that this should happen by 19:30 on the second day following the day of the auction.

If there is late payment by a successful bidder, the bidder may be charged interest from the payment due date to the date payment is made and/or a penalty for the auctioneer less the costs deducted by the clearing/ settlement system.

Delivery of allowances will not be made before payment. The CCP connected to the auction platform will intervene and take delivery of the allowances and pay the auctioneer. The settlement agent will apply Collateral standing to the credit of the bidder and use it to pay the auctioneer. Where the allowances cannot be settled the allowances are to be auctioned at the next two auctions held by the auction platform (Article 45 Auctioning Regulation).

A diagram illustrating the auction process is set out below. As can be seen, the first two layers describe the transfer of allowances between accounts, and the third layer describes the transfer of payments. The diagram is based on the process at both EEX and at ICE: we identify on the diagram where differences lie (essentially to do with the treatment of collateral).

Figure 3.5: Auction process



Note: The process with ICE does not require bidders to post collateral specifically for the EUA auction. All auction participants are Clearing Members and as such have general collateral agreements with ICE that cover the auction contracts.
Source: Norton Rose Fulbright and Europe Economics analysis.

3.4.5 Trading in secondary markets

In addition to trading on the primary auction market, trading in EUAs also takes place in the secondary markets, whether through (i) private spot trades between installations or compliance users of EUAs, (ii) organised OTC trading, e.g. of spot EUAs or forward contracts for future delivery of EUAs arranged between the parties to the trade through brokers, or (iii) trades in spot, futures and options contracts made through transparent trading platforms such as exchanges and MTFs.

A summary of the size and nature of these secondary trading markets is set out in Appendix 4 to this report. It is worth noting for current purposes that data from Trayport (at February 2013) indicate that 78 per cent of EUA trading was exchange-executed, with 22 per cent executed through brokers. The vast majority of the latter OTC element was also cleared — only two per cent of all trades were not cleared (i.e. executed bilaterally without the involvement of a clearing house). Data are also available for CERs, where OTC trading is more important (67 per cent of the total according to Trayport), with 30 per cent of total trading volume not cleared. Data from LEBA (also at February 2013) indicate that about 90 per cent of trades in both EUAs and CERs were cleared, and about 65 per cent of "other allowances" were cleared (LEBA do not provide more detailed data than this).

The post-trade infrastructure for the secondary market in EUAs is fundamentally the same as that for the primary auction market. As indicated above OTC trading is an important aspect of the secondary market in emissions allowances. It is worth noting that such bilateral trading need not involve CCP-clearing or other central settlement services — in which case the post-trade side is therefore managed between the parties to a trade on a bilateral basis. The parties would need to agree the transfers at the Union Registry and there is resulting counterparty and settlement risk to the other counterparty in these cases. As indicated the proportion of trades that are bilateral and non-cleared is very small at present — particularly with respect to EUAs. Various exchange trading platforms offer clearing services for OTC contracts through the clearing houses they own or associate with, with other clearing house (such as LCH.Clearnet) also offering such services.

The secondary market provides an open and transparent market for EUAs with both spot and derivative contracts (futures, options, etc.) being listed for trading.

3.4.6 Products traded

The range of products available in the secondary market is broader than that available in the primary market.

Spot trading in the secondary market is typically for immediate delivery, with settlement taking place as agreed between the parties and typically taking place within a two to three day period. As noted above, there is no centralised mechanism for dealing with the issue of counterparty risk / settlement risk for the transfer to the other counterparty.[28] Although the

[28] We note that the clearing house ECC offers a form of settlement that alleviates this risk for its members. For spot contracts traded by members on EEX, ECC offers physical and financial settlement through its omnibus Registry account. Before trading, the certificates have to be

EUTL conducts checks in respect of any transfer of allowances, those checks relate to compliance with the EU ETS rules (such as the status of the relevant accounts involved) and are therefore not relevant to counterparty / settlement risk.

Forward contracts in EUAs and other products are offered to the market by brokers, allowing buyers and sellers to set a price for a future delivery of EUAs. In general, the majority of these contracts are not cleared and therefore, as with the spot market, there is no centralised mechanism for dealing with the issue of counterparty or settlement risk.

Futures contracts are available for trading in the secondary market on exchanges such as EEX and ICE Futures. These derivative contracts are generally for December delivery and are cleared through a CCP, therefore insulating the buyer / seller from risk against the failure of its counterparty to deliver. Daily futures also function effectively as a form of spot contract as they trade and settle on the same day.

Options contracts on EUAs and options on EUA futures are also classed as derivatives and are listed for trading on exchanges in the EU. These contracts are also cleared through CCPs.

delivered by the members to the ECC registry account. Trades are fulfilled by means of transfers between ECC's internal delivery accounts, such that there are no registry transactions. (See http://www.ecc.de/en/operations/physical-settlement/emission-rights-process).

4 Clearing

4.1 What is clearing?

As is well documented, the financial crisis revealed problems within the OTC market and these perceived failures have been a primary driver behind the attempts of the G20 to address the risks in these markets by introducing legislation to mandate CCP clearing for standardised OTC derivative products, as we are seeing in the EU with EMIR.

The purpose of clearing is to manage counterparty exposure between the buyer and seller of an instrument or security between the point of execution of the trade and the point of final settlement, the primary advantage being that it offers a degree of protection for each party from the failure (i.e. default, insolvency, etc.) of its counterparty.

A CCP steps into each trade by acting as a counterparty to each party to the trade so that each such party owes its obligations to, and is owed matching obligations from, the CCP. In other words, the CCP becomes both the buyer to the seller and the seller to the buyer under the original trade.

The figure below illustrates this. The left-hand side of the figure represents a situation without central clearing, in which each party has obligations with a number of other parties. The right-hand side of the figure represents the situation with clearing, in which each party has only the CCP as counterparty.

Figure 4.1: Illustration of central clearing

The CCP is therefore the central guarantor and is neutral on a net exposure basis because it enters into both the buy and sell obligations under each trade. It is solely focused on managing risks and calculates the changing value of the trades, and calls collateral on an ongoing basis from each of the parties to hold against the risk that one of them may default on its obligations to the CCP. It is required to be well capitalised and it usually maintains a default fund made up of contributions from its members for use in the event that any of them were to default on its obligations to the CCP. It is easier for the regulators to focus their

attention on, and supervise, a CCP than to oversee all the trades between individual parties to bilateral contracts.

4.2 Relevant post-trade financial services legislation

The most relevant EU legislation relating to the clearing of EUA trades is EMIR. EMIR imposes obligations (broadly to clear OTC derivatives through a CCP, risk manage non-CCP cleared OTC derivatives and report all derivatives to a trade repository) on certain market participants that enter into derivatives.

EMIR also governs the authorisation, supervision and requirements for CCPs and trade repositories. EMIR applies to CCPs in respect of clearing services, which is understood to relate to all types of financial instrument, not just derivatives.

MiFIR is also likely to be relevant to the clearing of exchange traded derivatives when the proposals come into force in 2015 or beyond. MiFIR contains a provision that derivatives transactions subject to the mandatory trading requirement (also to be introduced in MiFIR) that are concluded on a regulated market must be cleared by a CCP.[29] This could require mandatory clearing for exchange traded EUA derivatives transactions.

4.3 Analysis

General application of EMIR and MiFIR

We consider in this Section the operation of EMIR in respect of emissions trading in terms of the following:

- authorisation and supervision of, and obligations on, CCPs;
- obligation to clear derivatives in EUAs; and
- risk mitigation obligations for non-cleared OTC derivatives.

4.3.1 Authorisation and supervision of, and obligations on, CCPs

Under Title III of EMIR, an organisation that provides clearing services as a CCP must be authorised[30] and will be supervised as such.[31] It must also comply with various operational, conduct of business and prudential requirements under Title IV. Any CCPs that clear emission allowances and derivatives on them are subject to these requirements. As the Union Registry does not provide clearing services, it need not comply with these requirements, but we do not believe there is any fundamental mismatch with these requirements and the fundamental characteristics or structure of the EU ETS regime.

[29] Proposal for a Regulation of the European Parliament and of the Council on markets in financial instruments and amending Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories – Council compromise text dated 13 February 2013 [MiFIR], article 25(1).

[30] Regulation (EU) 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories [EMIR], article 14.

[31] EMIR (EU) 648/2012, articles 26-39.

4.3.2 Obligation to clear derivatives in EUAs

Financial counterparties and non-financial counterparties that exceed one of the thresholds for clearing set out in EMIR are required to clear any OTC derivatives that have been declared subject to the clearing obligation. [32] "Derivative" for these purposes has the meaning set out in MiFID[33] and "OTC derivatives" for the purposes of EMIR are those that are not executed on a regulated market (i.e. an EU exchange designated as a regulated market) or an equivalent third country market. Spot contracts in EUAs would not be caught within the definition of a "derivative" for these purposes but certain forwards, options or futures contracts relating to EUAs may fall within the definition under EMIR as derivatives contracts on EUAs are already classified as Financial Instruments under Annex I Section C(10) of MiFID.[34]

There is a process to determine whether a particular asset class should be made subject to the clearing obligation: this either results from the authorisation or recognition of a CCP to clear that asset class of derivative or from the exercise of ESMA's own initiative. In either case, ESMA submits a proposal to the Commission taking into account certain factors after having consulted the public and certain relevant authorities. [35]

The figure below summarises the clearing obligation in terms of who is required to clear their derivative contracts, what the criteria are for determining whether a derivative class must be cleared.

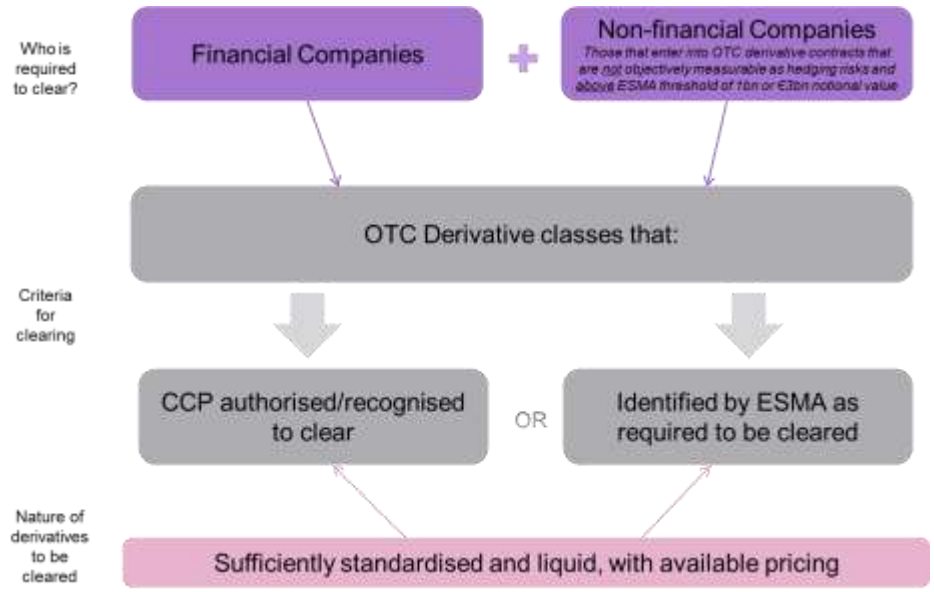
[32] EMIR (EU) 648/2012, articles 4(1) and 10(1).

[33] Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/61/EEC and 93/6/EEC and Directive 200/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC [MiFID], Annex 1 Section C.

[34] MiFID 2004/39/EC Annex 1 Section C(10).

[35] EMIR (EU) 648/2012, article 5.

Figure 4.2: Summary of clearing obligation



Source: Europe Economics analysis.

MiFIR will require that all transactions in derivatives that are concluded on a regulated market must be cleared by a CCP. [36] Since the obligation is proposed to apply to the operator of the regulated market, this would affect all types of counterparty which trade on exchanges. However, it is proposed that the obligation to trade on a regulated market or other type of trading venue would apply to the same scope of market participant as the clearing obligation.[37]

Based on our analysis, we do not believe there is any fundamental mismatch between these obligations and the structure and characteristics of the EU ETS regime. Any derivatives could be made subject to mandatory clearing as a result of the above process under EMIR, including derivatives on EUAs. The systems and processes necessary to clear EUAs-based derivatives are already available at some exchanges and CCPs. As described in Section 3.2.4, all exchanges that trade derivative contracts offer clearing services through the clearing houses they own or are affiliated to (this includes daily futures which, although acting as a proxy for spot contracts, are cleared and settled in the same way as derivative products).[38] The two main clearing houses used by exchanges are ICE Clear Europe (for ICE) and European Commodity Clearing

[36] MiFIR, article 25(1).
[37] MiFIR, article 24(1).
[38] EEX and Nasdaq OMX are the two exchanges that offer true spot contracts. For spot contracts traded by members on EEX, ECC offers physical and financial settlement through its omnibus Registry account. Before trading, the certificates have to be delivered by the members to the ECC registry account. Trades are fulfilled by means of transfers between ECC's internal delivery accounts, such that there are no registry transactions. (See http://www.ecc.de/en/operations/physical-settlement/emission-rights-process). On Nasdaq OMX, all emission contracts have physical delivery and financial settlement. See http://www.nasdaqomx.com/commodities/markets/products/.

(ECC) (for EEX). Other clearing houses are CME Clearing (for CME) and Nasdaq OMX's clearing house. The exchanges' CCPs, as well as LCH.Clearnet, also offer clearing services for OTC derivative contracts, such that the majority of EUA derivatives are cleared, whether traded on exchange or OTC.

As such, if EUA-based derivatives were made subject to mandatory clearing, we consider there are no current material regulatory or practical hurdles preventing mandatory clearing for EUA derivatives being implemented beyond those that exist for any other type of derivative that becomes subject to the mandatory trading or clearing obligation, (for example, the additional cost of clearing in comparison to the situation where the clearing obligation does not apply, the difficulties of putting in place clearing or client clearing relationships with Clearing Members of CCPs, etc.). The question that many market participants might have is about the possible use of EUAs as Collateral and this is considered in Sub-Task 1.2 in Section 9 of this report below.

4.3.3 Risk mitigation obligations for non-cleared OTC derivatives

Certain post-trade obligations also apply to OTC derivatives that are not subject to the mandatory clearing obligation as set out in Article 11 of EMIR. [39] The financial counterparties to which these apply differ but examples include:

- timely, electronic confirmation (all financial counterparties and non-financial counterparties);
- portfolio reconciliation (all financial counterparties and non-financial counterparties);
- dispute identification processes (all financial counterparties and non-financial counterparties);
- marking to market or model (financial counterparties and non-financial counterparties that have exceeded the thresholds);
- exchange of Collateral (financial counterparties and non-financial counterparties that have exceeded the thresholds); and
- requirement to hold capital to manage the risk not covered by exchange of Collateral (financial counterparties).

Where EUA derivative transactions are not subject to the clearing obligation itself, relevant market participants would still be required to comply with these obligations in relation to EUA derivatives transactions. Based on our analysis, we do not believe there is any fundamental mismatch between these requirements (which apply to relevant participants under EMIR where the clearing obligation does not apply) and the structure and characteristics of the EU ETS regime.

4.4 Example of clearing in the EUA context

We set out in this Section an example of a typical clearing structure and arrangement in relation to a typical EUA transaction:

[39] EMIR (EU) 648/2012, article 11.

Energy Company B enters into a future with Bank Y, under which the parties agree to enter into two derivatives in relation to EUAs. The first is an OTC forward contract which is intended to be cash settled (rather than by delivery of EUAs) and the second is an EUA futures contract on ICE Futures. Energy Company B has its own account at the Union Registry but is not a clearing member of the exchange and Bank Y has an account at the Union Registry and is a clearing member of the exchange.

The parties may be required, by EMIR, to clear the OTC derivative through a CCP if the type of cash settled forward in question is listed on the ESMA register for mandatory clearing and Energy Company B exceeds the thresholds for clearing. If the transaction is centrally cleared, this will be subject to the rules of the CCP. Bank Y will clear the derivative in its house account but Energy Company B will need to clear through a clearing member which will record Energy Company B's position and margin in a client / customer account at the CCP. Cash settlement will flow from one party to the other through the CCP and Energy Company B's clearing member. As the derivative is cash settled, there is no transfer at the Union Registry.

If the OTC derivative is not required to be cleared through a CCP, it will be subject to the bilateral risk management obligations in EMIR, [40] including the need to collateralise.

The ICE Futures contract is automatically cleared by ICE Clear Europe. Once the derivative becomes ready for delivery, the EUAs will be transferred from the Union Registry account of the seller (assuming this is Bank Y) to the CCP, which will transfer the EUAs to the buyer's (Energy Company B's) clearing member for onward transfer to Energy Company B. However, in practice, the CCP may direct Bank Y to transfer the EUAs directly to the Union Registry account of Energy Company B.

If, in either cleared context, one of the parties were to fail to make payment or delivery, the CCP would still be required to make payment or delivery to the other counterparty (subject to any provisions in the ICE Futures or ICE Clear rules). Such a failure would enable the CCP to declare a default against the clearing member (assuming Energy Company B's clearing member has not remedied its failure), which would enable the CCP to use the defaulting clearing member's Collateral and, if necessary, contribution to the guarantee fund of the CCP.

4.5 Assessment of EUA regime

Based on our analysis, we do not believe there is any fundamental mismatch with the EU ETS regime save that the time it takes to settle transfers from one account at the Union Registry to another may make it difficult for physically delivered cleared contracts to settle as quickly as transactions in other Financial Instruments. However, this will not be such a problem if the clearing members have trading accounts at the Union Registry and are on one another's trusted lists.

[40] See EMIR (EU) 648/2012, article 52.

5 Settlement

5.1 What is settlement?

Settlement is the process of discharging the obligations of buyers and sellers to a trade. It is the process whereby an item which is the subject of a trade between buyer and seller (i.e. a security or EUA) is delivered to the new owner and cash flows the other way, resulting in the discharge of original obligations under the trade between the buyer and the seller.

Settlement may take place entirely in cash (for example, where a trade is a cash settled EUA derivative contract, there is no physical delivery of the underlying asset) or there may be a delivery of an asset against payment (for example, a spot EUA or a physically delivered EUA futures contract).

There are two critical elements of any post-trade settlement infrastructure. Firstly it is essential that the buyer receives the relevant asset and the seller receives payment. Secondly, it is essential that each party receives good legal title and legal and beneficial ownership of the relevant asset or payment amount.

Settlement typically takes place a number of days (e.g. T+2) after the trade date (T) but this depends on the relevant settlement system or market conventions. Typically there is a simultaneous exchange for payment of money to fulfil contractual obligations under the trade, although again this depends on the nature of the relevant system used to effect the settlement or the terms of settlement agreed between the parties.

The establishment of Central Securities Depositories (CSDs) in well-developed securities markets has helped to reduce the risks of settlement in these markets (e.g. by ensuring simultaneous exchange of cash and securities between buyer and seller) but there is not currently a similar level of infrastructure in emissions markets. In the market for EUAs, settlement is effected on a bilateral basis between buyer and seller making use of the Union Registry for the transfer of the EUAs to the buyer and a separate banking system payment in order to transfer payment to the seller.[41] This could be seen as sub-optimal from a settlement risk perspective compared to the securities market settlement model under which payment and assets flows move simultaneously.

5.2 Relevant post-trade financial services legislation

In this Section, we consider the relevance of the draft CSDR to the EU ETS Union Registry system. Once finalised, the CSDR will set out the requirements applicable to CSDs operating securities settlement systems (including introducing operational and prudential requirements) and will govern the way in which they are supervised. It will also contain several provisions

[41] Settlement may be facilitated by other entities (such as clearing houses) but these still must utilise the Registry to physically settle the contracts, requiring two separate processes (a payments leg and a physical transfer leg).

about the settlement of transactions in Financial Instruments, which will capture EUAs once MiFID is amended in line with the MiFID II proposals.

5.3 Analysis

We understand the current policy objective of the CSDR is that the public bodies in charge of the Union Registry will not be considered a CSD for the purposes of the CSDR. One of the components of being considered a CSD under the CSDR is operating a securities settlement system. [42] A securities settlement system is defined by reference to the definition of a "system" under the SFD. A paraphrased version of the definition in the CSDR (borrowing from the definition in the SFD) is set out below:

A securities settlement system is a formal arrangement:

a) between three or more participants, excluding the system operator of that system, a possible settlement agent, a possible central counterparty, a possible clearing house / CCP or a possible indirect participant, with common rules and standardised arrangements for the clearing, whether or not through a central counterparty, or execution of transfer orders between the participants, and

b) governed by the law of a Member State chosen by the participants; the participants may, however, only choose the law of a Member State in which at least one of them has its head office,

whose business consists of the execution of transfer orders, being an instruction by a participant to transfer the title to, or interest in, a security or securities by means of a book entry on a register, or otherwise. [43]

Securities are not defined in the CSDR but are defined in the SFD as all Financial Instruments within the meaning of MiFID. [44]

However, recital 19 to the CSDR discusses the definition of CSD and notes that the structure of the definition used in the CSDR "should exclude, therefore, entities which do not operate securities settlement systems such as registrars or public authorities and bodies in charge of a registry system established under Directive 2003/87/EC or central counterparties (CCPs) that are regulated by Regulation (EU) 648/2012". [45] Directive 2003/87/EC is the EU ETS Directive, including the Union Registry provided for in the Registry Regulation, and Regulation (EU) 648/2012 is EMIR, discussed above in Section 4.

The intent of Recital 19 is therefore that neither the Union Registry nor a CCP is a securities settlement system for the purposes of the CSDR.

[42] Proposal for a Regulation of the European Parliament and of the Council on improving securities settlement in the European Union and on central securities depositories (CSDs) and amending Directive 96/26/EC [CSDR], article 2(1).

[43] Directive 98/26/EC of the European Parliament and of the Council on settlement finality in payment and securities settlement systems as amended by Directive 2002/47/EC [SFD], article 2(a).

[44] SFD 98/26/EC, article 2(h).

[45] CSDR, recital 19.

Nevertheless, important Articles under the CSDR relating to settlement periods and settlement discipline are expressed to apply to a securities settlement system that provides for the transfer of "transferable securities, money-market instruments, units in collective investment undertakings and emissions allowances". [46] This is via Article 5(1) of the CSDR setting out that list of instruments and then later Articles of the CSDR (such as Articles 6(2) and (3) and 7) referring back to "transactions in financial instruments referred to in Article 5(1)". [47]

The timelines for settlement proposed in the CSDR are quite tight and it might be more difficult to achieve them in relation to EUAs than it is for other securities because of certain security measures built into the Registry Regulation. For example, a transaction to an account other than a trusted account requires the approval of an additional authorised representative and transactions can only be initiated during certain hours of the working day. [48] However, the approval of an additional authorised representative is not required to initiate a transaction on an external trading platform account. [49] This is helpful because, under the CSDR, trades executed on a regulated market, multilateral trading facility or organised trading facility (which will include the auction platforms[50] and exchanges currently used for secondary trading) must be settled no later than the second business day after trading takes place[51] and the definition of external trading platform in the Registry Regulation refers back to trading platforms defined in MiFID.

While there may appear to be potential inconsistency in the approach taken in Recital 19 and the text of Article 5(1) of the CSDR, we understand there is an explanation, which is that it is envisaged that other CSDs satisfying the definition and authorised under the CSDR (such as perhaps Euroclear and Clearstream) could settle EUAs in their securities settlement systems. While we believe it is possible that such CSDs might hold accounts in the EU ETS Union Registry system, we do not believe this is common at present and, even if this were to change in the future, such a CSD would only be able to act as an intermediary in such a transaction chain as settlement of EUAs in a manner that provides the most robust legal comfort that title has passed would require that transfers in the transaction chain take place at the Union Registry through the EU ETS registry system. This approach creates a special position for the Union Registry by effectively drawing a distinction between issuer CSDs (which is what the Union Registry would be if it were a SSS) and investor CSDs, but only treating them differently in relation to EUAs. However, there is a sound policy reason behind this which is that it would not be appropriate to make the Union Registry subject to the wider organisational, supervisory

[46] CSDR, article 5(1).

[47] CSDR, article 6(2) & (3) and article 7.

[48] Commission Regulation (EU) No 389/2013 establishing a Union Registry for the trading period commencing on 1 January 2013, and subsequent trading periods, of the EU ETS pursuant to the EU ETS Directive 2003/87/EC and Decisions No 280/2004/EC and No 406/2009/ EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011, [Registry Regulation], article 23(3) and 39.

[49] Registry Regulation (EU) No 389/2013, article 23(3)(b).

[50] Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community [Auctioning Regulation], article 35(1).

[51] CSDR, article 5(2).

and prudential requirements of the CSDR. This reflects the inherent differences between the structure of the EU ETS trading markets and the securities markets.

6 Settlement Finality

6.1 What is settlement finality?

As noted in the previous section, it is an essential part of any effective settlement system that participants should be confident that they receive full legal and beneficial ownership / title to the relevant asset or payment at the point of settlement. It follows that it is therefore also important to be able to point to the time when transfers of EUAs or payments in relation to settlement of any EUA or EUA derivatives trade become final and irrevocable. Without this certainty, there is a risk of challenge in the event, for example, of the insolvency of one of the parties to a trade or one of the institutions through which the EUAs or cash was being transferred.

6.2 The settlement finality directive (SFD)

The SFD was passed to reduce systemic and legal settlement risk in payment and securities settlement systems in the EU. Member States may designate systems as qualifying for the purposes of the SFD provided they constitute formal arrangements between three or more participants with common rules and standardised arrangements for the clearing or execution of payment or securities transfer orders between the participants.[52] For these purposes, securities are defined as MiFID Financial Instruments[53] so a transfer of EUAs would not currently constitute a securities transfer order whereas a transfer of EUA derivatives would. This will change under MiFID II, which should mean that the transfers of EUAs between the accounts of different participants in a market will be capable of being better protected, to the same extent as cash and other assets that are Financial Instruments used as Collateral.

Finality in respect of securities transfers is achieved by a combination of three provisions in the SFD:[54]

- Article 3 ensures that transfer orders and netting remain legally enforceable against a participant provided the transfer orders are entered into the SFD designated system before the commencement of insolvency.
- Article 5 provides for transfer orders being irrevocable from the moment defined by the rules of the system.
- Article 7 abolishes the 'zero hour rule' applied by some Member States to determine the moment at which insolvency proceedings are deemed to take effect.

In addition, Article 9 protects the rights of a system operator or a participant to collateral security provided in connection with a designated system against the insolvency of the participant or a third party that provided the collateral.[55]

[52] SFD 98/26/EC, article 2(a).
[53] SFD 98/26/EC, article 2(h).
[54] SFD 98/26/EC, articles 3, 5 & 7.

Whilst seeking clarity on these substantive aspects, the SFD does not seek to fundamentally alter domestic laws, i.e. the applicable national law in the relevant Member States. Recital 13 of the SFD states that nothing should prevent a participant or a third party from exercising any right or claim resulting from the underlying transaction which they may have in law to recovery or restitution in respect of a transfer order.[56] An account holder's remedies for fraud, negligence or other wrong-doing in relation to misappropriated securities are therefore unchanged by the SFD and will depend upon the domestic law of the relevant Member State.

6.3 Relevance to trading of EUAs and EUA derivatives

6.3.1 Auction platforms

The Auctioning Regulation requires that an auction platform should be connected to at least one clearing system or settlement system[57] and for the auction platform including the clearing system or settlement system connected to it to implement collateral and other risk management processes necessary to ensure that auctioneers receive full payment regardless of any payment default by the bidder or a successor in title.[58] Collateral in this context means collateral security as defined in the SFD ("all realisable assets provided under a pledge, repurchase or similar agreement for the purpose of securing rights and obligations arising in connection with a [designated] system")[59] "including any allowances accepted as security by the clearing system or settlement system". The Auctioning Regulation provides that, where a successful bidder is in default of payment, the central counterparty shall interpose itself or the settlement agent shall apply collateral taken from the bidder to effect payment of the sum due to the auctioneer.[60]

This effectively means that the clearing and/or settlement system to which an auction platform is connected has (or will shortly have) to be a SFD designated system, either because it is a central counterparty or because it needs to take collateral security, and both ECC and ICE Clear are. As noted in Section 3.4.4 above, EEX and ECC require that the auctioneer is a participant and that the auctioned EUAs are held as collateral security in a German law governed escrow account by ECC Lux.[61] We understand that, under the contractual terms of the EEX and ECC arrangements, if a successful bidder fails to make payment, the auctioneer can apply the EUAs and re-auction them. If the provider of the collateral security were to become insolvent, the SFD would ensure that the rights of the auctioneer should not be affected by the insolvency proceedings. However, it is not easy to understand whether and how SFD protections apply to

55 SFD 98/26/EC, article 9.
56 SFD 98/26/EC, recital 13.
57 Auctioning Regulation (EU) No 1031/2010, recital 32.
58 Auctioning Regulation (EU) No 1031/2010, recital 40.
59 Auctioning Regulation (EU) No 1031/2010, article 3(38).
60 Auctioning Regulation (EU) No 1031/2010, article 45(4).
61 This EEX Arrangements contain a German law governed escrow agreement providing that such allowances are "Collateral security" for the purpose of Article 2(m) of the SFD and as such that the protection under Article 9 of the FCD applies.

their arrangements relating to EUAs and we believe a little more clarity on this point would be helpful to the market.

6.3.2 Secondary trading of EUAs and EUA derivatives

The concept of collateral security can also be used to protect a collateral taker in a secondary market which is designated as a SFD system where collateral is taken on a pledged basis. For example, original margin can be provided to ICE Clear on a pledged or title transfer basis. Where title transfer is used by a settlement system, the collateral security provisions of the SFD will not apply but the system can protect transfers of cash and securities from the failure of any of the participants in the system (such as settlement agents through whose accounts they are transferred) by designating such transfers as transfer orders and specifying the point at which they become final or irrevocable.[62] Again, a transfer of EUAs would not currently constitute a securities transfer order but this will change under MiFID II.

6.3.3 The Union Registry

Although we understand that the policy intent at present is not to designate the Union Registry as a "system" for the purposes of the SFD, given that the Union Registry could be described as the settlement system for EUAs, it is worth asking whether it would be beneficial for the Union Registry to be designated as a system once EUAs become Financial Instruments. At least theoretically, this could be seen as one straightforward way to ensure comprehensive applicability of SFD-protections to transfers of EUAs since they are ultimately settled in the Union Registry. However, we do not consider that not designating the Union Registry as a "system" under the SFD should present a material issue for either auction platforms or secondary markets for two reasons.

Firstly, auction platforms have to be connected to at least one clearing or settlement system which are likely to be designated already but, if not, CCPs will have to become so under EMIR and CSDs under the CSDR.[63] Once MiFIR is implemented, any transactions in derivatives that are concluded on a regulated market will have to be cleared by a CCP[64] and, if derivatives in EUAs are considered suitable for mandatory trading, they will have to be traded on a regulated market, MTF, OTF or third country equivalent trading venue.[65] Many MTFs already have access to CCP clearing and this should become more readily accessible for both MTFs and OTFs under MiFIR. In addition, if any derivatives in EUAs are listed on ESMA's register for mandatory clearing, any OTC trades in those derivatives will benefit from the protections offered by the CCP. The only gap is that there is no mechanism which appears to apply the provisions of the SFD to private or OTC trades in EUAs (whether spot or derivative trades) which are not cleared through a CCP and not otherwise processed through an SFD designated "system".

Secondly, the Registry Regulation contains its own provisions on settlement finality which is helpful in relation to the settlement of spot and derivatives trades in EUAs. While these

62 SFD 98/26/EC, article 3.
63 CSDR, article 2(3).
64 MiFIR, article 26(1).
65 MiFIR, article 25(1).

provisions do not entirely replicate the SFD provisions and also raise their own issues, as discussed below in more detail, they help to limit the size of the gap mentioned in the previous paragraph.

6.3.4 Uncertainties in the SFD

It is an interesting question whether, once EUAs become Financial Instruments under MiFID II, the Union Registry, even if not designated as a system itself, would be a participant in the system of a CCP that identifies transfers of EUAs as transfer orders for SFD purposes. The definition of participants in the SFD is not that clear but we think the Union Registry could arguably constitute a settlement agent in this case on the basis that it would provide settlement accounts through which transfer orders within such systems would be settled[66]. It is possible that once EUAs become Financial Instruments under MiFID II, an instruction given by the CCP (as holder of the account in the Union Registry) to transfer EUAs to another account holder (such as a clearing member) or vice versa could be a securities transfer order,[67] in which case the SFD protections would potentially be triggered on the insolvency of another participant in the system (such as the CCP or that clearing member). This could lead to potential inconsistency with the Registry Regulation because finalisation under the SFD does not work in the same way as under the Registry Regulation, whose relevant provisions we consider below.

Although the transfer order concept is in some ways quite flexible, it also has limitations. A securities transfer order is defined as an instruction by a participant to transfer the title to or interest in a security or securities by means of a book entry on a register, or otherwise. It is therefore difficult to see how a transfer of allowances from one participant in an omnibus account held by a clearing system to another participant of the same omnibus account at that clearing system could be included because, in this case, there would be no transfer of title at the level of the clearing house and no transaction in the Union Registry. However, this issue is not specific to emission allowances.

6.4 Potential inconsistency between the SFD and similar provisions in the Registry Regulation

As noted in Section 6.3 above, the Registry Regulation contains its own provisions on settlement finality. These provisions do not entirely replicate the SFD provisions and also raise their own issues.[68]

To consider them in more detail, we have applied the conceptual breakdown used by the TARGET2- Securities (T2S) Harmonisation Steering Group, being:

- Settlement Finality 1 (**SF-I**) - defined as the moment of entry of a transfer order into the system, or the moment when a transfer order is protected against insolvency procedures[69].

[66] SFD 98/26/EC, article 2(d).
[67] SFD 98/26/EC, article 2(i).
[68] Registry Regulation (EU) No 389/2013, article 40.

- Settlement Finality 2 (**SF-II**) - defined as the irrevocability of a transfer order (and not of the transfer itself) according to the rules of the system operator.[70]
- Settlement Finality 3 (**SF-III**) - defined as the irrevocability of transfers (bookings in CSD accounts) according to the rules of the CSD.[71]

The table below maps the current Registry Regulation rules relating to EUA transaction settlement against SFI to SFIII.

Table 6.1: Current Registry Regulation rules relating to allowance transaction settlement mapped against SFI to SFIII

	Analogous provisions from Registry Regulation, Union Registry and EUTL settlement processes
SF-I	In the context of the migration to a common cross-border platform for securities settlement in Europe known as TARGET2- Securities (T2S), there are ongoing discussions to agree a harmonised CSD rule for the moment of entry of transfer orders into the system. Currently there is a difference in approach with some CSDs considering that a transfer order enters the CSD at the point it is received in the CSD's technical environment. Other CSDs consider it is the time when the order is received and acknowledged by the CSD.[72] In the context of the initiation of transfers in the Union Registry, the latter approach would be the better approach (that is, an initiation that has been validated as allowed under the processes of the Union Registry). This follows from the changes introduced to settlement processes relating to transactions in order to provide enhanced security to the EU ETS. In particular, (a) transactions cannot be initiated without the approval of an additional authorised representative unless it is to a trusted account; and (b) transactions can only be initiated between 10.00 - 16.00 CET (excluding Saturdays, Sundays and public holidays). We would suggest that moment of entry of a transfer order in respect of a EUA would therefore be when a transfer is initiated in accordance with the Registry Regulation.
SF-II	This area is potentially more ambiguous due to the introduction of a further security protection that finalisation of transactions will be delayed for 26 hours (clock not running on Sat, Sun and notified public holidays) unless the transaction is between a trading account and an account on the trusted account list for that trading account. Importantly, if an account representative suspects that a transfer was initiated fraudulently, at the latest two hours before the end of the 26 hour delay period the account representative may request the national administrator to cancel the transfer on behalf of the account representative before the transfer is communicated for finalisation. We suggest that the moment when a transfer order is irrevocable for the purposes of the Union Registry (and not of the transfer itself) would be twofold:

[69] SFD, Art. 3; ESCB-CESR (2009) recommendations for SSSs (no 1); CPSS-IOSCO (2012) principles for financial market infrastructures (no 1 and 8); and CSDR proposal, Art. 36/3 and 45/a.

[70] SFD, Art. 5(1 and 2); ESCB-CESR (2009) recommendations for SSSs (no 1 and 8); CPSS-IOSCO (2012) principles for financial market infrastructures (no 1 and 8); and CSDR proposal (2012), Art.36/3 and 45/8.

[71] SF III is defined in and covered under: ESCB-CESR (2009) recommendations for SSSs (no 1 and 8); CPSS-IOSCO (2012) principles for financial market infrastructures (no 1 and 8); CSDR proposal (2012), Art. 36/4 and 45/8.

[72] ECSDA survey dated 24 October 2011 on settlement finality found that out of the 18 CSDs that participated in the survey, 6 CSDs consider the "point of entry" to be the moment in which the instruction (transfer order) is first received by the CSD, while 12 CSDs consider the "point of entry" to involve not only the receipt of an instruction but also some form of validation.

	Analogous provisions from Registry Regulation, Union Registry and EUTL settlement processes
	• for a transfer order between a trading account and an account on the trusted account list for that trading account, this would be the point in time when the transfer is properly initiated (that is, the time of SF-II would be the same as SF-I); and • for a transfer order which has a 26 hour delay period, this would be the point in time that is 24 hours after the point when transfer is properly initiated. We believe the former would be more relevant to a CCP and clearing members as they could be expected to hold trading accounts with the Union Registry.
SF-III	The Registry Regulation provides a number of provisions which provide clarity as to the point when the physical transfer of an allowance to an account is considered irrevocable. Those are: Article 104 provides that all transactions and other processes communicated to the EUTL in accordance with Article 6(3) (i.e. all EUA transactions) shall be final when the EUTL notifies the Union Registry that it has completed the processes. Article 40 provides that, subject to Article 70 (errors - see below) and the reconciliation process foreseen in Article 103, a transaction shall become final and irrevocable upon its finalisation pursuant to Article 104. Regarding the reference to Article 70, although there is a mechanism to provide for the correction of errors, this only operates in relation to an account holder unintentionally or erroneously initiating the surrender or deletion of allowances. It would not allow a reversal of a finalised transfer to another account holder.

Source: Norton Rose Fulbright analysis.

6.5 Conclusions

We consider that the inclusion of EUAs as Financial Instruments under MiFID and therefore securities for the purposes of the SFD is important as it will enable transfers of EUAs within the systems of CCPs to benefit from the same level of settlement protection as cash and other securities without having to rely on the collateral security provisions, part of which are being used by the auction platforms. Once this is the case, we agree with the Commission that designating the Union Registry as a settlement system is not necessarily vital to the protection of transfers of EUAs between accounts at the Union Registry on the grounds that, to the extent an EUA is being auctioned or traded on a regulated market or is the subject of a derivative transaction that is subject to the clearing obligation under EMIR, it should be cleared through a CCP which should ensure finality and, otherwise, it will be subject to the finality provisions in the Registry Regulation.

However, on the basis of the analysis in the Table 6.1 above, we consider that, if the Union Registry were to be considered a settlement system in the future, once EUAs have become securities, then it has existing processes capable of identifying the relevant moments in time for the purposes of the SFD. In this event, where a transfer in the Union Registry were to form part of a CCP's designated system, assuming these will at this point include transfer orders relating to EUAs, there would be a potential inconsistency caused primarily by the 26 hour delay, but this should not be an issue if the transferor's account is a trading account and the transferee is on its trusted list.[73]

[73] Registry Regulation (EU) No 389/2013, article 39(3).

A potential alternative approach for consideration once transfer orders relating to EUAs are possible, would be to maintain the general approach that the entry and irrevocability points for a transfer order are as defined in the system rules (in the case of the auction platforms and their relevant secondary market platforms, the exchange rules) but require that such system rules adopt a harmonised approach based upon the Registry Regulation and EUTL processes (i.e. require that the entry and irrevocability points match the finality provisions in the Registry Regulation). However, the successful promotion and adoption of a harmonised approach is likely to be limited except where there is legislative force to require such a change in approach or where there is leadership from the Commission or other relevant institutions. In any event, given the relative lack of clarity over how EUAs fit within the CCPs' systems under the current published rules, which have been designed primarily for other [instruments, general uncertainty as to how the Union Registry is connected into the CCP and CSD architecture in the financial markets and also the relative complexity and brevity of the SFD itself, we believe there would be significant benefit to the market as a whole in making this more transparent.

To the extent that there remain questions in relation to the scope and coverage of the SFD (for example in relation to who is entitled to be a participant), we recommend that the Commission should consider publishing guidance for the purposes of providing certainty around the open issues, i.e. in the manner adopted by ESMA's FAQs in relation to open questions on the drafting and application of EMIR.

7 Post-Trade Reporting and Transparency

7.1 Relevant post-trade financial services legislation

EMIR requires certain market participants to report derivatives in EUAs to a trade repository and it is intended that MiFIR will make provision for both post-trade transparency to the market of all transactions in EUAs and reporting to a competent authority of transactions in EUAs that are not covered by EMIR.

7.2 Analysis

7.2.1 Derivative reporting to trade repository

EMIR provides that counterparties and CCPs must ensure that details of any derivative (whether OTC or exchange traded, and whether or not cleared) they have concluded and any modification or termination are reported to a trade repository listed on ESMA's register of eligible trade repositories. [74] This obligation is already in force but the reporting start date for derivatives in EUAs has not yet been finally determined, although it is anticipated to be in January 2014 assuming that a trade repository has been registered with ESMA which is capable of receiving reports in relation to commodities derivatives such as EUAs. The required reports include detailed information about both counterparties to the transaction and common data about the nature and economics of the derivative itself.

7.2.2 Transaction reporting to competent authorities

Under MiFIR, Investment Firms which execute transactions in Financial Instruments (which will include EUAs, assuming the MiFID II proposals are implemented) that are traded on a trading venue (including a regulated market, an MTF and an organised trading facility (OTF)) will have to report the details of such transactions to their competent authority, whether the transaction is executed on a trading venue or OTC. [75] The operator of a trading venue will also be required to report details of transactions traded on its platform which are not subject to this requirement. We believe this would cover transactions entered into by non-Investment Firms who are members of such trading venues.[76] The reports will include detailed information about the transaction including the quantity of EUAs bought and sold, the date and time of execution and price.

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[74] EMIR (EU) 648/2012, article 9(1).

[75] Proposal for a Regulation of the European Parliament and of the Council on markets in financial instruments and amending Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories – Council compromise text dated 13 February 2013 [MiFIR], article 23(1) & (2).

[76] MiFIR, article 23(5).

7.2.3 Post-trade transparency obligations

MiFIR will also require the operators of trading venues (i.e. regulated markets, MTFs and OTFs) and Investment Firms which are counterparties to transactions in EUAs or EUA derivatives to make public the price, volume and time of transactions executed in EUAs and derivatives on EUAs traded on a trading venue through an approved publication arrangement. [77] Deferred publication arrangements for large in scale transactions and those for which the market is not liquid may be authorised under MiFIR and, in the case of illiquid Financial Instruments, a competent authority may also authorise a suspension.

We do not consider there are any direct inconsistencies between the proposed post-trade reporting regime that would apply to emissions derivatives and the structure or provisions of the EU ETS scheme.

We do not consider there are any direct or material inconsistencies between the proposed post-trade transparency and reporting regimes that will apply to EUAs and derivatives on EUAs and the structure or provisions of the EU ETS scheme.

In terms of future developments, while there are currently no position reporting obligations owed by commodity derivative trading firms to regulators under MiFID, the proposals for MiFID II seek to introduce position reporting for certain types of derivatives (including those relating to emissions allowances) and on spot EUAs such that each trading venue will be required to make public a weekly report with the aggregated positions held by entities according to instrument type and category of entity.[78] In addition, there will also be a separate obligation on the venue to provide information to the national regulator which includes a complete breakdown of the positions of all market members of participants and a real time reporting obligation for members of the relevant venue to that venue. [79]

In carrying out this assessment of the post-trade reporting and transparency environment, we have also reviewed the disclosure requirements under the Registry Regulation that apply to account holders and also the separate public disclosures that the EUTL is required to make on the public website of the EUTL set out in Annex XIV (Reporting requirements of the central administrator) of the Registry Regulation. [80] In the main, the disclosure requirements under the Registry Regulation that apply to users of the markets relate to security matters (e.g. loss of passwords or suspected fraud) that are irrelevant to the objectives of the financial markets legislation (transparency of counterparty risk concentration and identification of market abuse, to ensure the stability and integrity of the markets).

However, while the reporting obligations on users do not mirror those applying under the financial markets legislation such as MiFID or EMIR, the reporting requirements of the central administrator do provide for information gathering and disclosure by the central administrator in a manner which has some similarities to the requirement on trade repositories and

[77] MiFIR, articles 9 & 20.

[78] Proposal for a Directive of the European Parliament and of the Council on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council (Recast) - Council compromise text dated 13 February 2013 [MiFID II], article 60(1)(a).

[79] MiFID II, article 60(1)b).

[80] Registry Regulation, (EU) 389/2013, annex XIV.

exchanges under EMIR to make certain public disclosures in relation to positions in derivative classes, etc. However, the disclosure requirements under the Registry Regulation go beyond those under EMIR in many respects in terms of the information that is made public. For example, EMIR does not require individual position or transaction data to be made public (with aggregate data only being publishable under EMIR) whereas Annex XIV of the Registry Regulation requires details of individual transactions to be made public, albeit 3 years after the date of the trade. [81] In addition, the relevant national administrator is also required under Article 98 of the Registry Regulation to cooperate with competent authorities in relation to identify and prevent money laundering, terrorist financing and other criminal activity and this ensures that there should be a "joined up" approach between those authorities managing financial crime across the financial markets with those responsible for preventing and forestalling financial crime in the emissions market.

Based on our analysis, there are a number of key aspects that we note are of particular significance under the Registry Regulation:

7.2.4 Relevance of threshold triggers under Registry Regulation

The Registry Regulation provides that national administrators may decide to notify to national law enforcement and tax authorities all transactions that involve a number of units above the number determined by the national administrator and to notify any account that is involved in a number of transactions within a period that is above a number determined by the national administrator.

Although we envisage an ongoing role for a general provision of this nature, the Commission may consider permitting national administrators to source such information from the trade repositories (in relation to derivatives) and the competent authorities for MiFID purposes rather than requiring EU ETS account holders to provide it.

7.2.5 Relevance of price reporting limit under Registry Regulation

The Registry Regulation provides that the EUTL and the Union Registry shall not require account holders to submit price information concerning allowances or Kyoto units. We do not consider this is in conflict with post-trade reporting under EMIR and MiFIR as the EUTL and the Union Registry are not currently proposed to have any role in collating or transferring such information. However, if any such functionality is or could be envisaged then this provision would need to be amended.

7.2.6 Scope of post-trade transparency and reporting obligations

The financial markets legislation, and the requirements under MiFIR in particular, are limited in their scope. We consider there may be room for further consideration of the objectives behind them and how they fit with the EU ETS regulatory structure. For example, if the underlying objectives are to ensure that there is a clear picture of market movements for competent authorities and trading firms, then it could be argued that only applying the obligations to

[81] Registry Regulation (EU) 389/2013, annex XIV 1 (4).

Investment Firms will give an incomplete picture. However, it should also be noted that the EMIR obligation is quite widely defined in the sense that it applies to both financial and non-financial counterparties and the obligations in MiFIR will also apply to the operators of trading venues and will capture all trades on their platforms. [82] We do not therefore consider this to be a significant risk.

[82] MiFIR, article 5.

8 Applicability of SLL Consultation Principles

8.1 Should the proposed SLL consultation principles apply to EUAs?

As part of Sub-Task 1.1, we have been asked to consider whether the proposed Principles in the SLL Consultation should apply to EUAs. Our in-depth analysis on this question is set out in Appendix 3: Applicability of SLL Consultation Principles to Dealing in EUAs. The analysis that follows below in Section 8.2 is by way of summary and conclusion of this detailed analysis.

8.2 Which account providers would be captured?

8.2.1 Commission and central administrator

The Principles in the SLL Consultation are designed to apply to Financial Instruments (within the meaning of MiFID) which are capable of being credited to a securities account so would capture EUAs once MiFID is amended in line with the MiFID II proposals unless otherwise provided. However, the practical application of the Principles of the SLL Consultation is to account providers, which is a concept not defined with the EUA market in mind. If considered by reference to the Commission or the central administrator, many of the Principles of the SLL Consultation (such as Principles 3, 4, 5, 7, 8 and 14) do not serve any purpose because equivalent or similar issues are dealt with in the Registry Regulation and, in some cases (e.g. Principles 5, 7 and 14 of the SLL) are inconsistent with the Registry Regulation. We do not therefore think it would make sense to apply the Principles in the SLL Consultation to EUAs to the extent the Commission or central administrator would be the account provider.

8.2.2 Intermediaries

However, the Registry Regulation does not directly address the issues raised by the Principles in the SLL Consultation at the level of other account providers of EUAs. The SLL Consultation considers account providers to include CSDs and custodians. However, our understanding is that market participants currently make relatively little use of custodians to hold EUAs and, as a result (or perhaps as the cause), there are relatively few custodians offering this as a service. In addition, where this is the case, we understand that the custodians do not necessarily hold EUAs as custodian, but rather as Collateral taker, which means they might have different rights from a true custodian. Although one of the reasons for the under-utilisation of custodians for EUA holdings is the relative freedom of access to the Union Registry, it is considered likely that the use of custodians for holding EUAs will increase in the future as EUAs become more valuable and as institutional investors want to hold them as part of their portfolios, as not all such persons may want an account at the Union Registry.

The intermediaries that we believe are most likely to be holding EUAs in the Union Registry on behalf of another person are CCPs and their clearing members. However, in our view these persons might not all satisfy the current definition of account provider, which would therefore need to be extended if it were considered desirable to cover these persons. This might not be appropriate in the sense that CCPs are heavily regulated under EMIR, although EMIR is more focussed on clearing than settlement.

Not all the SLL Consultation Principles would make sense and be consistent with the Registry Regulation if applied to EUAs at "other intermediary" level, especially where the "other intermediary" is the account holder in the Union Registry, but we think aspects of Principles 11, 12 and 13 of the SLL Consultation could be relevant and applied here. Even if it is considered that the application of these Principles to other intermediaries is sufficiently important to clarify in relation to EUAs, a choice would have to be made whether to apply those Principles to EUA intermediaries through the proposals for new Securities Law Legislation or by amending and extending the Registry Regulation. It might be confusing to participants to try to apply only specific parts of certain Principles of the SLL Consultation only to EUAs, whereas it might be easier to create a separate coherent regime dealing with these Principles deemed to be relevant through parallel amendments to the Registry Regulation. However, it is possible that the answer to this question may be likely to depend on the perspective of the relevant market participant. For example, a custodian and institutional investor that holds EUAs as part of a wider portfolio may prefer the same requirements to apply to holding EUAs and also to holding securities. On the whole, while it is not ideal to have two different sets of legislation applying to the holding of EUAs depending on the identity of the account provider, we think this might make more sense than making the custody of EUAs subject to the Registry Regulation.

While Principle 21 proposes to make safekeeping of securities an investment service under MiFID (and this is also proposed in MiFID II), our experience is that custodians are generally sufficiently well regulated in most Member States to mean that the risk of their being the subject of misconduct and abuse is not significantly greater than other regulated entities. For example, they are generally subject to know your customer and business checks for anti-money laundering purposes and should have policies and procedures to deal with issues like conflicts of interest and market abuse arising because of the different activities of different parts of their business. We believe this will only become clearer as a result of EUAs being made Financial Instruments under MiFID II and the accompanying extension of the scope of the market abuse regime.

8.3 Limited interests in EUAs

Perhaps the most significant gap in the scope of the potential application of the Principles of the SLL Consultation to EUAs relates to the creation and transfer of interests in EUAs that are less than the full interest in the EUA (i.e. limited interests), which would reflect the potential use of EUAs as security or Collateral. The Registry Regulation does not make provision for the creation of limited interests and the mechanics of the Union Registry do not support such use. If the Commission were to wish to facilitate or encourage the use of EUAs for these purposes

(see also sub-task 1.2), we believe that aspects of Principles 3 to 9 of the SLL Consultation should be made applicable to EUAs.

The same question arises here that arises in relation to question as to which of the SLL Consultation Principles should apply to intermediaries: i.e. would it be better to make the relevant Principles in the SLL Consultation applicable to EUAs or to amend the Registry Regulation? While avoiding unnecessary complexity might be best served by adopting the same approach on these two issues, the considerations might be slightly different. Given that the Registry Regulation is currently silent on these points, the approach in the SLL Consultation which refers to national law does not undermine the Registry Regulation and the two would therefore not conflict, and as a result there would seem to be little harm in including EUAs within the scope of the SLL Consultation Principles, at least in so far as they apply to intermediaries. However, making these Principles relevant to EUAs by either means is unlikely in itself to enable the market to start using EUAs as security or Collateral with full legal certainty. For example, the Commission would likely need to make some technical amendments to the operation of the Union Registry (and, possibly, to the relevant EU ETS legislation) in order to be able to segregate or flag EUAs subject to a security interest and to show the order of creation of different types of security as required by Principle 9 of the SLL Consultation on priority. We have considered certain of these potential changes in more detail in the response to Task 1.3 in this report.

8.4 Conflicts of laws

The other significant issue in relation to the applicability of the Principles in the SLL Consultation to EUAs relates to conflicts of laws. This can be looked at narrowly or widely. On the narrow consideration, the purpose of Principle 14 of the SLL Consultation in determining the applicable law of the account is redundant with regard to EUAs as the Registry Regulation also makes provision for this at Article 11(5). If the administrator would be considered to be the account provider, it should logically be the case that the applicable law would be same applicable law under each piece of legislation, and if the matter is governed by the Registry Regulation, it might also be harmonised across Member States as the regulation has direct effect and should therefore form part of each Member State's law.

Considering this more widely, it is not so clear that the answer would always be the same. While the Registry Regulation and the Principles in the SLL adopt the same approach of referring certain questions to national law, the scope of the Registry Regulation is wide in its subject matter (Article 11(5) is not expressly limited to certain matters, but this does not mean it can prevent all conflicts and these continue to arise as evidenced by the issues that have arisen in the context of the theft of allowances which were quickly sent out of the country where they were stolen). In addition the scope of the Principles in the SLL is wide in terms of the accounts it could apply to (i.e. all accounts held by any type of account provider). This creates a risk that the SLL could apply to an account holding EUAs where the administrator is not the account provider (i.e. an intermediary account) and in this case, the applicable laws could be different and point to different answers. For example, Principles 7 and 14 of the SLL could apply the local law of a Member State on priority or reversal to an intermediary account,

which might not produce the same answer as would apply to the account at the Union Registry, whether or not that answer were set out in the Registry Regulation.

Unless the Commission could conclude that these risks are not real ones (either because it was certain that there would be no overlap between the application of the two pieces legislation, or that they were consistent in approach or that there are no intermediaries holding EUAs), we would be cautious about applying Principle 14 of the SLL to EUAs on the basis that there could be a conflict of laws

The Commission's approach in both financial markets and EUA legislation to date has been to try to make the regime sufficiently harmonised to enable market participants to carry on the business they need to carry on without seeking to harmonise key areas of national law such as insolvency and property law. We believe that, on this point, the same type of issues arise in relation to EUAs as also arise in relation to securities and that there is genuine merit in adopting a functional approach in the absence of any realistic prospect of achieving something that goes further than the current regime for securities in the foreseeable future.

9 Financial Collateral Directive — Extension to EUAs

9.1 Summary

The FCD does not currently extend its legal protections to financial Collateral arrangements under which emission allowances are provided as Collateral. In practice, it appears that few market participants currently accept or provide emission allowances as Collateral. While there is not necessarily an absolute causal link between these two facts, it appears clear on the legal and market analysis that extending the protections of the FCD to cover emission allowances could to some extent encourage Collateral takers and Collateral givers to make greater use of emission allowances.

The latest MiFID II proposals envisage bringing spot emission allowances within the scope of financial regulation in the EU by classifying emission allowances as Financial Instruments within the meaning of MiFID. [83] While this change would bring emission allowances within the scope of both MiFID and related financial services legislation, the FCD does not link its own definition of "financial instruments" [84] to the corresponding definition under MiFID. As a result, the extension of MiFID II to cover emission allowances will not be sufficient to bring emission allowances within the scope of the FCD. Instead, legislative changes to the FCD will be required to broaden its scope to emission allowances.

While changes to extend the FCD are recommended, our legal analysis also suggests that certain further legal changes within EU law may need to be implemented in order to encourage use of EUAs as Collateral. Additional changes would help to address certain other legal issues that may currently discourage market participants from providing or receiving emission allowances as Collateral under Collateral arrangements, for example, changes to security arrangements and clarification of issues of legal certainty. Our overall view is that simply extending the FCD to cover emissions allowances, without seeking to address the other legal issues which have been identified as of continued relevance in the market such as introducing a mechanism for registering security interests or resolving legal questions around title, will not be sufficient in itself to overcome the current market reluctance to engage in making use of collateralisation opportunities for emission allowances.

While the feasibility and desirability of a complete package of legislative measures (i.e. changes more extensive than simply amending the scope of the FCD) is beyond the scope of this Sub-

[83] MiFID II, recital 9 & Annex 1 Section C(11).

[84] Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial Collateral arrangements, as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2002/47/EC on financial Collateral arrangements as regards linked systems and credit claims, article 2(1)(e).

Task 1.2, we have considered in Sub-Task 1.3 related recommendations that the Commission may wish to consider for the longer term of the Union Registry and related infrastructure and legislative framework (which include, for example, market-led solutions). These may help to encourage collateralisation opportunities for emissions allowances. On the other hand, of course, market appetite may evolve absent any regulatory initiative by the Commission.

The main economic advantage to using allowances as Collateral is the savings to firms of the opportunity costs of raising other Collateral, such as cash and sovereign bonds. The potential market size for the use of allowances as Collateral is limited in a number of ways. Firstly by the allocation and value of allowances: the value of forecast allowances allocated in 2013 is approximately €9.6 billion. Further limitations include the haircuts (and other restrictions) imposed by clearers, and the ready availability (or otherwise) to market participants of other forms of collateral. We estimate that the possible benefit across the market in terms of the saved costs of raising other Collateral could be around €170 million a year. This figure would increase significantly with any increase in the price of EUAs.

Interest among market participants to use allowances as Collateral appears to be high. Feedback from industry bodies suggests that market participants would welcome the opportunity to make use of the otherwise idle EUA assets held on their balance sheets. Of course decisions would be based on a weighing of the benefits with the costs of setting up the necessary systems (which we do not anticipate to be large). However, our consultation with stakeholders did not reveal much ***formal*** consideration on the part of market participants of the use of allowances as Collateral, and such decision-making may not be straightforward.

It is clear that increased legal certainty and protections in terms of collateralisation in relation to emission allowances could in turn encourage entry to or activity on primary and secondary markets by a range of market participants in that it will allow participants more choice in terms of the Collateral they provide. A number of commentators note that this could allow compliance users to make more productive, efficient and economic use of their emission allowances by utilising them as Collateral for trading activity (and not necessarily limited to trading in emission allowances) rather than simply holding them effectively dormant in an account until the relevant surrender date, although there are obvious limitations around the extent to which these changes could impact market behaviour without wider commercial support, i.e. arising through increases in value of EUAs, etc.

9.2 Analysis of desirability of extending the FCD

This Section 9.2 assesses the desirability of extending the Financial Collateral Directive (FCD) to cover emission allowances. We summarise the role of the FCD and legal arguments for extending it to cover EUAs. We consider the current extent of the use of allowances as Collateral, and the barriers to more widespread usage. In the following Section 9.2.2 we assess the potential commercial advantages and disadvantages of extending the FCD to include allowances, and discuss the possible impacts of doing so.

9.2.1 The role of Collateral in financial markets

Collateral is used in financial transactions to minimise the risk of financial loss to a lender in the event of a borrower failing to meet its financial obligations to the lender. Collateral essentially means any asset or property that is delivered by the borrower (the Collateral provider) to secure an obligation to the lender (the Collateral taker).

Collateral arrangements may take different legal forms. For example, Collateral may be provided / received using the method of title transfer, often referred to as a "title transfer Collateral arrangement", or by way of a pledge or security interest, referred to as a "security interest Collateral arrangement", each described in more detail below. Currently, certain types of Collateral arrangements receive protection under the FCD whereas other forms of Collateral arrangement do not benefit from these protections.

9.2.2 The FCD

The aim of the FCD is to create a uniform EU legal framework to limit credit risk in financial transactions through encouraging the provision of securities and cash as Collateral (under both security interest and title transfer structures) with the aim of contributing to the greater integration and cost-efficiency of European financial markets. The FCD seeks to reduce the formal Collateral requirements for financial Collateral arrangements and seeks to harmonise and clarify the Collateral process at a minimum level within the EU. In harmonising Collateral rules, it was hoped that these rules would lead to lower credit losses, encourage cross-border business and encourage competitiveness.

The FCD seeks to protect the validity of financial Collateral arrangements and it recognises both "security financial Collateral arrangements" and "title transfer Collateral arrangements". [85] "Security financial Collateral arrangements" comprise an arrangement under which a Collateral provider provides financial Collateral by way of security in favour of, or to, a Collateral taker, and where the full ownership of the financial Collateral remains with the Collateral provider when the security right is established. A "title transfer Collateral arrangement" means an arrangement under which a Collateral provider transfers full ownership of financial Collateral to a Collateral taker for the purpose of securing or otherwise covering the performance of relevant financial obligations. This includes repurchase agreements.

While the FCD does not set out a common insolvency law for Member States, in order to improve the legal certainty of financial Collateral arrangements, the legislation requires that Member States should ensure that certain provisions of national insolvency law do not apply to financial Collateral arrangements falling under the scope of the directive. In particular, the FCD disapplies any national insolvency law that would inhibit the effective realisation of financial Collateral[86] or cast doubt on the validity of techniques contemplated under the FCD such as bilateral close-out netting, the provision of additional Collateral in the form of top-up Collateral and substitution of Collateral.

[85] FCD 2002/47/EC, article 2(1)(b) & (c).
[86] FCD 2002/47/EC, recital 5, article 4.

The FCD imposes limitations on the perfection requirements which national laws may impose in respect of financial Collateral. These perfection requirements are limited to a requirement that the relevant financial Collateral is delivered, transferred, held, registered or otherwise designated so as to be in the possession or under the control of the Collateral taker or of a person acting on the Collateral taker's behalf. [87] Member States are not permitted to exclude Collateral techniques where the Collateral provider is allowed to substitute Collateral or to withdraw excess Collateral.

The FCD also requires that the perfection or enforceability of a financial Collateral arrangement, or the provision of financial Collateral under a financial Collateral arrangement, should not be dependent on the performance of any formal act such as the execution of a document in a specific form or the filing or other registration of the arrangement, subject to certain exclusions. [88] This streamlines the collateralisation process and reduces administrative burdens. However, in order for this to operate effectively, the FCD covers only those financial Collateral arrangements which provide for some form of dispossession, i.e. the provision of the financial Collateral, and where the provision of the financial Collateral can be evidenced in writing or in a durable medium, ensuring thereby the traceability of that Collateral. [89]

The FCD seeks to protect top-up financial Collateral arrangements and Collateral substitution arrangements under which replacement financial Collateral is substituted by a Collateral giver for other assets of the same value. The FCD also provides for a right of use in the case of security financial Collateral arrangements, with the aim of increasing liquidity in the financial market stemming from such reuse of "pledged" securities. [90]

The scope of the FCD, and therefore the protections available to Collateral provided under financial Collateral arrangements, is currently limited to particular instruments. Article 4(a) of the FCD states that the financial Collateral to be provided under an approved financial Collateral arrangement (as defined in the FCD) must consist of "cash or financial instruments", and following the amendments under Directive 2009/44/EC, this has also been extended to include credit claims. For the purposes of the FCD:

- "cash" means money credited to an account in any currency, or similar claims for the repayment of money, such as money market deposits; [91] and
- "financial instruments" means shares in companies and other securities equivalent to shares in companies and bonds and other forms of debt instruments if these are negotiable on the capital market, and any other securities which are normally dealt in and which give the right to acquire any such shares, bonds or other securities by subscription, purchase or exchange or which give rise to a cash settlement (excluding instruments of payment), including units in collective investment undertakings, money market instruments and claims relating to or rights in or in respect of any of the foregoing. [92]

[87] FCD 2002/47/EC, recital 9.
[88] FCD 2002/47/EC, recital 10.
[89] FCD 2002/47/EC, recital 10.
[90] FCD 2002/47/EC, recital 19.
[91] FCD 2002/47/EC, article 2(1)(d).
[92] FCD 2002/47/EC, article 2(1)(e).

The limited definition of "financial instruments" under the FCD means that the scope of the legislation is similarly limited to certain Collateral types. As a result, the protections provided under the legislation to financial Collateral arrangements in relation to Collateral provided in the form of shares, bonds, cash, money market instruments and other common forms of financial Collateral do not currently extend to cover the provision of Collateral in the form of emission allowances. [93] This is because emission allowances do not fall within the definition of "financial instruments" for these purposes.

9.2.3 Current use of emission allowances as Collateral in the EU ETS

The acceptance of allowances as Collateral is not widespread. ICE Clear Europe first accepted EUAs and CERs as Collateral for initial margin around two years ago, with a haircut of 25 per cent. Clearing members were allowed to cover up to 30 per cent of their exposure with allowances. Some clearing members made use of this offer. Notable exceptions were German firms: German regulation does not protect counterparties with allowances held as Collateral in the event of the clearing house's insolvency.[94] However, given the security concerns with the National Registries and related problems with the spot market, ICE has raised the haircut to 100 per cent, and thus effectively no longer accepts allowances as Collateral.[95]

Nasdaq OMX accepts a limited use of allowances as Collateral, with a number of restrictions. This can only be taken up in the final week of trading of their EUA and CER forward contracts, and is used essentially as a concession in recognition of the significant increases in daily margins in the final trading week. Net sellers are allowed to pre-deliver allowances in order to reduce their need for Collateral. The seller can pre-deliver allowances up to a maximum equal the sum of all net short positions in forwards belonging to the same Compliance Period as the pre-delivered allowances. Nasdaq OMX reserves the right to apply a haircut to the value of the allowances used as Collateral, although the value of this is not set.

In addition to ICE and Nasdaq OMX some other clearing houses have investigated the use of allowances as Collateral, but the investigations either ceased after a particular barrier was encountered, or were not conducted in earnest. There is no clear evidence of brokers or bilateral clearers accepting allowances as Collateral (for example, LEBA, the London Energy Brokers Association, is not aware of any activity in this regard among its brokers) and we consider this activity likely to be at most very small scale.

There are a number of reasons why the acceptance of emission allowances as Collateral is not more widespread. These barriers and risks include:

- The efficiency and liquidity of the spot market. A well-functioning and efficient spot market is essential for the use of allowances as Collateral. EMIR Article 46 notes that a CCP should "accept highly liquid collateral with minimal credit and market risk". The commercial risk management practices of CCPs generally embody this principle. In the case of a counterparty defaulting, the clearing house (or bilateral clearer) would need to be

[93] FCD 2002/47/EC, article 2(e).
[94] German Insolvency Ordinance.
[95] ICE retains the option to accept allowances as collateral in the future, hence the 100 per cent haircut instead of completely removing the use of allowances as collateral.

able to offload the allowances quickly. Holding allowances as Collateral would increase the amount of allowances the clearer would have to hold, as well as the time for which they would have to hold them. In a market that is characterised by high price volatility, falling prices, and relatively low levels of liquidity (in terms of volume and frequency of trades), the risk associated with holding allowances as Collateral is currently high (these commercial factors are, of course, subject to change).

- Registry problems. Past problems, such as the theft of allowances, have contributed to an undermining of the spot market and increased the perceived risk to clearers of holding allowances as Collateral. Although the transition to the Union Registry is expected to have substantially eliminated security as an operational risk, stakeholders have indicated that the Union Registry needs to operate with absolutely no problems for a period of time (lasting at least several months even through to some years) before clearers would feel comfortable with the stability of the Registry.
  Similarly operational difficulties with the Union Registry are a concern: e.g. technical access problems, such as those leading to a minor outage on 13th March 2013. Market participants are wary of further operational risks.
- Low price and price volatility. The decline in the price of allowances over time implies that the value of EUAs as Collateral has reduced, particularly after the application of haircuts. The price volatility is also a concern, and is exacerbated by the lower overall price of EUAs. The internal risk committees of banks and clearing houses would need assurance that the price of EUAs is not going to fall away to zero before they place any confidence in them as Collateral; this is unlikely to happen while the price remains volatile and low.
- Nature of the asset class. Allowances are still considered an 'exotic' asset class and therefore often not even investigated as potential Collateral candidate by clearers. Clearers tend to be conservative. For example, CME has only recently accepted *gold* as Collateral; emission allowances in comparison comprise a far less well understood asset class.[96]
- Coverage of the FCD. Some, but notably not all, relevant stakeholders consulted on this issue cited the lack of coverage of allowances by the FCD as a barrier to their use as Collateral. Interestingly, some stakeholders consider that the FCD — whilst a step in the right direction — did not go far enough, so that even an extension of the Directive would not mitigate specific bankruptcy risks associated with using allowances as Collateral.

9.2.4 Use of Collateral in auctioning as part of settlement

While EUAs are not widely used outside the EU ETS itself, EUAs are used in the auctioning process, as provided for under the Auctioning Regulation and discussed in more detail in this Section.

Before an auction takes place for a two day spot or five day futures transaction, bidders or their clearing members are required to post Collateral in respect of their prospective bids

[96] Bloomberg (2012), 'CME Clearing Europe to accept gold as collateral on demand' http://www.bloomberg.com/news/2012-08-17/cme-clearing-europe-to-accept-gold-as-collateral-on-demand-1-.html.

(Article 49 Auctioning Regulation).[97] In addition, the auctioneer is to give allowances as Collateral to be held in escrow with the clearing system or settlement system acting as custodian of those allowances until delivery is made (Article 50 Auctioning Regulation).

Member States may also submit Collateral in respect of the auctioning of futures that, where the Member State and the auctioning platform agrees, will be released and replaced by allowances held in escrow by the clearing system or settlement system, acting as a custodian. The clearing system or settlement system can continue to hold such allowances in escrow in a holding account at the option of the Member State, where such allowances are not used.

Both the Auctioning Regulation and the EEX Arrangements provide that ECC Lux will hold allowances, pending delivery to a successful bidder, in escrow as a custodian. The Auctioning Regulation does not deal with what happens to the allowances upon insolvency of ECC Lux. However, the EEX Arrangements contain a German law governed escrow agreement providing that such allowances are "Collateral security" for the purpose of Article 2(m) of the SFD and as such that the protection under Article 9 of the FCD applies.

The extension of the FCD to allowances is likely to have similar implications in terms of protection for collateral providers in the auctioning context, i.e. the auctioneers and the bidders in the auctioning. However, as with the use of EUAs in other contexts, our view is that simply extending the FCD to cover emission allowances, without addressing other legal issues, would not be sufficient to overcome the current market reluctance to use EUAs as collateral. We note that ICE already has the provision to accept EUAs as collateral from clearing members, but due to the 100 per cent haircut this provision is effectively negated. Extension of the FCD in this case would have little relevance.

9.2.5 The legal arguments for extension of the FCD

As noted above, the scope of the Collateral instruments covered by the FCD does not currently include emission allowances. In this Section 9.2.5 we analyse the legal basis for the extension of the protections of the FCD to cover financial Collateral arrangements relating to emission allowances and the practicality and desirability of such changes from a legal perspective. The key commercial advantages and disadvantages of extending these protections to Collateral arrangements relating to emissions allowances are considered separately in detail below.

The first step in the legal analysis is to consider the legal rationale for extending the scope of the FCD to cover emission allowances. The starting point in this analysis is to identify and consider the relevant legal issues in the market that need to be addressed that currently might be deemed to limit the use of emission allowances as Collateral. We have identified the key issues in this area and we consider each of them in detail in turn below:

Legal uncertainty of insolvency protection of Collateral arrangements under national laws

If an arrangement qualifies as a financial Collateral arrangement under the FCD, this confers a number of benefits on the Collateral taker in an insolvency situation under the relevant national law implementing the directive. In particular, under Article 8 of the FCD, certain

[97] As noted in Section 3.4.4 ICE does not require specific collateral to be posted for the auction as all participants are Clearing Members with general collateral guarantees.

insolvency provisions relating to the order of payment of creditors are disapplied, restrictions that would inhibit the realisation of financial Collateral are disapplied and also the directive prevents the avoidance of the financial Collateral arrangement by a liquidator or administrator in certain situations. [98] Emission allowances do not currently fall within the scope of the FCD and therefore, in general, the national insolvency laws of Member States do not confer this same level of protection on Collateral arrangements under which emission allowances are provided to a Collateral taker. This means that a market participant faces potential legal uncertainty (or at the very least, differing treatment) in relation to its emission allowances Collateral arrangements (whether by way of title transfer or by way of security interest) under the legal regimes that apply under the respective national laws of the various Member State jurisdictions in which it might do business. This is deemed by many market participants to amount to additional legal risk that makes EUA Collateral arrangements less attractive.

The extension of these protections to emission allowances by a broadening of the scope of instruments covered by the FCD on a harmonised and uniform basis across Member States would lead to a perceived and, in many cases, tangible reduction in legal risk associated with Collateral arrangements for emission allowances when viewed against current requirements which market participants are required to consider on a jurisdiction by jurisdiction basis. As a result of the increased protection around emission allowance Collateral arrangements in an insolvency situation, Collateral takers may be more inclined to accept emission allowances as Collateral.

Legal uncertainty of recognition of security Collateral arrangements under national laws

Where an arrangement qualifies as a security financial Collateral arrangement under the FCD, this enables the Collateral taker legal certainty around the enforcement of his security in an insolvency situation under the relevant Member State national law. [99] For example, Article 4 of the FCD requires that Member States must ensure that the Collateral taker under a security financial Collateral arrangement can sell, appropriate or by set off apply the value of financial Collateral towards the discharge of the Collateral giver's obligations on an enforcement event under the relevant arrangement, subject to certain conditions. The application of these uniform standards to Collateral arrangements relating to emission allowances would provide market participants with a uniform and harmonised degree of legal certainty and legal protections across all Member States in relation to the recognition of security provided by the Collateral giver under such arrangements, which in turn may encourage such market participants to make greater use of emission allowances as Collateral.

As noted below, there are certain other considerations around enforcement of security that exist outside the narrow context of the FCD that would also need to be addressed in order to fully cover off the concerns of those in the market.

Legal uncertainty around rights of use and ability to substitute Collateral under national laws

Article 5 of the FCD requires that Member States must provide for Collateral takers to have a right to exercise a right of use in relation to financial Collateral provided under a security

[98] FCD 2002/47/EC, article 8(1)-(4).
[99] FCD 2002/47/EC, article 4(1).

financial Collateral arrangement (without invalidating the security arrangement). Article 5 also allows for the ability for the Collateral taker to (a) transfer replacement equivalent Collateral as a substitute for the original financial Collateral (at the latest) on the due date for performance of the relevant financial obligations or (b) otherwise set off the value of Collateral against existing financial obligations of the Collateral giver. [100] These rights and protections for the activity of the Collateral taker are important elements of the Collateral arrangement and constitute a powerful legal and commercial incentive for Collateral takers to receive Collateral in the form of "financial instruments" that benefit from the protections under the FCD as opposed to other forms of Collateral such as EUAs where these rights and protections are not guaranteed under the relevant national laws.

While securities lending arrangements can be established in relation to emission allowances, securities lending related to allowances is typically arranged bilaterally through escrow arrangements rather than more common and straightforward structures for financial Collateral applied in securities lending more generally. As Recital 19 of the FCD notes, the right of use in case of security financial Collateral arrangements has the aim of increasing liquidity in the financial market stemming from such reuse of the "pledged" securities. This makes a clear causal link between the protection of legal rights of reuse and the objective of encouraging liquidity in the markets where such securities may be reused.

Legal uncertainty around legal title and conflicts of laws

Article 9 of the FCD concerns the issue of conflicts of laws and introduces in relation to financial Collateral covered by the directive certain provisions in relation to Collateral in the form of "book entry securities", requiring that issues of title, legal nature and proprietary interests, requirements for perfecting security and other matters in relation to those Collateral types are reserved for the governing law of the country in which the relevant account / register is maintained. The Registry Regulation has introduced a broadly equivalent provision into the regulatory regime applying to emission allowances (see Article 11(5) of the Registry Regulation which states that "accounts shall be governed by the laws and fall under the jurisdiction of the Member State of their administrator and the units held in them shall be considered to be situated in that Member State's territory"). As emission allowances can only exist by means of holding in an account in the Union Registry, the relevant jurisdiction in respect of any account will always be clear.

On this basis, extension of the FCD in this area to emissions allowances would probably not bring additional benefits in areas such as the legal nature of allowances. However, recent reforms under the Registry Regulation (for example, those changes resulting in the current Article 40) and their positive impact on key legal questions such as the legal nature of an allowance and the means of demonstrating title are important related developments which justify the need to add the additional layer of certainty provided by the FCD.

We discuss the impact of the introduction of Article 40 to the Registry Regulation further below.

[100] FCD 2002/47/EC, article 5(2).

Article 40 of the Registry Regulation addresses three core objectives in the following manner.[101]

Table 9.1: Objectives of Article 40

Article	Objective	Provisions
40(1)	Clarifying the legal nature of an allowance	An allowance or Kyoto unit shall be a fungible, dematerialised instrument that is tradable on the market.
40(2) and (4)	Clarifying how title to an allowance is demonstrated and transferred	The dematerialized nature of allowances and Kyoto units shall imply that the record of the Union Registry shall constitute prima facie and sufficient evidence of title over an allowance or Kyoto unit, and of any other matter which is by this Regulation directed or authorised to be recorded in the Union Registry. A purchaser and holder of an allowance or Kyoto unit acting in good faith shall acquire title to an allowance or Kyoto unit free of any defects in the title of the transferor.
40(3)	Restraining the operation of domestic law to the extent it could undermine the finality of transactions completed in accordance with the Registry Regulation	The fungibility of allowances and Kyoto units shall imply that any recovery or restitution obligations that may arise under national law in respect of an allowance or Kyoto unit shall only apply to the allowance or Kyoto unit in kind. In particular: • subject to Article 70 (which relates to rectification of errors not relevant to the transfer of allowances between account holders) and the reconciliation process foreseen in Article 103, a transaction shall become final and irrevocable upon its finalisation pursuant to Article 104. Without prejudice to any provision of or remedy under national law that may result in a requirement or order to execute a new transaction in the registry, no law, regulation, rule or practice on the setting aside of contracts or transactions shall lead to the unwinding in the registry of a transaction that has become final and irrevocable under the Registry Regulation; and • nothing within this Article shall prevent an account holder or a third party from exercising any right or claim resulting from the underlying transaction that they may have in law, including to recovery, restitution or damages, in respect of a transaction that has become final in the Union Registry, for instance in case of fraud or technical error, as long as this does not lead to the reversal, revocation or unwinding of the transaction in the Union Registry.

Source: Norton Rose Fulbright analysis

The impact of Article 40 can be considered through an assessment of its impact on pre-existing legal analysis. For example, prior to the introduction of Article 40 there was existing

[101] Register Regulation (EU) 389/2013, articles 40(1), 40(2) & (4) & 40(3).

English case law that an allowance was a form of intangible property.[102] The most recent case considered the circumstances where a victim of a theft of allowances could pursue a proprietary claim for restitution against the ultimate holder of such allowances. Under English law, one defence to such a claim is the defence of bona fide purchaser for value and without notice. In that particular case, where the facts took place before Article 40 was in force in its current or previous form, the recipient was found to not be able to access that defence on the basis that it had sufficient information to be on notice. Following the introduction of Article 40, the question arises whether in similar circumstances a court would equate the English law defence of bona fide purchaser for value and without notice with the Article 40(4) formulation of a "purchaser and holder of an allowance or Kyoto unit acting in good faith shall acquire title to an allowance or Kyoto unit free of any defects in the title of the transferor". As a regulation such as the Registry Regulation is directly effective, national law must ensure that rights arising from the application of directly effective EU legislation are protected.

Similar questions will arise in other jurisdictions. For example, in France Article L. 229-15 of the French Environment Code describes the legal status of the EUAs as follows:

"GHG emission EUAs granted to operators of installations authorized to emit such gases shall be movable assets exclusively represented (i.e. dematerialised) by inscription on the account of their owner in the national registry mentioned in Article L. 229-16. EUAs shall be negotiable, transmissible by transfer from an account to another and confer identical rights to their holders. They may be assigned from their issue, subject to the provisions of Article L. 229-18.

By granting allowances negotiability it is arguable that it was intended to enable the law relating to negotiable instruments to be used in France with respect to transfers. This would bring with it the benefit of the law relating to the ability to acquire good title to a negotiable instrument notwithstanding the defect in title of the transferor. The question would therefore arise whether the approach likely to have been applicable prior to Article 40 will remain substantively the same or be altered by the formulation used by Article 40. This is a relevant question because Article 40 did not provide that an allowance is a negotiable instrument (although some sector representative bodies such as the International Emissions Trading Association had suggested this as a means of clarifying transfer of title rules relating to allowances). Instead, Article 40 provides that an allowance is a "*fungible, dematerialised instrument that is tradable on the market*" and then provides that a "*purchaser and holder of an allowance or Kyoto unit acting in good faith shall acquire title to an allowance or Kyoto unit free of any defects in the title of the transferor*". This is, however, a very similar formulation to transfer of title as is recognised under both common law and civil law jurisdictions' law and practice relating to negotiable instruments (e.g. the property that is the subject matter of the instrument passes from the transferor to the transferee by mere delivery and a transferee accepting the instrument in good faith and for valuable consideration (and who has no notice of any defect in the title of the transferor) obtains an indefeasible title).[103] In practice, this

[102] Armstrong DLW GMbH v Winnington Networks Ltd [2012] EWHC 10 (Ch).

[103] Whilst this summary is closest to the English law approach to transfer of title of negotiable instruments, it is generally consistent with the approach taken in common law and civil law jurisdictions. For example, in France, the most analogous rule is provided for in Article L211-16 of the the French Monetary and Finance Code, which states that "*Nul ne peut revendiquer pour quelque*

means that a legal determination of the validity of a disputed transfer in the jurisdiction of a Member State could involve consideration of whether previous legal precedents relating to the transfer of title of negotiable instruments has any application to the similar formulation used in Article 40. Such application would not necessarily be a negative outcome and could assist reach a conclusion consistent with the policy intent of Article 40. Rather, it highlights that there may be a residual amount of uncertainty as to the application of Article 40 in a given legal dispute (which is a far better position when compared to the significant legal uncertainty that existed before the introduction of Article 40).

In our view, these questions are important issues for emissions market participants. The approach that has been taken is to define certain key functional outcomes relevant to enhancing the confidence of market participants utilising the EU ETS. This is similar to the approach of the SFD in that the narrow objective of ensuring national laws do not cut across the settlement finality provided therein is resolved but not the wider question of the indirect impacts on those national laws. The widely held view of the success of the SFD (as transposed into domestic legislation) in providing an important degree of comfort to significant trading markets is also relevant for the Article 40 reforms. In our view, despite continuing questions regarding the nuanced impact of Article 40 under domestic laws, the overall impact is to provide an important 'baseline' of certainty. This is an important conclusion when considering the value of extending the FCD to emission allowances as creating the right conditions for market certainty may well involve multiple reforms, i.e. reforms extending beyond the FCD alone, as discussed in more detail in the following Section 9.2.6. In assessing the value of extending the FCD to EUAs, it will be important to liaise with all the relevant stakeholders. For example, whilst the Auctioning Regulation allows Member States to use allowances as collateral, it requires bidders to provide cash or other collateral. It will be important to understand whether Member States would be concerned by the alterations to this approach with the widening of the scope of bidder collateral.

9.2.6 The legal basis for extension of the FCD

Assuming that the Commission was to take the view that the scope of the relevant financial Collateral arrangement protections should be extended to a wider range of instruments, the next key question is to consider how in practical terms the necessary broad architectural or detailed legislative changes could be made to the relevant EU and national legislation. We consider below the available mechanisms to effect the extension of the FCD to cover emission allowances, together with discussion of other legal changes that may be necessary or desirable.

As noted above, the FCD does not link its own definition of "financial instruments" to the corresponding definition under MiFID and therefore the proposed changes under MiFID II to classify EUAs as Financial Instruments under MiFID would not bring emission allowances within

cause que ce soit un titre financier dont la propriété a été acquise de bonne foi par le titulaire du compte-titres dans lequel ces titres sont inscrits" [that is: "No one can claim for any reason whatsoever [title to] securities the ownership of which was acquired in good faith by the owner of the securities account in which such securities are registered"].

the scope of the FCD. Additional legislative changes to the FCD will therefore be required to broaden its scope to emission allowances.

On the basis of the provisions in the FCD, in principle there does not appear to be any reason why the protections in the FCD could not be extended in some form to cover emission allowances, although the process is not necessarily straightforward given the fact that the legal nature of emissions allowances is not uniformly accepted across all Member States as a result of the fact that EUAs have aspects of both administrative grants or licences and of private property which results in Member States coming to different conclusions as to the legal classification of EUAs. Notwithstanding this difficulty, based on our analysis, it appears that the majority of the provisions of the FCD do not need to be limited in their application to the existing types of "financial instruments" (as defined in the FCD) and our view is that the directive could potentially be applied to emissions allowances through EU legislative provision taking the form of an amendment to the FCD to include emission allowances in the definition of "financial instruments".

Our analysis of the key provisions of the FCD against the legal and operational characteristics of emission allowances suggests that the main Collateral taker protections could be made to work for emission allowances, although certain changes and adaptations would need to be considered in detail (which we note is beyond the limited scope of this Sub-Task exercise) in the following areas:

Enforcement of security financial Collateral arrangements and right of use of financial Collateral under security financial Collateral arrangements[104]

The key obstacle to putting in place security financial Collateral arrangements in relation to emission allowances is the current practical difficulty of taking security over emissions allowances. The latest Registry Regulation does not anticipate the creation of security interests at the Union Registry, although this has been identified by some in the market as a potentially valuable quality for the Union Registry. As a result, we understand that, to the extent this issue remains open to question, it is therefore a matter that would be determinable at Member State national law level in the relevant jurisdiction rather than at the level of the Commission or Registry Regulation, with the result that there could be significant differences between practices in Member States in implementing such a security interest model. For example, we understand that in certain jurisdictions the implementing legislation contains a provision specifically prohibiting the pledging of emission allowances. Because the Union Registry does not support the registration of any form of security or "pledge", it follows that the only functional and reliable Collateral model for Collateral takers (in the current market) is to adopt a Collateral arrangement comprising full title transfer of the allowance and this may not be attractive to certain market participants. We note also that it is widely held that the validity of a charge given over emission allowances remains open to question in a number of jurisdictions in the EU, particularly when the security is a pool of allowances originating from accounts in different Member States.

[104] See FCD 2002/47/EC, articles 4 & 5.

In terms of proposing a solution, we note that some of the previous proposals on Article 40 of the Registry Regulation (which suggested that the regulation should make express provision for the creation of security interests) was not followed up and implemented following discussions with Member States. As a result, this has been left effectively as an open question over the regime. Recital 13 of the Registry Regulation notes that:

"Since it may be desirable to provide for additional account types or other means that would facilitate the holding of allowances or Kyoto units on behalf of third parties, or the taking of a security interest in them, these issues should be examined in the context of a future review of this Regulation." [105]

Assuming that it remains a possibility that this issue may be examined again by the Commission in the context of a future review of the Registry Regulation, our recommendation is that any proposal to provide for security financial Collateral arrangements in relation to emission allowances under the FCD should be considered in tandem with a proposal to amend the Registry Regulation to facilitate the taking of security over emission allowances.

Some practical examples drawn from English law can assist in understanding the issues here, although we understand that these issues are not necessarily unique to English law jurisdictions. On the basis that an emission allowance is a form of property, it follows that security can be granted over an emission allowance under English law. However, issues arise in practice in respect of perfecting such security. The most secure form of security a person could seek in the UK would be a "fixed charge" over the emission allowance of the third party granting that security. This would give the beneficiary of the fixed charge priority in the event of insolvency. There are three issues with this structure: first, ensuring that the security interest is "perfected" by registration; second, ensuring that the interest of the beneficiary of the charge is protected vis-à-vis purchasers; and third, ensuring that the charge takes effect as a fixed (as opposed to a floating) charge.

In relation to the first two issues mentioned above, UK law enables a security interest to be registered. Such registration serves to ensure the interest of the beneficiary of a charge is protected vis-à-vis purchasers by deeming them have been placed on notice by way of such registration. As noted above, in the Union Registry there is no system to record the existence of security interests in emission allowances. There is therefore a risk the grantor of the charge could either transfer title to the emission allowances or could grant security over the emission allowances to a third party without that third party having actual or deemed notice of the prior security interest.

In relation to the third issue mentioned above, in order to ensure that a fixed charge is obtained and maintained over emission allowances, the beneficiary of that charge must be able to demonstrate an adequate degree of "control" over the emission allowances. This "control" has two parts: control over dealings in the emission allowances themselves and control over the "proceeds" of the emission allowances (i.e., the proceeds of sale of the emission allowances). This can pose significant practical difficulties.

[105] Registry Regulation (EU) 389/2013, recital 13.

An example of how similar issues have been dealt with in respect of dematerialised securities includes the approach of the CREST system in the UK. CREST has developed an escrow function that allows a CREST member to move charged securities to an escrow balance under the control of the chargee. This achieves the same practical effect of passing control of securities to a third party without transferring title.

In light of the above, examples of important practical reforms that could be undertaken include the ability of an account holder to set up a sub-account where control of that account could be given to a third party and that the account holder could not remove such control without the consent of that third party. An additional enhancement would be to enable a compliance entity to elect for future allocations of allowances to be issued directly into this 'controlled' account (with such election again being unable to be reversed without the consent of that third party). These practical reforms could support:

- Enhancing chargee confidence. The confidence of a chargee taking security over emission allowances would be improved by the practical ability to the chargee to demonstrate clear control over the charge assets. This would be similar to the mechanism offered by CREST in the UK that allows a CREST member to move charged securities to an escrow balance under the control of a chargee (thus achieving the same practical effect of passing control of securities to a third party without transferring title).
- Enhancing conditions for compliance entity lending. The second recommendation would create positive conditions for secured finance to be extended to compliance entities that have benefit of forward allocations of allowances. For example, Norton Rose Fulbright LLP has been involved in loans for the retro-fit of compliance installations where better financial terms would have been available if the bank was able to have confidence that allocated allowance would move directly into an account controlled by an entity other than the compliance entity.

Recognition of close-out netting provisions and disapplication of insolvency law provisions[106]

As discussed above, issues of legal uncertainty in relation to emission allowances continue to remain notwithstanding the changes that were introduced into the Registry Regulation (resulting in the current Article 40 of the Registry Regulation) which sought to address certain concerns of market participants. As a result, the treatment and ownership of emission allowances remains a potential point of concern for participants. In addition, as the treatment of EUAs under the bankruptcy law of Member States remains a potential concern for market participants in the absence of EU wide safeguards against bankruptcy proceedings that cover emission allowances (although we note that EU insolvency and bankruptcy law is also not harmonised in relation to other areas or securities) and the lack of coverage of the FCD which would serve to promote their use, this also may be deemed to promote a cautious attitude to use of emissions allowances as Collateral. Bringing emission allowances within the scope of the FCD and proposing to protect the enforcement of Collateral arrangements relating to emission allowances under the provisions of Article 4(5) of the FCD are not likely to be sufficient without also making changes to the Registry Regulation and also other EU legislation in order to

[106] FCD 2002/47/EC, articles 7 & 8.

address these issues, as suggested in the three options set out in the paper published by the Financial Markets Law Committee in October 2009.

9.2.7 Settlement finality in relation to emission allowances

As noted in Section 6.2 of this report, the purpose of the SFD is to reduce the systemic risk associated with participation in payment, clearing and settlement systems, and in particular the risk linked to the insolvency of a participant in such a system. A number of commentators have noted that market participants might take additional comfort from the addition of emission allowances to the SFD which would deal with the irrevocability of instructions and protect transactions in emission allowances from being unwound as a result of insolvency law claw back provisions, for example provisions under any relevant Member State insolvency laws relating to transactions at an undervalue and to transactions made under preferences.

Overall, our analysis suggests that simply extending the FCD on its own may not make a significant impact on the willingness of market participants to make use of emission allowances as Collateral. This is because the other legal issues that remain in the market, such as issues around title and registration of security, would not be resolved through an extension of the FCD alone, and therefore continue to represent a source of legal risk of concern to market participants. We note that, as discussed in Section 6.2, the SFD relates to Financial Instruments as defined in MiFID, and therefore the SFD will apply to emission allowances once MiFID is amended in line with the MiFID II proposals.

9.3 High-level cost-benefit analysis of extending the FCD protections to emission allowances

The following Sections analyse the commercial rationale behind extending the FCD protections to cover emission allowances. We begin by assessing the possible size of the market for the use of allowances as Collateral and the potential benefits that may arise. We then discuss the possible impacts on CCPs and other market participants, including compliance costs, and wider impacts on the market as a whole (e.g. on liquidity).

9.3.1 Direct economic benefits

The main advantage of extending the FCD to cover allowances (provided that this solves, or leads to the solution of, other barriers) is the savings to firms of the opportunity costs of raising other Collateral, such as cash and sovereign bonds.

In order the estimate the possible benefits in this area, we consider the potential market for the use of EUAs as Collateral, and estimate the savings to firms in terms of the (opportunity) cost of raising other capital.

Size of the potential market

Table below presents the historic and forecast value of EUA allocations.[107]

Table 9.2: EU ETS supply and demand balance (million tonnes)

	2008	2009	2010	2011	2012F	2013F	2014F	2015F
EUA Allocation	2,003	2,052	2,079	2,099	2,334	2,110	2,072	2,034
Emissions	2,119	1,882	1,937	1,893	1,952	1,951	1,957	1,962

Source: Barclays Quarterly Report 2013.

The size of the possible market in each year would be based on the annual availability (allocation) of allowances. (For simplicity this does not account for the carry-over of EUAs from one phase to the next). For 2013 this is forecast at 2,110 million tonnes. The value of this, based on ICE's end-of-day settlement price at the beginning of March 2013 of €4.57, is approximately €9.6 billion. Any return to historic price levels would significantly increase the potential value of EUAs as Collateral. This can be compared to, for example, the total value of Collateral in circulation in the uncleared OTC derivative market of approximately €2.6 trillion in 2011.[108]

This total value would be reduced by the haircuts applied by clearing houses and bilateral clearers. Haircuts represent the level of risk the clearing firm is exposed to in accepting allowances as Collateral. An important driver here is price volatility — i.e. the risk that the value of the Collateral given will decline substantially before it can be realised. Given that ICE applied a haircut of 25 per cent when it first accepted EUAs as Collateral, we believe that haircuts would be above this level, and could range from 35 per cent to 65 per cent, with a central estimate of 50 per cent.

The total possible value would then be adjusted by the proportion of firms that would wish to use their EUAs as Collateral, bearing in mind the possible barriers that may exist (e.g. the costs of setting up the necessary processes). We have assumed that this proportion would range from 25 per cent of firms to 75 per cent of firms, again with 50 per cent as a central estimate.

Using these ranges, we estimate the possible size of the market for the use of EUAs as Collateral to be between approximately €800 million (low scenario) and €4.7 billion (high scenario), as shown in the table below.

Table 9.3: Estimated size of potential market for use of EUAs as Collateral

	Low market scenario	Medium market scenario	High market scenario
Haircut (%)	65	50	35
Proportion of firms	25	50	75
Estimated value (€m)	844	2,411	4,701

Source: Europe Economics.

[107] We have not estimated the possible savings that might arise from the use of CERs or ERUs as collateral. Whilst it is possible that clearers may accept CERs or ERUs as collateral, the current size of the spot market and price of these products suggests that the practical potential for using these as collateral would be minimal.

[108] ISDA Margin Survey 2012; converted from $3.6 trillion using average dollar/euro exchange rate for 2011.

Value of savings

The value of potential savings to firms of using EUAs instead of raising other capital as Collateral can then be estimated using indicative costs of capital for firms using EUAs. The cost of capital represents the opportunity cost to firms of raising Collateral (i.e. the returns they would otherwise earn on assets if they were not used as Collateral). The data on sector-by-sector cost of capital available to us are on a post-tax basis, and therefore we have adjusted these upwards by the marginal tax rate in each country.

Information on firms using emission allowances is derived from Carbon Market Data's company database. The table below presents the share of emission allocations by industry sector, and the corresponding cost of capital.

Table 9.4: Share of allocated allowances and costs of capital, by industry sector

Industry sector	Share of allocated allowances	Cost of Capital (pre-tax weighted average)
Cement & Lime	11.15%	9.04%
Iron & Steel	13.34%	9.89%
Power & Heat	53.69%	7.63%
Food & Drinks	0.73%	7.93%
Pulp & Paper	1.37%	8.65%
Chemicals	4.30%	10.39%
Aluminium	0.26%	10.39%
Oil & Gas	13.24%	11.52%
Motor industry	0.31%	8.71%
Pharmaceuticals	0.07%	9.25%
Mining	0.16%	10.54%
Waste Management	0.00%	9.10%
Coke	0.07%	10.62%
Building Materials	0.36%	9.04%
Glass	0.93%	9.04%
Water Utilities	0.00%	6.52%
Education	0.01%	11.59%

Source: Carbon Market Data (2011) and EE calculations based upon NYU Stern database.

Multiplying the share of allocated allowances with the medium estimated size of the market for EUAs as Collateral as shown in Table 9.3 (€2.4 billion) we arrive at the allocation of the possible market size across industry sectors. Multiplying this by the cost of capital in each industry sector provides an estimate of the savings that could be made in each sector from using EUAs as Collateral instead of raising other capital.

The results are shown in the table below.

Table 9.5: Estimated savings across industry sector

Industry sector	Possible value of collateral (€m)	Opportunity cost saving(€m)
Cement & Lime	268.7	17.5
Iron & Steel	321.6	23.3
Power & Heat	1,294.2	70.1

Industry sector	Possible value of collateral (€m)	Opportunity cost saving(€m)
Food & Drinks	17.7	1.0
Pulp & Paper	33.1	2.1
Chemicals	103.7	7.9
Aluminium	6.3	0.5
Oil & Gas	319.2	26.8
Motor industry	7.5	0.5
Pharmaceuticals	1.8	0.1
Mining	3.8	0.3
Waste Management	0.0	0.0
Coke	1.7	0.1
Building Materials	8.7	0.6
Glass	22.4	1.5
Water Utilities	0.1	0.0
Education	0.2	0.0
Total	**2,411**	**212**

Source: Europe Economics.

The possible benefit to firms using EUAs as Collateral could be in the region of €212 million per year, under our medium scenario. The cost of capital percentages used could be adjusted downwards to take account of the return on the Collateral posted paid by the clearing house (either through a direct coupon, or indirectly through lower fees). Using a global risk-free rate of 1.76 per cent, the possible savings across firms of €212 million would be reduced by approximately €41 million, i.e. €171 million.

This figure is sensitive to the price of EUAs — for example, if the price were to rise to historic levels of €15 a tonne, or even €6 a tonne, the possible savings could increase to €300 million or €692 million. (And increased value could also increase interest levels). The risks associated with accepting EUAs as Collateral will also influence the possible size of the market; if the haircuts imposed by clearer are reduced to 25 per cent from 35 per cent, the estimated possible savings increase to €317 million under our medium scenario.

We have tried to be conservative in our assumptions for this scenario, selecting a relatively high haircut and low proportion of market participants who would be interested in taking up the acceptance for emission allowances as Collateral. Take-up would most likely be improved (both among those accepting and using allowances as Collateral) with increases in the price of EUAs and improvements in the efficiency of the spot market. Competition among clearers may also increase the priority of investigating the possibility of accepting allowances as Collateral. However, the total value of possible savings will be constrained by limits imposed by clearing houses on the proportion of margins that can be covered by allowances.

A further driver of take-up would be firms' need for Collateral. Increased clearing obligations, for example regulations around the clearing of derivatives under EMIR, will increase the need for Collateral across sectors of the market. It may be that trading venues and clearing houses face significant increases in demand from members to accept wider forms of Collateral, particularly those disproportionately dealing in products affected by the changes. For example, CME group's decision to accept physical gold as Collateral was justified as follows:

"We recognize there will be a massive demand for Collateral as a result of the clearing mandate. This is part of our attempt to maintain the risk management standard and to offer greater flexibility to clearing members and end clients."[109]

We do note, however, that the current level of collateralisation among derivative contracts is already high, including those traded over the counter and not yet subject to clearing regulations. According to the ISDA Margin Survey 2012, 71 per cent of OTC derivatives transactions were subject to Collateral agreements during 2011 (and 84 per cent of transactions among the larger derivative dealers).[110] On the other hand, margin requirements on any given contract are to increase once EMIR is implemented.

A final consideration would be the interest among market participants to use their allowances as Collateral. Whilst feedback we have received for this study suggests that market participants would welcome the opportunity to make use of otherwise idle assets, the practical use of allowance as collateral may not be straightforward. For example, for a large non-financial company with internal structural separation between the trading and asset-holding parts of the group, there might be complications about using the assets for trading purposes. Trading divisions of large companies may be required to raise their own collateral from the balance sheet agreed by the group, and thus and decisions to use allowances as collateral would need to be taken across the group rather than by the trading division alone.

9.3.2 Impact on CCPs

As noted above, the use of emission allowances as Collateral within clearing and settlement systems is currently very limited and very few CCPs currently accept emission allowances as Collateral. It is likely that extending the protections of the FCD to these instruments would result in a broadening of the scope of "acceptable" Collateral in the market and this could have increasing importance in the light of the new requirements under EMIR which are aimed at increasing clearing and collateralisation of OTC derivatives transactions.

One view is that extending the protections under the FCD to cover emissions allowances would be helpful in encouraging CCPs and other Collateral takers to accept emissions allowances as Collateral, which in turn could encourage liquidity in the emissions market and allow participants more choice in terms of the Collateral they provide. This could allow compliance users to make more productive use of their EUAs (as Collateral) rather than simply holding them in an account until the surrender date.

The question as to whether CCPs will be able to accept EUAs as Collateral under the relevant provisions in EMIR remains an open question. Article 46(1) of EMIR sets out the Collateral requirements for CCPs authorised under EMIR, noting that "a CCP shall accept highly liquid Collateral with minimal credit and market risk to cover its initial and ongoing exposure to its

[109] Bloomberg (2012) 'CME Clearing Europe to accept gold as collateral on demand' http://www.bloomberg.com/news/2012-08-17/cme-clearing-europe-to-accept-gold-as-collateral-on-demand-1-.html.

[110] ISDA Margin Survey 2012, p3.

clearing members."[111] Chapter X of the relevant regulatory technical standards set out the applicable Collateral requirements for CCPs in more detail. Article 39 of the relevant EMIR regulatory technical standards requires that Collateral must meet the conditions set out in Annex I of the technical standards for "highly liquid Collateral". These conditions do not appear to either explicitly or implicitly rule out EUAs as acceptable Collateral for the purposes of EMIR, although additional economic and instrument analysis would be required in order for any CCP to be able to demonstrate satisfactorily that EUAs meet the relevant requirements.

On such a detailed analysis, it may be that certain of the conditions may not yet be met by the market for EUAs (for example, liquidity and market risk requirements, and discussed in Section 9.2.3 above, where we make clear that high liquidity is a commercial as much as a regulatory requirement for the clearers). However, as the market develops it may be the case that further of the conditions would be met.

9.3.3 Impact on other market participants

As with CCPs, our analysis suggests that currently very few other market participants are prepared to accept emission allowances as Collateral, as discussed in more detail above.

As noted above, Recital 19 of the FCD provides for a right of use in case of security financial Collateral arrangements, with the aim of increasing liquidity in the financial market stemming from such reuse of "pledged" securities. This makes a clear causal link between the protection of legal rights of reuse and the objective of encouraging liquidity in the markets where such securities may be reused.

Feedback from stakeholders suggests that interest from market participants to *provide* allowances as Collateral is high in general, although we are not aware of much formal thinking on the part of market participants in this regard (as the opportunities have not been available). Indeed, there seems little reason why holders of emissions allowances would not want to put these assets to use, thus saving the costs of raising other forms of Collateral. There may be practical complications for large companies with internal structural divisions between the trading and asset-holding sections of the group.

The economic analysis above indicates the possible savings to market participants of using allowances as Collateral instead of raising capital for other forms of Collateral. These savings would be spread across the market. Naturally, the greater the value of Collateral that could be obtained from allowances (e.g. higher price of allowances, or lower haircuts) the greater the demand among market participants would be.

However, the extent to which market participants would wish to provide allowances as Collateral would depend on other factors in addition to the legal protection afforded by the extension of the FCD. Participants would incur some compliance costs in setting up appropriate systems to provide allowances as Collateral (these costs would include those costs

[111] Article 46(2) notes that "A CCP may accept, where appropriate and sufficiently prudent, the underlying of the derivative contract or the financial instrument that originates the CCP exposure as collateral to cover its margin requirement". This suggests that EUAs could be taken as collateral in relation to certain options and futures contracts for example.

of overcoming structural separations between trading and asset-holding divisions), and the benefits of doing so would need to outweigh the costs. The effort involved in providing allowances as Collateral could discourage small participants, and also larger, cash-rich, participants with ready access to other forms of Collateral. Increased availability of custody services for allowances would help smaller firms in particular in setting up the provisions to provide EUAs as Collateral. The appetite for custody services of EUAs may be limited, however; one market participant commented that challenges around asset servicing (such as the maturity process of the annual surrendering of allowances, i.e. the 'tear up'), the current absence of ISIN codes (such that EUAs do not "fit" into existing processes) and the absence of a centralised depositary are a deterrent to this type of business.

9.3.4 Compliance costs

When assessing the costs associated with providing and accepting allowances as Collateral, one must bear in mind that market participants would be under no *obligation* to do so, and would only act if they consider the commercial benefits to outweigh the costs. 'Compliance' costs are therefore arguably zero. In any event, the potential costs are likely to be limited.

Firms who would take up the opportunity to provide EUAs as Collateral can be assumed to already be Collateral 'users', with the necessary systems in place (or underway to meet new requirements, for example under EMIR). Incorporating the provision of allowances within this will be marginal, 'front-line' work onto existing systems, possibly in the region of one to two weeks' IT coding time to enable the automatic transfer of allowances to clearing parties. Our understanding from a market participant is that this process would be made simpler once EUAs are defined as financial instruments and therefore standardised, from an IT perspective, with other forms of Collateral (i.e. with ISINs).

Firms with no history of using Collateral would incur higher costs of setting up systems from scratch. They may alternatively make use of Collateral management services of a custodian — costs of these services are estimated at around €50–€100,000 per year.

Costs to firms of accepting allowances as Collateral would include work by internal risk assessment committees to assess the feasibility of doing so, and potentially costs of IT resources. However, as above, these costs would only be incurred if expected to be offset by the expected benefits.

9.3.5 Wider impacts on the market for emission allowances

The FCD provides protection to Collateral takers (which includes both CCPs and also clearing members taking Collateral from their customers or clients). It follows that the extension of the FCD might therefore facilitate the collateralisation of transactions in emission allowances. This may be particularly significant for smaller market participants and compliance users.

In addition, it may also serve to enable the more productive utilisation of emission allowances as Collateral for securities lending and this could serve to promote market liquidity by introducing to the markets emission allowances that might otherwise have simply lain dormant on the balance sheet of the relevant holder. This is likely to have a relatively greater effect in

the derivatives market than the spot market, and we note that the take-up of emission allowances as Collateral depends significantly on the *existing* liquidity and efficiency of the spot market.

It is unlikely that the extension of the FCD to allowances and their use as Collateral would have a significant impact on the price of allowances or liquidity in the market. Although the intrinsic value of EUAs should increase if they could be put to an alternative use, price would still be determined by market mechanisms of supply and demand, which in this market are based largely on compliance needs. We consider it unlikely that demand for EUAs would increase solely because they could be used as Collateral, particularly given the likely reductions in value as Collateral imposed by risk mitigants such as haircuts.

The use of allowances could, in theory, lead to a reduction in transactions costs insofar as this lowers the costs of Collateral. This could manifest in tighter bid-ask spreads and less costly risk management (if using derivatives to hedge risks). However, the scale of this impact is likely to be, in practice, negligible given the relatively small proportion of all Collateral allowances would represent.

Risk analysis of capacity to secure benefits

Whilst extending the FCD looks to be a necessary condition for the use of allowances as Collateral,[112] on its own it may not be sufficient given the range of legal and economic factors that need to be resolved in the market. These represent risks to the capacity of the FCD extension to secure benefits or, to the extent that the situation changes with respect to the economic factors, possible positive drivers. We summarise these below:

- Legal uncertainties in relation to the perfection of security rights in the absence of the means to register interests or implement third party control rights.
- Liquidity and efficiency of the spot market, both to satisfy requirements under EMIR that Collateral is "highly liquid" and to satisfy the needs of clearers to be able to cash in allowances in the event of counterparty default. This need could be alleviated, for example, by taking the daily futures market as an adequate proxy (this is the approach adopted by ICE).
- Price level and volatility of allowances. A higher, and more stable, price level would increase the potential value of allowances as Collateral and reduce to risk to Collateral takers of prices falling significantly at the time at which they need to sell.
- Operational risks around the functioning of the Union Registry. We take this to be a relatively low risk.
- Demand from market participants to provide allowances as Collateral. Although the latent demand appears to be high, this may be limited in practice by the limited appetite for providing custody services of allowances to assist market participants in using allowances as Collateral.
- The accessibility of cash as Collateral. At present access to cash Collateral is not considered an issue by market participants, but this is expected to change in the near future.

[112] Although the fact that ICE accepted allowances as collateral whilst still outside the FCD illustrates how the market can bring forward compensating measures.

Many of these risks are linked to the price and price discovery performance of the emissions market: a recovery in price and reduction in volatility (which would likely be driven by an increase in liquidity) would promote market-led solutions to most (or even all) of the above risks.

We have considered an extension of the FCD to emission allowances without any other changes to the FCD. If this is the case, there do not appear to be any potential disadvantages to doing so. The main issue, as discussed above, is around the scale and achievability of the potential benefits.

10 Initial Recommendations for Further, Longer-term Development

10.1 Summary

Based on our analysis in the preceding Sub-Tasks, we set out in this Section 10 a number of initial recommendations for the further, longer-term development of the regulatory regime in relation to EUAs. To summarise these recommendations, in our view, the current Commission proposals and recent changes to the EU legislation in the market for EUAs are positive steps towards facilitating the further and future development of the market. For example, the recent changes to Article 40 of the Registry Regulation, the proposed changes to the definition of Financial Instruments under MiFID II and the proposals in relation to the SLL are all helpful in addressing certain concerns and issues in the market. As noted above in the summary on Sub-Task 1.2, we think that the extension of the FCD to EUAs would be another move towards solving some of the remaining issues in the market.

As well as these changes, we recommend that the Commission should look to put in place a legislative and/or practical operational solution to the current absence of a satisfactory mechanism to register or enforce a security interest issue at the Union Registry as this could help to encourage the productive use of EUAs as Collateral. In addition, we recommend that the Commission should try to resolve or otherwise seek to encourage Member States to resolve the ongoing issues around legal certainty and title in relation to EUAs, i.e. in connection with Article 40 of the Registry Regulation and the uncertainty of ownership across Member States, either through further amendments to the legislation or by providing guidance or encouraging dialogue between the Member States in order to attempt to address market concerns around these issues.

Our recommendations for the purposes of this Sub-Task are outlined in more detail below:

10.2 Recommendation 1 — Solution to SLL applicability to EUAs

While our conclusion on the other pieces of financial markets legislation is generally that it would be preferable to include EUAs within their scope and treat them in much the same way as other financial instruments, at least to the extent logically possible, we think the Principles in the SLL Consultation may be the exception.

There are several Principles within the SLL Consultation that have no real relevance to EUAs and in respect of which their inclusion in the eventual Securities Law Legislation would have to be disapplied on an instrument specific basis. There are also several fundamental Principles where the mischief being addressed is already covered by the Registry Regulation with varying degrees of consistency. As a result, if the Commission was to make EUAs subject to these

particular SLL Consultation Principles, this would be unlikely to enhance legal certainty and may be more likely to have the opposite effect.

However, it is notable that both the proposal set out in the SLL Consultation Principles and the Registry Regulation follow a similar functional approach, leaving questions of legal characterisation to the Member States and, in a sense the fact that the Registry Regulation has direct effect and effectively forms part of each Member State's law means that there is arguably little inconsistency. However, it would not be possible to apply the SLL Consultation Principles to EUAs wholesale and our analysis suggests that it would potentially be quite complicated to split each Principle and each paragraph within each of them and apply them in different ways.

As a result, we recommend that the Commission should therefore consider adding any provisions of the SLL that have particular value for EUAs (such as those relating to the creation, perfection and enforcement of security interests) to the Registry Regulation or other EUA specific legislation.

10.3 Recommendation 2 — Extend FCD protections to EUAs

In our view, the changes made to Article 40 of the Registry Regulation, the proposed changes to MiFID and the fact that this will extend the scope of other legislation such as the SFD are all helpful in terms of developing the market for EUAs. We think that the extension of the FCD to EUAs would be another significant step towards solving some of the remaining issues in the market.

While certain issues would remain around the question of legal certainty, lack of provision for taking security at the Union Registry and more general questions around conflicts of laws, particularly on insolvency, we think that the positive impact of extending the FCD would bring commercial and legal advantages and would also be relatively straightforward to implement.

Overall, we think that this "piecemeal" approach of bringing EUAs within the scope of existing financial services legislation (i.e. by extending MiFID and the FCD) is on balance preferable to the creation of a bespoke regime for EUAs.

10.4 Recommendation 3 — Provide for security interests at Union Registry

In the medium term, we recommend that the Commission should look to put in place a legal solution to the security interest issue at the Union Registry. This would go some way towards encouraging the use of EUAs as Collateral in security Collateral arrangements, regardless of whether the FCD was extended to cover EUAs.

In the shorter term, there may be practical market-driven measures that could be pursued as an alternative solution to legislative measures, i.e. the provision for locked sub-accounts with access restrictions or other technical or operational solutions to the issues around control of EUAs in accounts by persons other than the legal owner which would allow for a quasi-security model to be developed. These solutions could be promoted as the result of market driven

demand for technical and operational changes at the Union Registry. This would require action by the authorities responsible for the operation of the Union Registry although we consider that such innovations could be introduced without the need for legislative change, e.g. the addition of a security register function would not necessarily need to be implemented via changes to the legislation.

10.5 Recommendation 4 — Resolution of issues of legal certainty and title

We recommend that the Commission should try to resolve or otherwise seek to encourage Member States to resolve the ongoing issues around legal certainty and title in relation to EUAs, i.e. in connection with Article 40.

As with the options for the provision of security interests at the Union Registry, in our view there may be practical steps that the Commission could take that could be effective without necessarily requiring legislative changes - for example, the Commission could explore the option of providing guidance or encouraging other initiatives taking the form of cooperation between Member States to try to encourage a dialogue between Member States to attempt to answer some of the open questions held by market participants as to the treatment of EUAs under the national law of certain jurisdictions, for example:

- Interface between the law of negotiable instruments and Article 40: Clarifying whether a Member State considers the elements of Article 40 regarding transfer of title free of defects in title is sufficiently similar to the law of negotiable instruments to enable law and practice relating to those to be applied in determining future issues (such as, the applicability of case law and practice concerning the impact of notice of any defect in the title of the transferor);
- Article 40(4): Clarifying the intended operation of Article 40(4) to confirm that the reference to "purchaser and holder of an allowance" is not intended to mean that the protection afforded under Article 40(4) only applies while the purchaser holds the relevant allowance; and
- Remedies at national law: Guidance by Member States regarding the likely scope of legal remedies that remain available under national law despite the direct application of Article 40.

Addressing the issue of legal certainty in the market could have a material impact on the perceived legal risks associated with trading, holding and depositing EUAs as Collateral.

10.6 Recommendation 5 — Clarification of settlement discipline in EUAs

If it is considered beneficial to apply the settlement discipline provisions included in certain of the Articles of the CSDR to EUAs, we would recommend considering how to clarify this in the CSDR or alternatively building equivalent provisions into the Registry Regulation. We believe the former would be preferable from the perspective of keeping the legislation together by theme as far as possible (i.e. all provisions relating to settlement for all financial instruments should be in the CSDR).

As explained in Section 6.4 of this report, we believe that the CCPs and other operators of "systems" designated under the SFD should be required to make it clearer as to the extent to which those systems currently apply to EUAs. Once EUAs become Financial Instruments, assuming the CCPs clearing for the markets on which EUAs are traded start to treat them as the subject of transfer orders, we also think it would be helpful to try to standardise the way in which they define the points of entry into the system and irrevocability. We think this could help to reduce the potential inconsistency with the finality provisions in Article 40 of the Registry Regulation.

10.7 Recommendation 6 — Retain focus on EUAs in legislative reform

We note that recent reports suggest that the Commission is looking outside the EU to new legislative developments in this market, for example, we are aware of recent discussions in relation to proposed linkages with emissions trading schemes of other jurisdictions such as Australia. During this period of considerable change in the financial services regulatory regime and given the proposals to tie EUAs more closely into the scope of financial services regulation, we recommend that the Commission should continue to pay close attention to the needs of the market as a whole and, following the model set by EMIR, ensure that cooperation with international regulatory bodies remains a key part of any new proposals.

10.8 Longer-term options for the Single Registry

We provide high-level longer-term options and scenarios for the Single Registry. We consider two main options:

- Integration of additional functions to the Single Registry, such as a payments leg and a trade repository function.
- Transferring the operation and/or ownership of the Single Registry to a third party private partner.

These are not mutually exclusive, e.g. a private partner could take on the payments function whilst leaving the Registry otherwise unchanged.

10.8.1 Integration of additional functions to the Single Registry

We consider the following additional functions that could be added to the Single Registry:

- A payment function and/or a central depository function.
- Trade repository functions.

Introducing a payment function to the Single Registry

The Single Registry does not include a payment function for trades of physical emissions allowances, and only facilitates the transfer of the assets between two parties upon conclusion of a trade. The transfer of payment (between the two parties must therefore occur via a separate banking system, and the parties must agree on delivery times for the allowances and the cash. Since there is no automatic coordination between the two mechanisms, there is

likely to be an unpredictable difference in the timing of the completion of the two transfers.[113] This creates counterparty risk, whereby the first counterparty to make a transfer takes on the risk of the full value of the trade. It is possible to reduce the risks presented by these timing differences using contractual mechanisms — involving escrow accounts operated by third parties — to protect the parties during bilateral settlement. These can be cumbersome and expensive and only have merit for a few large transactions.[114] The use of CSDs also alleviates this risk but, as already noted, this is not widespread. The main CSD active in this space appears to be Clearstream, the international central securities depository (ICSD) within Deutsche Börse Group, with its Global Emissions Market Access (GEMA) service. GEMA is a custody and settlement service for carbon emission rights, which acts as a single point of entry, allowing carbon emission rights to be held and settled in the settlement systems of Clearstream Banking Luxembourg.[115] [116]

One solution would be to introduce a payment function to the Single Registry, such as Delivery versus Payment (DVP) settlement, which ensures that the exchange of the cash and the asset are simultaneous and final.

This would have the benefit of reducing counterparty risk by enabling parties to transfer both the physical allowances and the cash payments at the same time. This in turn could have a positive impact on the efficiency of the emissions market by enabling trades to be settled with no delay between the transfers, and reduce the need for (and costs of) finding alternative risk-reducing mechanisms such as the use of escrow accounts. It could also improve the confidence of market participants and hence encourage trading activity and liquidity.

However, introducing a payments function would also have a downside.

- The European Commission would also be responsible if any operational problems occurred with the payment leg of the transaction. More generally the European Commission could face reputational risks related to any concerns (whether well-founded or not) about the integrity of the system.
- The European Commission would also then be involved in a settlement process and would take on the counterparty risk. If either one of the parties went bankrupt before the

[113] We note that the clearing house ECC offers a form of settlement that alleviates this risk for its members. For spot contracts traded by members on EEX, ECC offers physical and financial settlement through its omnibus Registry account. Before trading, the certificates have to be delivered by the members to the ECC registry account. Trades are fulfilled by means of transfers between ECC's internal delivery accounts, such that there are no registry transactions. (See http://www.ecc.de/en/operations/physical-settlement/emission-rights-process).

[114] Bourse Consult (2010) 'The Post-Trade Infrastructure for Carbon Emissions Trading'.

[115] http://www.clearstream.com/ci/dispatch/en/kir/ci_nav/1_settlement/020_icsd/050_gema.

[116] Euroclear established a CSD-like service in 2008 called ClimateSettle, through which participants agreed to have Euroclear acting as the custodian of their emissions units. Euroclear held an omnibus account at the (then) UK Registry in which it held all its participants' positions. A trade between any two ClimateSettle participants could be settled within the Euroclear system (with cash and assets transferred simultaneously) rather than requiring a registry transfer. The potential of this service depended on a large number of participants to create a critical mass to enable transactions to take place without registry movements. It is possible that such a mass was not achievable as this service no longer appears to be on offer.

conclusions of the transfer of allowances/cash, the Commission would be responsible for that counterparty's obligations. It is likely that should the European Commission take on such a function, some sort of legal ring-fence would need to be in place to protect the rest of the institution from the risks inherent in acting as a settlement counterparty. Such a move might be seen as impinging upon activities more normally left to market forces.

- This risk is exacerbated by a potential operational risk inherent in the fact that the Single Registry operates 24 hours a day, seven days a week. This may make it more difficult to manage DVP settlement. For example, emissions units may be transferred early on a Saturday morning, leaving two days before the banking system would next be open to process the cash payment.

These risks may be addressed through the outsourcing of this function to a third party, which we discuss in the next Section 10.8.2.

Introducing trade repository functions

EMIR requires all derivative contracts to be reported to trade repositories, who will centrally collect and maintain the records of derivatives. A longer-term option for the Single Registry could be to introduce a trade repository function for emissions derivatives contracts. This could create benefits through synergies for market participants engaged in trading both emissions derivatives and the underlying asset, whereby they would only need to report to a single registry for all their emissions allowances trades.

There do not appear to be significant risks related to extending the functionality of the Single Registry to include trade repository functions. Changes to the infrastructure of the Registry would need to be made which would entail IT build costs (and the normal operational risks associated with such activity). Work is ongoing regarding the development of the trade repository market in light of EMIR, for example discussions on how the data should be standardised across repositories such that information can be shared and consolidated as needed for supervisory purposes. We recommend that the introduction of trade repository functions to the Single Registry is based on — i.e. lags — developments in the trade repository market. This would enable the European Commission to benefit from lessons learned and to build infrastructure that is compatible with other trade repositories.

As with the introduction of the payment function, it may be that trade repository and reporting functions of the Single Registry would be best if outsourced to a third party.

10.8.2 Transferring functions to a third party private partner

The adding of functions of the Single Registry could be undertaken by the European Commission, or they could be outsourced to a third party. There are a few possible options for this:

- the ownership and management of the Single Registry could be transferred to a third party; or
- the European Commission could retain ownership of the asset and outsource only the management/running of the various functions. All the functions of the Registry could be

outsourced to the same third party, or different functions could be outsourced to different providers (the European Commission could even retain some functions).

Benefits

The benefits of involving a private partner vary according to the particular function, although there should be general advantages as well. We have already touched upon the point as to whether it is appropriate for the European Commission to have responsibility for market infrastructure. Outsourcing the operation of the Single Registry to a private-sector third party would provide some distance, and would bring the development and administration of post-trade infrastructure within the ambit of the market. The latter should increase the flexibility with which it responds to market demands, and introduce higher levels of innovation.

As discussed above, introducing a payment function would place operational and counterparty risk on the European Commission. It may not be willing to accept such risks — indeed the roles and competencies attributed to the Commission under the treaties may also inhibit it from doing so. Involving a third-party could remove these challenges and risks from the Commission (at least where ownership is transferred). A private-sector player may be better able to take on such risk due to existing experience in the market, established risk control mechanisms and access to dedicated prudential capital.

Any third-party would presumably be already offering similar services in other asset classes so economies of scale would be accessible. For example, the trade repository DTCC was selected in 2011 as the preferred service provider for building and managing global trade repositories for Interest Rates, Commodities and Foreign Exchange derivatives, adding to its already existing repositories for Credit and Equity derivatives. If the trade repository function of the Single Registry were delegated to DTCC (or an equivalent) it is likely that the marginal costs of administering this function would be lower than if it was undertaken by the European Commission. RegisTR is another possibility: a central trade repository for derivatives transactions across multiple product classes and jurisdictions. The trade repository is open to financial and non-financial institutions, primarily in Europe, and aims to service all types of derivative contracts. From previous engagement we understand that the marginal cost to RegisTR of offering additional asset classes is relatively low.

Other synergies and economies of scope could exist if functions other than trade repository were outsourced to a third party. At present, the Single Registry does not include a payment leg nor a settlement function. Third parties such as DTCC are experienced at providing these and thus could enhance the value of the Single Registry by combining several functions, with the requisite expertise to do so.[117]

A central deposit function could be outsourced to a CSD, which enables the registration, safekeeping, and settlement of securities in exchange for cash and efficient processing of securities transactions in financial markets. There exist some CSDs that already offer DVP settlement of emissions, as well as other CSDs offering these services for other financial

[117] DTCC, through its subsidiaries, provides clearing, settlement and information services for equities, corporate and municipal bonds, government and mortgage-backed securities, money market instruments and over-the-counter derivatives.

instruments. There may again be economies of scale if any one of these were to become involved.

Synergies would probably be higher if only a single third-party was involved.

Risks

There are some risks and disadvantages. Passing full ownership and control of the Single Registry to a third party would create an organisation with monopoly power over the registering and settlement of allowances (if a DVP function were included). Any competition would likely mean having multiple registries (increasing difficulties in reconciling and processing data for the supervisors). A key requirement in this case would be to have information in a form that is directly comparable across registries.

Similarly such a single provider would need to be regulated or supervised in some way to prevent the abuse of dominant position. This would likely mean amendment to the Registry Regulation, and perhaps the EU ETS Directive as well. The provider would also need to follow certain standards to ensure the continuing secure and orderly running of the EU ETS.

A second option would involve entering into long-term service contracts whereby the European Commission would retain ownership of the Registry asset. Providers could be invited to tender for the management and development of the Registry. The tender process could be structured to ensure that the provider would be innovative and flexible in its approach.

This option would require resources on the part of the European Commission to set up and monitor the contract, which may not be wholly trivial. Consideration would also need to be given to how the third party would be funded, and whether it would be a not-for-profit institution or would be profit-making. At present countries fund their own activity on the EU ETS (for example in the UK the Environment Agency administers the EU ETS accounts in England and Wales and raises charges to recover the costs of this work. This means that the costs to users would not necessarily decrease. (These considerations would also apply to a situation in which the Registry is wholly owned by a third party.)

A key risk with this option is the question around counterparty risk that is inherent in the introduction of a payment leg. If the European Commission retained ultimate ownership of the Registry it would also retain the responsibility for counterparty risk introduced by DVP settlement, albeit in a reduced form. This may result in mismatched incentives between the European Commission and the third-party contractor (these may be capable of being overcome through good contract design).

There may be a risk that the European Commission may be seen to be encroaching on services more appropriate to market involvement. It might also be seen, as a public institution with different funding structures to private entities, to be at an unfair advantage (e.g. if the additional functions were cross-subsidised from other parts of the Commission). It is likely that outsourcing the Registry to a private third party would alleviate such fears.

10.8.3 Longer-term scenarios for the Single Registry

In the long-term, say the next 10–15 years, much may change in the regulatory landscape both on the EU ETS side and in the financial post trade frameworks e.g. EMIR might be revised at least once in that timeframe). This makes developing possible scenarios for the Single Registry, which will be influenced by regulatory change, difficult. A good scenario would be one in which the European Commission:

- has undertaken (or encouraged Member States to undertake) the recommended legal adjustments to resolve the applicability of the SLL to EUAs;
- encouraged the use of EUAs as collateral;
- resolved issues of legal certainty and title;
- clarified the settlement disciplines relevant for EUAs; and
- added functionality to the Registry, in particular by introducing a payments function.

A less desirable scenario would be one in which the Registry has undergone little development, either legally or practically. In particular, a lack of investment in the structure of the Registry could result in the post-trade infrastructure of the EU ETS becoming more fragmented as market participants individually attempt to address the shortcomings (for example, having multiple trade repositories for emissions; or costly processes for addressing counterparty risk caused by the lack of a payments function). This in turn could reduce the efficiency of the EU ETS market as a whole and discourage participation. We have noted at various points in this report that many participants are adopting a wait and see approach and these could be discouraged if market participants felt that insufficient investment was made.

Task 1 Report: Appendices

Europe Economics

NORTON ROSE FULBRIGHT

11 Appendix 1: Glossary of Key Terms

We set out below a glossary of key terms used in this report:

Table 11.1: Glossary of terms

Auctioning Regulation	means Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community
Central counterparty or CCP	means a legal person that interposes itself between the counterparties to the contracts traded on one or more financial markets, becoming the buyer to every seller and the seller to every buyer. CCPs are shortly to become regulated at EU level under EMIR
Central securities depository or CSD	means a facility (or an institution) for holding securities, which enables securities transactions to be processed by book entry
Central Securities Depository Regulation (CSDR or CSD Regulation)	means the Proposal for a regulation on improving securities settlement in the European Union and on central securities depositories dated 22 October 2012
Clearing member	means a member of a CCP. All trades cleared by a CCP must be settled through a clearing member. A direct clearing member is able to settle only its own obligations. A general clearing member is able to settle its own obligations as well as those of customers
Collateral	means an asset that is delivered by the Collateral provider to secure an obligation to the Collateral taker. Collateral arrangements may take different legal forms; Collateral may be obtained using the method of title transfer or by way of a pledge or security interest
Collateral security	means, in accordance with the SFD, all realisable assets provided under a pledge, repurchase or similar agreement for the purpose of securing rights and obligations potentially arising in connection with a securities settlement system, or provided by central banks
Compliance users	means an entity that requires emission allowances to meet its greenhouse gas emissions requirements under the EU ETS Directive. A compliance user may not be required to be licensed under European financial services legislation. To date, this captures most compliance users. Certain compliance users are licensed under European financial

	services legislation, although to date this type of compliance user has been relatively uncommon
CER	means Certified Emission Reductions
Counterparty	means the opposite party to a financial transaction such as a securities trade or swap agreement
CREST	means CREST, the CSD for the UK, Republic of Ireland, Isle of Man, Guernsey, and Jersey equities and UK gilts, named after its securities settlement system, CREST
Custodian	means an entity that safekeeps and administers securities for its customers and that may provide various other services, including clearance and settlement, cash management, foreign exchange and securities lending
Custody	means the safekeeping and administration of securities and financial instruments on behalf of others
Customer	means a market participant that does not participate directly in a trading, clearing or settlement system, e.g. a party that is not a member of the CCP and must settle through a clearing member. The customer may be the beneficial owner of securities and financial instruments within the system held by another market participant
Derivative	means a financial contract the value of which depends on the value of one or more underlying reference assets, rates or indices
EC	European Commission
EEX	European Energy Exchange
EEX Arrangements	arrangements on primary auctions of emission allowances on the spot market of the European Energy Exchange under Commission Regulation (EU) No 1031/ 2010 and clearing and settlement of such transactions through European Commodity Clearing AG (ECC) 02 October 2012
ECC	European Commodity Clearing AG
ECC Lux	European Commodity Clearing Luxembourg S.a.r.l
EFET	European Federation of Energy Traders
EMIR	means the Commission Regulation on OTC derivatives, central counterparties and trade repositories (EU) 648/2012
Emission allowance or EUA	means an allowance to emit one tonne of carbon dioxide equivalent during a specified period under the terms of the EU ETS Directive and related legislation
ERU	means Emissions Reduction Unit
EU ETS Directive	means Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (as amended)
EU	European Union
EUTL	European Union Transaction Log
Financial Collateral Directive or FCD	means Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial Collateral arrangements, as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive

	2002/47/EC on financial Collateral arrangements as regards linked systems and credit claims
Financial Instrument	means any instrument referred to in Section C of Annex 1 to Directive 2004/39/EC (MiFID)
Fixed charge	means a charge over a particular asset where the chargee controls any dealing or disposal of the asset by the chargor. Under English law, a fixed charge ranks before a floating charge in the order of repayment on an insolvency
Floating charge	means a charge taken over all the assets or a class of assets owned by the chargor from time to time as security for borrowings or other indebtedness of the chargor. Under English law, the advantage of a floating charge is that it allows the charged assets to be freely used by the chargor prior to its insolvency without reference to the chargee. The floating charge crystallises if there is a default or similar event, at which point the floating charge is converted to a fixed charge over the assets which it covers at that time. If default occurs, depending on when the floating charge was created, the chargeholder may be able to appoint an administrative receiver or an administrator
Haircut	means the difference between the market value of a security and its Collateral value
ICE Futures	ICE Futures Europe Limited
ICE Clear	ICE Clear Europe Limited
IETA	International Emissions Trading Association
Investment Firm	means an entity that is licensed under European financial services legislation and buys and sells EUAs and derivatives on them for reasons other than compliance - e.g. brokers, proprietary traders etc.
ISDA	International Swaps and Derivatives Association
Initial margin	means cash or Collateral that is deposited with the CCP to ensure performance on obligations to it (also known as performance bond and original margin)
Margin	means Collateral used to secure an obligation, either realised or potential
Market participants	means the range of participants active in the market for emission allowances including compliance users, financial firms, auction platforms and CCPs
Member State	means a member state of the European Union party to the treaties of the European Union
Multilateral Trading Facility or MTF	has the meaning given in Article 4(15) MiFID
MiFID	means the Markets in Financial Instruments Directive 2004/39EC
MiFID II	means the Markets in Financial Instruments Directive 2004/39EC Recast - compromise text date 3 December 2012
MiFIR	means the draft Markets in Financial Instruments Regulation - compromise text dated 3 December 2012
OTC or over the counter	means a method of trading that does not involve an exchange. In over-the-counter markets, participants trade directly with each other, typically through telephone or

	computer links
Perfection	means the process that a chargee must follow to ensure that the security it has over charged assets is valid against any relevant third parties. This ensures that if the chargor defaults or becomes insolvent, its security is protected and (so far as possible) it is repaid in full and in priority to other creditors of the chargor
Principles	means the Principles in the SLL Consultation
Phase II	means Phase II of the EU ETS, covering 2008 to 2012
Phase III	means Phase III of the EU ETS, covering 2013 to 2020
Pledge	means a delivery of property to secure the performance of an obligation owed by one party (the debtor or pledgor) to another party. A pledge creates a security interest (lien) in the property delivered
Realisation	means, in relation to security, the act of enforcing a security interest over assets, for example, taking possession and ownership of assets held under a security financial Collateral arrangement under the terms of that arrangement
Registry Regulation	means Commission Regulation (EU) No 389/2013 establishing a Union Registry for the trading period commencing on 1 January 2013, and subsequent trading periods, of the EU ETS pursuant to the EU ETS Directive 2003/87/EC and Decisions No 280/2004/EC and No 406/2009/ EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011
Security financial Collateral arrangement	means an arrangement under which a Collateral provider provides financial Collateral by way of security in favour of, or to, a Collateral taker, and where the full ownership of the financial Collateral remains with the Collateral provider when the security right is established
Security interest	means a form of interest in property which provides that the property may be sold on default in order to satisfy the obligation covered by the security interest
Settlement agent	means, generally, a person who acts in order to complete the settlement of a transaction between a buyer and seller. This is done through the transfer of securities to the buyer and the transfer of cash or other payment or consideration to the seller. A settlement agent for the purposes of the SFD means an entity provided to institutions or to a CCP participating in securities settlement systems, settlement accounts through which transfer orders within such systems are settled and, as the case may be, extending credit to those institutions or CCPs for settlement purposes
SFD or Settlement Finality Directive	means Directive 98/26/EC of the European Parliament and of the Council on settlement finality in payment and securities settlement systems as amended by Directive 2002/47/EC
SLL Consultation or Securities Law Legislation Consultation	means the principles relating to a potential harmonisation of the EU legal framework for securities holding and

	transactions set out in the consultation document dated 5 November 2010 and published by the European Commission in the interests of seeking stakeholders' views on the harmonisation of legislation on legal certainty of securities holding and dispositions
Subcustodian	means where one custodian (e.g. a global custodian) holds its securities through another custodian (e.g. a local custodian), the latter is known as a subcustodian
Title transfer	means conveyance of the ownership interest in property from one counterparty to another
Title transfer Collateral arrangement	means an arrangement under which a Collateral provider transfers full ownership of financial Collateral to a Collateral taker for the purpose of securing or otherwise covering the performance of relevant financial obligations. This includes repurchase agreements
Union Registry	means the single EU wide registry created pursuant to the Registry Regulation

12 Appendix 2: Sources of Legislation and Financial Collateral Rules

Table 12.1: Sources of legislation and financial collateral rules

Short title	European legislation and version referred to in this document
Auctioning Regulation	Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community
CSDR - CSD Regulation	Proposal for a Regulation of the European Parliament and of the Council on improving securities settlement in the European Union and on central securities depositories (CSDs) and amending Directive 96/26/EC - Council Compromise text dated 22 October 2012
EMIR - European Market Infrastructure Regulation	Regulation (EU) 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories.
EU ETS Directive	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading and amending Council Directive 96/61/EC, as amended from time to time.
FCD - Financial Collateral Directive	Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial Collateral arrangements, as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 amending Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2002/47/EC on financial Collateral arrangements as regards linked systems and credit claims
MiFID	Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/61/EEC and 93/6/EEC and Directive 200/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC
MiFID II - Markets in Financial Instruments Directive	Proposal for a Directive of the European Parliament and of the Council on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council (Recast) - Council compromise text dated 13 February 2013.
MiFIR - Markets in Financial Instruments Regulation	Proposal for a Regulation of the European Parliament and of the Council on markets in financial instruments and amending Regulation (EU) 648/2012 on OTC derivatives, central counterparties and trade repositories - Council compromise text dated 13 February 2013.
Registry Regulation	Commission Regulation (EU) No 389/2013 establishing a Union Registry for the trading period commencing on 1 January 2013, and subsequent trading periods, of the EU ETS pursuant to the EU ETS Directive 2003/87/EC and Decisions No 280/2004/EC and No 406/2009/ EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No

Short title	European legislation and version referred to in this document
	1193/2011
SFD - Settlement Finality Directive	Directive 98/26/EC of the European Parliament and of the Council on settlement finality in payment and securities settlement systems as amended by Directive 2002/47/EC.
SLL Consultation- Securities Law Legislation consultation	The legislative principles relating to a potential harmonisation of the EU legal framework for securities holding and transactions set out in the consultation document dated 5 November 2010 and published by the European Commission in the interests of seeking stakeholders' views on the harmonisation of legislation on legal certainty of securities holding and dispositions

Norton Rose Fulbright Analysis.

13 Appendix 3: Applicability of SLL Consultation Principles to Dealing in EUAs

In this Appendix we set out our detailed analysis of the applicability of the Principles set out in the Securities Law Legislation Consultation (SLL) to dealing in EUAs.

13.1 Account provider:

The SLL refers to an account provider, which is defined as:

"account provider' means a person who:

- maintains securities accounts for account holders and is authorised in accordance with Article 5 of Directive 2004/39/EC to provide services listed in Annex I Section A indent (9) of Directive 2004/39/EC or is a Central Securities Depository as defined in [...] and, in either case, is acting in that capacity;
- in relation to Principles 3 to 13, if not subject to a national law, in the course of a business or other regular activity maintains securities accounts for others or both for others and for its own account and is acting in that capacity;

A securities account is an account between an account provider and an account holder allowing for the evidencing of securities holdings of that account holder with that account provider.

Securities means Financial Instruments (as listed in Annex 1 Section C of MiFID), which are capable of being credited to a securities account.

An account holder is a person for whom an account provider maintains a securities account, whether that person is acting for its own account or for others, including in the capacity of account provider.

In order to determine whether the Principles in the SLL should apply to EUAs depends on who would be the account providers and account holders in relation to securities that are EUAs. The definition of securities will cover EUAs once they become financial instruments under MiFID. The entity that would most naturally be understood as an account provider for EUAs is the Commission or the national administrators as the entity responsible for the accounts in the Registry but this does not fit the definition very well as they are unlikely to be either a CSD nor a custodian. If it was intended to capture them, the definition would need to be expanded.

Given the purpose of the SLL, we believe the intention may be for the account provider definition to be interpreted widely as including any person that holds accounts in the Registry on behalf of others for the purposes of providing a service akin to a CSD or custodian. The definition would cover any CSDs and custodians that do so, but the more likely types of entity that might hold EUAs in the Registry on behalf of other persons are CCPs and clearing members facilitating the trading of EUAs and such persons might not be regulated as CSDs or custodians.

13.2 Table of detailed analysis of SLL application

The table below contains our detailed analysis of the applicability and relevance of the SLL to dealing in EUAs, taking each Principle of the SLL in turn.

Table 13.2: Detailed analysis of applicability and relevance of the SLL to dealing in EUAs

SLL Ref	Principle	Relevance to EU ETS - Comments
Principle 1	EU law should regulate the legal framework governing the holding and disposition of securities held through securities accounts and the processing of rights flowing from securities held through securities accounts. The legislation should not harmonise the legal framework governing the question of whom an issuer has to recognise as the legal holder of its securities.	The objective of the SLL is not as relevant to EUAs as it is for securities for several reasons: • there are fewer legal and practical restrictions on opening an account at the Registry than there are with opening an account at a CSD, although we accept that, for example, where Member State administrators utilise the right to require entities opening an account to be located in that Member State, then non-EU entities may consider it expensive and/or impractical to open accounts at the Registry. • in practice, we do not believe that it is common for persons wishing to have an exposure to EUAs to hold them through an intermediary other than the CCP of the auction platform or exchange on which they are bid for or purchased - i.e. we do not think there is widespread use of custodians or CSDs to hold EUAs. It is already clear what functional rights attach to an EUA (i.e. to dispose of or surrender it) and that they are different from those that attach to securities (such as dividends, corporate actions etc.). That said, the use of CSDs and custodians may develop over time as EUAs become more valuable - for example, pension funds might start to hold EUAs alongside securities in their portfolios and may not wish to open separate accounts with the Registry. It is also recognised that the legal nature of the rights attaching to EUAs differs between Member States and creates risk in relation to cross border transactions. **Conclusion: The objective of the SLL is to resolve problems that exist in relation to the way securities are held which are not the same as the problems that exist in the way EUAs are held, at least not at present.**
Principle 2	It should be possible for Member States to provide that a person other than the account provider is responsible for the performance of certain, but not all, functions of	The Registry does not operate on the basis of a system where the Commission shares some of its functions with other service providers. Therefore, this Principle would not be relevant to EUAs.

SLL Ref	Principle	Relevance to EU ETS - Comments
	an account provider. In such a case, references made in EU law to an account provider aim at the person responsible for performing the function to which the relevant provision applies. The Commission would need to be notified accordingly and could specify the exact content of the notification. The Commission should publish on its website a list of Member States allowing for the sharing of account-provider functions, including all relevant specifications.	**Conclusion: This Principle is not relevant to EUAs.**
Principle 3	The national law should clarify that securities standing to the credit of a securities account confer upon the account holder at least the following rights: • the right to exercise and receive the rights attached to the securities if the account holder is the ultimate account holder or if, in any other case, the applicable law confers the right to that account holder; • the right to effect a disposition under one of the harmonised methods (cf. below); • the right to instruct the account provider to arrange for holding the securities with another account provider or otherwise than with an account provider, as far as permitted under the applicable law, the terms of the securities and, to the extent permitted by the national law, the account agreement and the rules of a securities settlement system. The national law should make sure that account holders which act in the capacity of account provider for a third person exercise the rights (b) and (c), above, in accordance with the instructions of that person (see below). In case of acquisition of a security interest or other	The functional rights that are acquired by the holder of an EUA are clear in European law, even though the laws of different member States may characterise the nature of EUAs in different ways. The main right is to surrender the EUA. However, there is also a right to transfer EUAs from one account to another account, which is adequately set out in the Registry Regulation. To the extent the Commission is the only account holder, the right to transfer to another account provider does not exist but we see no reason why this right should not apply to other account providers. Equally, it would be sensible to apply paragraph 2 of this Principle to EUAs. At present, paragraph 3 would not work in relation to EUAs as the Union Registry does not recognise security interests or other limited rights in EUAs and has no mechanisms to facilitate the operation of such rights. However, it would seem sensible to introduce a provision to this effect if the Commission was able to accommodate the use of EUAs as Collateral in the future. Allowing national law to characterise the legal nature of account held securities and focussing on the functions of the EUAs also fits with the spirit of the Registry Regulation. However, under the Registry Regulation, it is the law of the Member State of the administrator of the account that governs the account and this could be a different national law to that determined under the SLD. **Conclusion: The part of this Principle that seeks to harmonise the functional rights of EUA holders is consistent with the Registry**

SLL Ref	Principle	Relevance to EU ETS - Comments
	limited interest in account-held securities the national law of should be able to restrict the rights (a)-(c), above. The national law should be allowed to characterise the legal nature of account-held securities as any form of property, equitable interest or other right as far as the characteristics flowing from the legal nature is in accordance with the rights (a)-(c), above, and the remainder of any legislation.	**Regulation, which already seeks to do this at Registry level. The limited interest aspects of this Principle would not work in relation to EUAs at present.**
Principle 4	The national law should provide for acquisitions and dispositions of account-held securities and limited interests therein to be effected by crediting an account and debiting an account respectively. The national law should provide that an account provider may credit the accounts of its account holders, for each description of securities, only if it holds a corresponding number of securities of the same description by: • having available account-held securities in a securities account maintained for the account provider by another account provider; • arranging for securities to be held on the register of the issuer in the name, or for the account, of its account holders; • holding securities as the registered holder on the register of the issuer; • possessing relevant securities certificates or other documents of title; or • creating the initial electronic record of securities for the issuer in accordance with the applicable law. and that an account provider continuously holds that corresponding number. If the applicable law allows crediting and debiting to be made conditional it should also define the extent to	Paragraph 1 of this Principle is adequately dealt with in the Registry Regulation, which allows for acquisitions and dispositions by debiting and crediting the Registry accounts and characterises the nature of the EUA as a fungible, dematerialised instrument that is tradable on the market. However, paragraphs 2 to 4 are less clearly relevant at Union Registry level. The EU ETS is a closed system and there are a limited number of EUAs in circulation and systems such as the EUTL ensure EUAs can only be in one account at a time. Further, conditional crediting and debiting is not possible under the Registry Regulation. Where account providers are seen more widely, we see no immediate reason not to have EUAs treated in the same way as securities but consider this would be a change from existing practice and believe the practical impacts should be considered, some of which may be the same as for securities. We note that many custody arrangements currently provide that the custodian can deal with EUAs deposited as it chooses and only has an obligation to deliver an equivalent volume of EUAs when called upon. This may reflect a distinction between a custodian that is acting purely as a custodian and one that has been appointed or authorised to use the assets for certain purposes and it will be important to make clear whether this Principle is intended to cover both. The view taken as to importance of custodial services and the risk of financial failure of custodians will influence whether it is sensible to apply the requirement to hold a corresponding amount to any entity acting as a custodian. A factor to consider in assessing this would be the likely impact on the cost of such services for a user. For example, if

SLL Ref	Principle	Relevance to EU ETS - Comments
	which such conditional crediting or debiting is taken into account in determining the number of securities referred to in the preceding paragraphs. Credits to a securities account the effectiveness of which is subject to a condition must be identifiable as such in the account. If a corresponding number (paragraph 2) is not held, the account provider should promptly apply either or both of the following mechanisms in order to re-establish compliance: • reverse erroneous credits; • provide additional securities of the relevant description, to be held by one of the methods provided for in paragraph 2. The sharing of any cost entailed by the provision of additional securities pursuant to subparagraph (b) can be subject to a contractual agreement between the account provider and those account holders holding securities of the relevant description at the time of the occurrence of the loss in non-segregated accounts only in cases where the account provider held securities of the relevant description with another account provider pursuant to Article 17(3) subparagraphs (a) and (b) of the MiFID. The applicable national law may in addition allow for acquisitions and dispositions being effected under one or more of the following methods: • earmarking account-held securities in an account, or earmarking a securities account, and the removing of such earmarking; • concluding a control agreement; or • concluding an agreement with and in favour of an account provider.	custodians considered this reduced the ability to utilise EUAs transferred to the custodian prior to the return obligation crystallising then costs may increase. The Registry Regulation does not provide for the recognition of the disposal of a limited interest of an EUA such as the grant of a security interest. In this sense, earmarking or control agreements are already a matter for national law as the Registry Regulation does not make any relevant provision. **Conclusion: It is not necessary to apply this Principle in relation to the Commission or administrator but this Principle would not be inconsistent with the EUA regime if applied to other account holders. However, whether the "no debit without credit" Principle should be applied to EUAs as well as securities, is not simply a legal question.**

SLL Ref	Principle	Relevance to EU ETS - Comments
Principle 5	The legal nature of dispositions over account-held securities effected under one of the methods listed in Principle 4 would be determined by the national law, as far as the legal nature does not contravene the Principles. No further steps than those set out in Principle 4 paragraphs 1 and 5 should be required to render an acquisition or disposition effective between the account holder and the account provider and against third parties. To the extent that the requirements of Principle 4 paragraph 2 are not met, and until measures under Principle 4 paragraph 4 are successfully applied, the national law, or the rules of a settlement system in accordance with the applicable law, should determine, subject to Principle 8 below, whether and in what circumstances a credit is legally ineffective, liable to be reversed or subject to a condition, and the consequences thereof. Acquisitions and dispositions arising by mandatory operation of the national law are effective and have the legal attributes, in particular rank, attributed by that law. Effectiveness in the above sense does not determine whom an issuer has to recognise as legal holder of its securities. The effectiveness can be made subject to a condition in accordance with national law. The national law prescribes whether the credit is legally ineffective, liable to be reversed or subject to a condition, and the consequences thereof if the terms of issue of the relevant securities, in accordance with the national law under which the securities are constituted, require the agreement of the issuer for an acquisition to be legally effective.	Article 40 of the Registry Regulation purports to clarify the legal effectiveness of EUAs and the limitations on transaction reversals under national law. This is inconsistent with Principle 5 in two senses. First, some of the paragraphs within this Principle are inconsistent with the Registry Regulation. For example, compliance with paragraph 2 would not be possible in relation to a disposition of an EUA because, pursuant to the Registry Regulation, the transfer of an EUA is subject to a 26 hour delay unless it concerns a trading account or trusted account. Equally, the Registry Regulation provides for limited circumstances in which reversals can be effected. Further, a transfer in the Union Registry will not take account of a condition under national law. This is without even mentioning that the mechanics of the Registry cannot reflect the existence of ear-marking or a control agreement because EU ETS cannot record the fact that a person other than the account holder has rights to the EUAs in an account. However, Collateral givers and takers in certain Member States could get round this by granting security by way of title transfer. Second, Article 40 is intended to be directly applicable and partially alter national law, whereas Principle 5 provides that this should be determined by national law. It might be possible to reconcile this on the basis that Article 40 effectively becomes national law in each Member State but this would require the Principles to be interpreted to refer to national law as it incorporates the Registry Regulation and having been made consistent with the Registry Regulation, which it would be helpful to clarify. Whether the market generally considers Article 40 to have adequately provided for legal certainty as to the legal nature of dispositions should be considered through discussions with key market participants rather than solely legal analysis. We are aware of ongoing concerns. For instance, although EUAs identifying serial numbers are now confidential, market participants remain concerned that a victim of an EUA theft would be able to use legal proceedings against the Central Administrator to identify where such affected allowances are held. In this context, we have previously considered whether the EUA regime

SLL Ref	Principle	Relevance to EU ETS - Comments
	The national law may provide for reasons which trigger ineffectiveness of acquisitions and dispositions effected under a control agreement or an agreement with and in favour of the account provider and regulate the consequences of such ineffectiveness.	would operate more safely if EUAs were treated as a right against the Commission and this was all that could ever be transferred. This would make EUAs closer in nature to securities but we believe this would be a longer term solution and we question whether the residual risk is sufficient to justify the work required. This is why further discussion with key market participants would be useful as it would assist capture the scope of that residual uncertainty and whether that is having a practical impact. **Conclusion: This Principle would appear to be inconsistent with Article 40 of the Registry Regulation unless interpreted to mean that national law, incorporating and consistent with the directly applicable Registry Regulation. Even then, there are some aspects that the Registry Regulation does not cover. If applied to EUAs, we would think the intended interpretation should be clarified.**
Principle 6	Acquisitions and dispositions that have become effective under the methods described in Principles 4 and 5 should be equally effective against the insolvency administrator and creditors in any insolvency proceeding. The Principle contained in Paragraph 1 does not affect the application of any substantive or procedural rule of law applicable by virtue of an insolvency proceeding, such as any rule relating to: • the ranking of categories of claims in the case of violation of the methods described in Principles 4 and 5; • the avoidance of a transaction as a preference or a transfer in fraud of creditors; or • the enforcement of rights to property that is under the control or supervision of the insolvency administrator.	This Principle should apply to EUAs as it does to securities. Although the Registry Regulation does not specify that this is the case, the fact that Article 11(5) now makes clear that EUAs are to be treated as situated in the territory of the administrator of the relevant account in the Union Registry, it should be clearer than previously that the law of that Member State should be applicable in determining whether a disposition was effective. **Conclusion: While the application of this Principle to EUAs logically follows that of Principle 5, we believe it would provide greater legal certainty if this clarification were made in relation to EUAs.**
Principle 7	The national law should ensure that Book entries can only be reversed under the following circumstances:	The finality of EUA transfers is inconsistent with Principle 7. The purpose of Article 40 of the Registry Regulation is to ensure that specific

SLL Ref	Principle	Relevance to EU ETS - Comments
	• in the case of crediting provided that the account holder consents to the reversal; • in the case of erroneous crediting which was not authorised by the account holder, subject to Article 9; • in the case of debiting which was not authorised by the account holder, or a third person who has acquired an interest in the relevant account-held securities; • in case of earmarking which was not authorised by the account holder, subject to Article 9; • in case of removal of an earmarking which was not authorised by the person in whose favour it was made. Paragraph 1 should be, to the extent permitted by the applicable law, subject to any rule of a securities settlement system. The national law should specify the extent to which consent in the sense of paragraph 1(a) can be given in a general manner and any formal requirements for giving such consent.	transfers of EUAs cannot be reversed save in limited circumstances, which are more limited than those in Principle 7. They apply where an account holder unintentionally or erroneously initiated a surrender or deletion of allowances or where the national administrator unintentionally initiated a deletion of allowances. In each case, a written request must be made and there are further conditions that must be satisfied. **Conclusion: Principle 7 is inconsistent with the Registry Regulation, which already deals with the reversal of EUA transfers, and should not therefore be applied to EUAs.**
Principle 8	The national law should ensure that: • an account holder is protected against reversal of a crediting; • a person in whose favour an earmarking has been made is protected against reversal of this earmarking unless it knew or ought to have known that the crediting or earmarking should not have been made.	This is what Article 40 of the Registry Regulation attempts to achieve. Article 40(4) provides that a purchaser and holder of an EUA acting in good faith will acquire title free of any defects in the title of the transferor. However, again, this is set out in directly effective European legislation rather than national law. In addition, Article 40 does not apply to earmarking. It would be unhelpful for both Article 40 of the Registry Regulation and Principle 8 to apply in relation to dispositions of EUAs because, while the concept is the same, there are differences in the description of a good faith acquirer and these could give rise to further legal uncertainty. However, if the Commission does want to take steps to facilitate granting of security over EUAs, it would be useful for either

SLL Ref	Principle	Relevance to EU ETS - Comments
		that aspect of the SLL to apply or for this to be covered in the Registry Regulation as well. **Conclusion: Principle 8 should not be applied to EUAs but the Commission should consider how to deal with this issue if it facilitates the use of EUAs as Collateral in the future.**
Principle 9	The national law should provide that priority rules prescribe that: • interests in the same account-held securities which are acquired by earmarking rank amongst themselves in chronological order; • interests in the same account-held securities which are acquired by control agreement or an agreement with and in favour of the account provider rank amongst themselves in chronological order; • interests in account-held securities which are acquired by earmarking have priority over interests acquired in the same account-held securities by means of a control agreement or an agreement with and in favour of the account provider. An acquisition of securities, account-held securities or interests therein effected under Articles 5 should prevail over any other method permitted by the national law. Parties should be able to deviate from the above rules by agreement. Such agreement cannot affect the rights of third parties. Security interests or other limited interests created by mandatory operation of the applicable law should have the priority attributed by that law.	While we believe it would make sense for this Principle to apply to EUAs as well as securities in the absence of anything equivalent in the Registry Regulation, there is a practical problem, which is that the EU ETS legislation does not provide for any system of recording security granted under national laws with respect to an account or EUAs generally. It would therefore be difficult to determine the chronological order in which interests had been granted. **Conclusion: If the Commission decides to recognise the ability to dispose of limited rights in an EUA in the future, this type of provision would enhance legal certainty, but we do not think there is significant benefit to applying it to EUAs now.**
Principle 10	The national law should ensure that in the event of insolvency of the account provider securities and account-held securities held by the account provider for its account holders should be unavailable for distribution among or realisation for the benefit of	Where the account provider was considered to be the Commission or the administrator of the account, this Principle is irrelevant. To the extent a custodian can be considered to be an account provider, the EU ETS legislation provides no support for national law to recognise the account holder's interest as protected from the custodian's creditors

SLL Ref	Principle	Relevance to EU ETS - Comments
	creditors of the account provider. The national law applicable in the insolvency of an account provider should provide for a mechanism governing the distribution of the shortage in the event of an insufficient number of securities or account-held securities in the sense of Principle 4 paragraph 2 being held by an insolvent account provider.	and therefore it would be useful if this provision of the SLL were to apply to EUAs. The extent of the benefit will depend on how common it becomes for intermediaries to hold EUAs. **Conclusion: It would create further legal certainty if this were to apply to EUAs but only to the extent they are held by account providers other than the Commission or administrator.**
Principle 11	An intermediary should neither be bound nor entitled to give effect to any instruction in relation to account-held securities of an account holder given by any person other than that account holder. Paragraph 1 is subject to: • any agreement between account holder and account provider; • the rights of any person, including the intermediary, who has acquired an interest in the relevant account-held securities; • any judgement, award, order or decision of a court or other judicial or administrative authority of competent jurisdiction; • any rule of the applicable law; • if the account provider is the operator of a securities settlement system, the rules of that system, to the extent permitted by the law governing the system.	If considered in terms of the rights of an account holder in the Registry then the security systems set out in the Registry Regulation will ensure that transfers can only be effected by authorised entities. However, this also means that there is no specific mechanism by which a holder of an interest over an account (e.g. a security trustee in respect of a crystallised floating charge) or via a court would be able to require the Central Administrator or National Administrator to effect instructions relating to EUAs held in an account. It might therefore be helpful to develop some flexibility around instructions but, given that the restrictions have been put in place for a reason, it might be better if that flexibility were built into a wider initiative to enable security interests to be reflected in the Registry. Until that time, it would be preferable not to apply this Principle to EUAs at the level of the Registry accounts. However, we see no reason why it could not be applicable to other account providers. **Conclusion: this Principle is redundant in relation to the Commission or administrator but would be relevant to other account providers.**
Principle 12	The national law should provide that creditors of an account holder may attach account held securities only at the level of the account provider of that account holder.	Although we can see no reason why this Principle should not apply, we note that EU ETS legislation does not currently provide for any mechanism to support or enable attachment of an account. As with registration of security interests, we could see the value in the longer term of a harmonised system by which any legitimate attachment under national law and in accordance with this Principle would be able to be put in place by means of a mechanism under the Registry system.

SLL Ref	Principle	Relevance to EU ETS - Comments
		Conclusion: This Principle would make sense for EUAs in Principle but the Registry system is not set up to enable effective attachment even at the Registry level so extending it to cover EUAs is academic at this stage.
Principle 13	The national law should prohibit that creditors of an account provider attach securities credited to accounts opened in the name of that account provider with a second account provider, as far as these accounts are identified as containing securities belonging to the first account provider's customers. Where the law provides for a presumption that accounts opened by an account provider with a second account provider contain securities belonging to customers, the presumption should apply.	Although we can see no reason why this Principle should not apply, we note that EU ETS legislation does not make any specific provisions for separation of EUAs held on behalf of a customer / client from an account provider's proprietary EUAs. However, given that there are few restrictions on establishing accounts at the Registry, it is feasible to see how this Principle could apply. **Conclusion: This Principle would make sense for EUAs in principle but would require account providers to open separate accounts for EUAs held on behalf of customers / clients.**
Principle 14	The national law should provide that any question with respect to any of the matters specified in paragraph 3 arising in relation to account-held securities should be governed by the national law of the country where the relevant securities account is maintained by the account provider. Where an account provider has branches located in jurisdictions different from the head offices' jurisdiction, the account is maintained by the branch which handles the relationship with the account holder in relation to the securities account, otherwise by the head office. An account provider is responsible for communicating in writing to the account holder whether the head office or a branch and, if applicable, which branch, handles the relationship with the account holder. The communication itself does not alter the determination of the applicable law under paragraph 1. The communication should be standardised.	Article 11(5) of Registry Regulation provides that accounts shall be governed by the laws and fall under the jurisdiction of the Member State of their administrator and the units held in them shall be considered to be situated in that Member State's territory. If, under the SLL, the account provider is the Commission, this Principle would not work for EUAs because there would be no national law. However, if the account provider were the administrator, they might point to the same answer to the extent the account provider's cash is held by its head office. Given that the Registry Regulation is now quite clear on this point, we think it would be preferable to leave the applicable law to be determined under the Registry Regulation. The question is whether, in relation to account providers other than the Commission or administrator, it would be preferable for the applicable law to follow that under the Registry Regulation or the SLL. To the extent another account provider is the account holder in the Registry, the former would seem sensible. **Conclusion: The Principle is potentially inconsistent with the current approach under the Registry Regulation and it would be preferable not to apply it to EUAs.**

SLL Ref	Principle	Relevance to EU ETS - Comments
Principle 15	Holding of securities should not discriminate against the exercise of rights attached to securities held in another jurisdiction on the sole grounds that the relevant securities are held in a specific manner, in particular: • through one or more account providers, • through an account provider acting in its own name but for the account of its account holders, • through accounts in which securities of two or more account holders are held in an indistinguishable manner. The national law should remain free to prescribe which holding methods account providers should offer to their account holders.	There are no relevant provisions within EU ETS legislation. However, given the level of control of the Commission over the structure of the Registry system and associated functionality, we do not see any benefit in making this provision applicable to EUAs. **Conclusion: We see no benefit in extending this to EUAs**.
Principle 16	The national law should require that information with respect to securities received by an account holder, which is not the ultimate account holder, from its account provider or from the issuer should be passed on to its account holder or, if possible, to the ultimate account holder without undue delay as far as information: • is necessary in order to exercise a right attached to the securities which exists against the issuer; and • is directed to all legal holders of securities of that description. The account provider of the ultimate account holder must pass on information with respect to the exercise of rights attached to securities received from the ultimate account holder to the issuer of the securities or, if applicable, the following account provider without undue delay, as far as information is provided by the ultimate account holder in the course of the exercise of a right attached to the securities.	As stated above, the only entity authorised to act in respect of an account is the account holder (as represented by the authorised representatives). There are no rights attaching to EUAs directly other than the right to transfer them in accordance with the EU ETS legislation. This Principle is therefore less relevant in relation to emission allowances than securities unless the Commission intend that it applies more widely than just to corporate actions. **Conclusion: this Principle is not relevant.**

SLL Ref	Principle	Relevance to EU ETS - Comments
Principle 17	The national law should require that the account provider of the ultimate account holder should be bound to facilitate the determination of the exercise of rights attached to securities by the ultimate account holder against the issuer or a third party as requested by the ultimate account holder. Such facilitation must at least consist in the account provider of the ultimate account holder: • arranging for the ultimate account holder or a third person nominated by the ultimate account holder being the representative of the legal holder with respect to the exercise of the relevant rights, if the account provider or a third person is the legal holder of securities, in which case Article 11 of the Shareholders' Rights Directive applies correspondingly; • exercising the rights attached to the securities upon authorisation and instruction and for the benefit of the ultimate account holder, if the account provider or a third person is the legal holder of the securities; or • providing the ultimate account holder, regardless of whether it is the legal holder of the securities or not, with evidence confirming its holdings and it being enabled to exercise the rights attached to the securities against the issuer or a third party, under a general framework guaranteeing the integrity of the number of available rights and the position of the legal holder of the securities in respect of (c) of paragraph 2. The content and form of the evidence to be provided should be specified and standard forms should be developed, in particular to define under which conditions issuers should recognise	As above. **Conclusion: this Principle is not relevant.**

SLL Ref	Principle	Relevance to EU ETS - Comments
	such evidence for purposes of exercising rights attached to securities. The extent to which the obligations following paragraphs 1 and 2 can be made subject to a contractual agreement between the ultimate account holder and its account provider as well as the formal requirements to be met by such agreement should be subject to restrictions for purposes of customer / client protection.	
Principle 18	The national law should ensure that Charges levied by an account provider on its account holders for any service relating to the compliance with any of the duties established in Principles 16 and 17 in respect of cross-border holdings of securities should be the same as the charges levied by that account provider on its account holders in respect of comparable domestic holdings of securities.	As above. **Conclusion: this Principle is not relevant.**
Principle 19	An account provider should make reasonable and appropriate arrangements with its account holder if the account holder maintains account-held securities for others and is not subject to the rules of this Directive, facilitating the effective exercise of rights attached to the securities which the account holder holds for others. Technical standards to be adopted by the Commission on this issue could be envisaged.	As above. **Conclusion: this Principle is not relevant.**
Principle 20	Where an ultimate account holder is able to exercise itself the rights flowing from securities but does not want to do so, its account provider exercises these rights upon its authorisation and instruction and in accordance with the contractually agreed level of services. There should be an EU-wide standard regarding the formal requirements to be met by such an agreement as far as it provides for general authorisation	As above. **Conclusion: this Principle is not relevant.**

SLL Ref	Principle	Relevance to EU ETS - Comments
	of the account provider to exercise the rights flowing from the securities.	
Principle 21	All securities account providers should be regulated on a European level. To this end, 'safekeeping of securities [etc.]', Annex I Section B (1) of the MiFID, should be upgraded to become an investment service (under Section A(9) of Annex I) and those which provide this service should be authorised and supervised under MiFID. We understand that this Principle will be implemented pursuant to the MiFID II proposals.	The Commission or administrators do not have a licence under MiFID to safeguard and administer financial instruments but this should not matter as they have sufficient authority from the EU ETS legislation itself. We assume the implementation of this change would be designed to minimise impact on account providers that are already custodians, albeit that they might need to extend the scope of their financial instruments to include EUAs. The real question is whether the reference to custody in the account provider definition is sufficient to cover all account providers that might hold EUAs. **Conclusion: if any other Principles are being applied to EUAs, it would make sense for this one to apply also.**

Norton Rose Fulbright Analysis.

14 Appendix 4: Background to the EU Carbon Market: Foundation for Tasks 2 – 5

14.1 The Carbon Market within the EU: EU ETS

In 2003, the European Union established the European Union Emissions Trading Scheme (EU ETS) under the Directive 2008/87/EC which aimed to achieve carbon emissions reduction across all Member States in a cost effective way. Since its introduction, the Scheme has accounted for the majority of emissions trading within the global carbon market and is the largest multi-national emission trading scheme in the world.

The EU ETS adopted a cap-and-trade system within which an absolute quantity limit on carbon emissions is set to the installations covered. Trading of allowances between installations is then facilitated under the scheme to enable them to buy or sell the allowances to meet their cap.[118]

The scheme is broken down into three phases of trading and significant changes have been implemented in each trading period to improve the efficiency of the emission trading market.

14.1.1 The three phases of EU ETS

Phase one (2005 to 2007)

The first trading period, which was also known as the trial period, was dedicated to act as a learning period for emission trading within EU. It included around 12,000 installations responsible for approximately half of all EU carbon emissions.[119] The emission of carbon dioxide in the following sectors was covered in this Phase: power generation, oil refinery, steel, cement and lime, pulp, board and paper.[120]

In this initial period, most of the allowances were issued for free to the companies of installations which led to criticism of "windfall" profits for some operators through the resale of allowances in the market. The price of allowances peaked in April 2006 at €30 per allowance but collapsed quickly to under €15 in one week within the same month after the first release of verified emissions data which revealed that the total allocation exceeded the actual emissions. The over-allocation of

[118] A.Ellerman, et.al. (2008), "The European Union's Emissions Trading System in perspective", Pew Center – Global climate change.

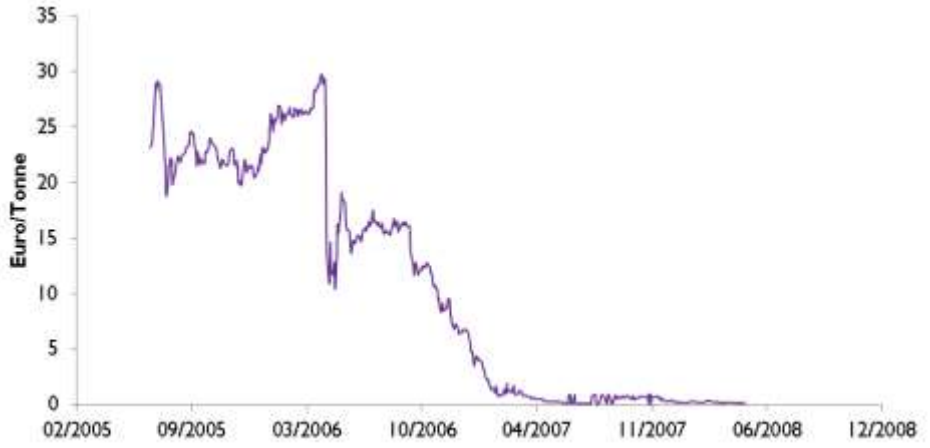
[119] Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".

[120] Cameron Mckenna, "Phase III of the EU Emissions Trading Scheme: your Q&A guide", http://www.law-now.com/cmck/pdfs/nonsecured/phase3.pdf.

quotas reflected an over-estimation of emissions by some Member States and the market recalibrated the expectation with actual demand and prices adjusted downward accordingly.

The Phase was structured in such a way that banking and borrowing of allowances intra-period was allowed but unused allowances were not permitted to be carried over to the next period, i.e. no inter-period banking. This led to a gradual fall in price towards zero by the end of Phase One, as illustrated in the figure below.

Figure 14.1: Spot price of EUAs in Phase One



Source: Europe Economics analysis of Bluenext data, market included: Bluenext.

Although the system did not reduce carbon emissions significantly, it was intended to provide information on designing a cost-effective trading system and revealed various lessons in the design of the trading system for the subsequent periods.

Phase two (2008 to 2012)

This period coincides with the first Kyoto commitment period, and is often referred to as the "Kyoto Phase", aimed at realising the goals set in the Kyoto Agreement. Significant changes in design were implemented to reduce the price volatility of the market and to reduce carbon emissions in line with the Agreement. The key changes can be summarised as below:[121]

- The overall EU cap was set centrally by EU registry:
  - Significant reduction in emission caps: as much as a 25 – 35 per cent lower cap was set in markets in Eastern Europe.
  - Inter-banking of allowances to allow excess allowances in Phase Two to be used in the next period.
  - Inclusion of the aviation industry to cover emissions on flights operating in the EU in 2012.

[121] J.Nordby (2011), "Price Relationships between EUAs and Energy and Commodity prices", Master Thesis.

The issue of allowances remained largely free of charge and only around four per cent of allowances were auctioned.[122]

A series of events occurred in Phase Two that raised concerns about the security measures in the EU ETS.[123] In addition to the VAT fraud and CER recycling in 2009 and 2010 respectively, a wave of cyber-attacks targeted the Registry system of the ETS, and over three million units of allowances were stolen from national registries in early 2011. [124] This represented approximately 0.15 per cent of total emission allowances. Market confidence was negatively affected by the risk of receiving stolen credits through the trading system and the potential associated economic losses. Spot trading was suspended on most exchanges and daily futures contracts were delisted on ICE and suspended on CME. Only a sub-set of products were resumed for trading by May 2011 with stricter security measures, and the liquidity and volumes were reduced due to the applied restrictions. The disruption observed in the spot/daily futures markets did not affect the futures and options markets where volumes traded increased in the year. It is argued that the security loophole was driven by the lack of national- and EU-level determination on the legal frameworks on the property rights of a carbon unit.

Phase three (2013 to 2020)

For Phase Three, emission caps will be set in line with the goal of achieving emissions at 20 per cent below the 1990 level by 2020. The cap is structured with total number of allowances decreasing in a linear manner to meet this target.

A series of changes have been implemented to strengthen the system. These include the introduction of the Single Registry on behalf of all national registries for the entire EU issuance of allowances and the functions of the ETS, while the functions required under the Kyoto Protocol, such as management of the surrendered units remain the responsibility of national registries.[125] Also, a common auctioning system for the distribution of allowances has been established to provide equitable access for emitters of all sizes. Starting from Phase Three, Member States are required to auction all the allowances that are not issued for free and adopt the centralised auctioning platform by 2015. The percentage of allowances to be issued via auction has also increased, with full auctioning of emission allowances to electricity generators which account for the majority of the emissions in the ETS.[126]

In addition, this Phase covers a number of new industries including petrochemicals, ammonia and aluminium industries and the emissions of two new greenhouse gases which are nitrous oxide and perfluorocarbons.[127]

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[122] Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".
[123] World Bank, State and Trends of the Carbon Market 2012.
[124] World Bank, State and Trends of the Carbon Market 2012.
[125] Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".
[126] World Bank, State and Trends of the Carbon Market 2012.
[127] Article by International Emissions Trading Association (IETA), http://www.ieta.org/index.php?option=com_content&view=article&id=324:the-eu-emission.

Phase Three also introduces a significant reduction in the percentage of international credits (CERs/EURs) that can be used to comply with the emissions requirement. Under the revised EU ETS Directive, there are approximately 1,700 million tons of CERS and ERUs that are eligible for installations in Phase Two and Phase Three combined, representing approximately six per cent of the average supplementary limit in Phase Two. The limit in Phase Two alone was set at 1,400 million tons which corresponded to approximately 13 per cent of the average allocation in that period.[128]

To address the risk of criminal attacks that occurred in Phase Two, an enhanced registry infrastructure with a number of new security measures has been put into force in this Phase, including stronger and harmonised account checks and transaction security.[129]

The carbon trading market

This section presents information and statistics on the carbon trading market.

Trading venues

Auction market

This trading mechanism has played an increasingly role from the evolution of the ETS and is now used in both primary and secondary markets for emissions trading. EUAs are first "traded" between the issuer and the receivers at a market price via common auction platform of EEX for installations within all Member States, (except for those in Germany and United Kingdom who have opted out of the common auction platform). It is also supported as part of the secondary trading services in the major exchanges, such as the ICE and EEX.

Screen trading

Screen trading on regulated exchanges provides a liquid and transparent platform for the trading of emission allowances. This is the common marketplace shared by all market participants of each exchange and allows trading to be executed anonymously. The volume traded via exchange platforms has grown significantly since the launch of the ETS and covers the range of emission products of the tradable credits.

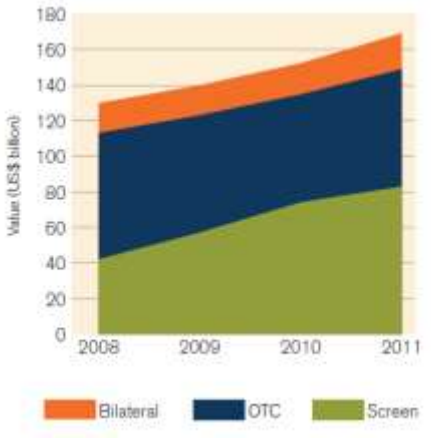
OTC trading

In the beginning of the ETS, the majority of trading took place via brokers in the over the counter (OTC) markets as most of the products were not liquid or standardised enough to be traded on exchanges. However, derivative contracts have become more standardised over time, reducing the need for customised deals executed through brokers. Market commentators suggest that uncertainty over the ETS and Kyoto progress has led to the lack of appetite for long-term forward contracts; traded contracts are thus very near-date and homogenous. This has facilitated the shift in trading from OTC-dominated to exchange-traded.

[128] World Bank, State and Trends of the Carbon Market 2012
[129] World Bank, State and Trends of the Carbon Market 2012.

As shown in the figure below, the proportion of all emissions contracts screen-traded on exchanges has increased over time; screen-trading accounted for nearly half of the total value traded by 2011.

Figure 14.2: Total emissions value traded

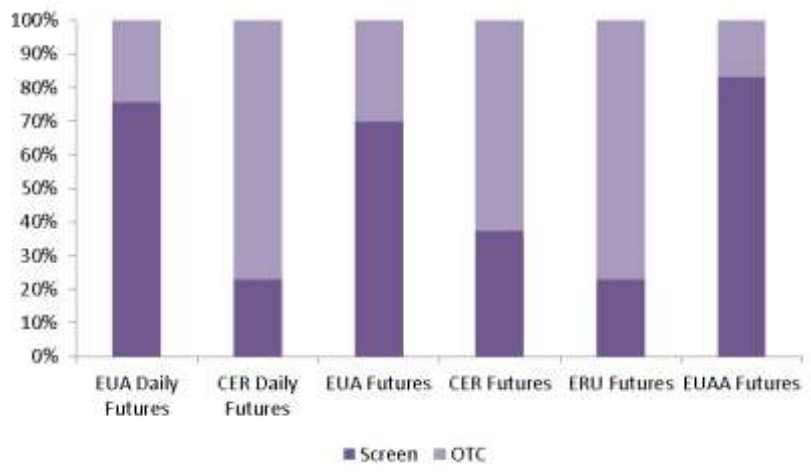


Source: World Bank 2012.

Some products are more likely to be traded on exchanges than OTC, and thus the diagram above does not represent the share of trading across individual products. Information collected by Trayport has shown that the majority of EUA trading is screen executed, but less than 40 per cent of CER trading took place via screen in 2011 and 2012.[130] Trading statistics from ICE present a similar picture: the majority of EUA and EUAA products are screen-traded but only a minority of CER products are traded on screen. The annual balance of trading between OTC and screen via the exchange is illustrated in the figure below.

[130] Trayport Euro Commodities Report, December 2012.

Figure 14.3: Balance of trading in 2012



Source: Europe Economics analysis of ICE statistics.

Regulated exchanges

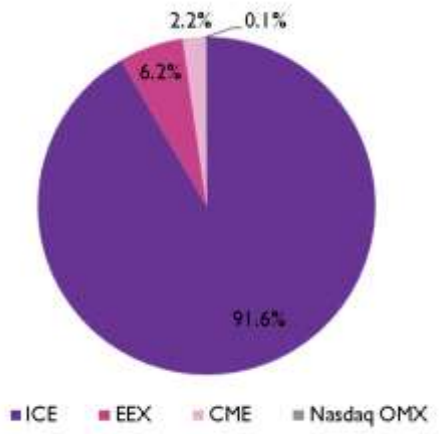
Several regulated exchanges facilitate the trading of emission allowances. Among all the exchanges, the IntercontinentalExchange (ICE) of UK is the dominant exchange with around 92 per cent of the market shares. It provides a comprehensive trading platform, as well as clearing facilities. It is also the largest exchange by volume traded in emission derivatives with 9,286,000 contracts traded in 2012.[131]

The second exchange by market share is EEX, an energy-based exchange in Germany. Although it has around six per cent of the market, it became the main exchange for spot trading after the collapse of Bluenext of Paris in 2012. The other smaller exchanges include CME[132] and Nasdaq OMX, formally known as Nord Pool. Both the exchanges account for less than three per cent of the market. The market share of each exchange is as shown in the figure below:

[131] Monthly overview of the Emissions Market by ICE Futures Europe, March 2013 https://www.theice.com/publicdocs/ICE_Emissions.pdf.

[132] It is used known as Green exchange which is now a subsidiary of CME Group Inc.

Figure 14.4: Carbon exchanges market shares 2013



Source: ICE Futures Europe (2013) 'The Emissions Market.

Each exchange offers a unique range of contracts for the tradable credits and the trading within each is governed by their set of in-house rules as well as national/EU regulations. The range of contracts varies from derivatives only (ICE) to a mixture of spot and derivative products. The most common contracts are future derivatives contracts. There are a number of similarities in the contract specifications shared by each exchange such as contract size which is measured in lots of 1,000 EUAs and minimum fluctuation (tick size) of €0.01 per EUA. The figure below summaries the number of emission products available for trading in each exchange.

Table 14.1: Products traded across exchanges

		Spot	Daily future	Auction daily future	Option	Serial option	Forward	Auction
EUA	ICE		X	X	X			X
	EEX	X						X
	Nasdaq	X			X			
	CME		X		X	X		
CER	ICE		X		X			
	EEX	X						
	Nasdaq	X			X		X	
	CME				X	X		
ERU	ICE				X			
	EEX				X			
	Nasdaq							
	CME				X			
EUAA	ICE			X				
	EEX	X						
	Nasdaq							
	CME							

Source: Bloomberg and the exchanges.

Market participants

There are different types of participants in the secondary market for emissions. The majority of market participants are general traders who could be solo traders or companies with memberships registered in different exchanges. There are over 100 emission members of ICE while more than 130 members of Nasdaq OMX.[133] There are three market makers[134] listed on EEX with two for spot trading and one for futures trading.[135] There are over 90 clearing membership registered with the exchanges with majority of international financial service companies operated in multi exchanges, for instance, 24 members are listed on ICE and over 70 members are accessible by the trading participants in CEM.[136]

Trading volume

We focus on the trading period between 2009 and 2012 which covers most trading within the Phase Two of ETS and some products from Phase Three which began to trade in 2012.

The volumes traded of allowances have increased significantly with the expansion of the sector coverage in the ETS. Market reports have shown that the monthly volume of all EUAs trading has

[133] http://www.nasdaqomx.com/commodities/markets/.

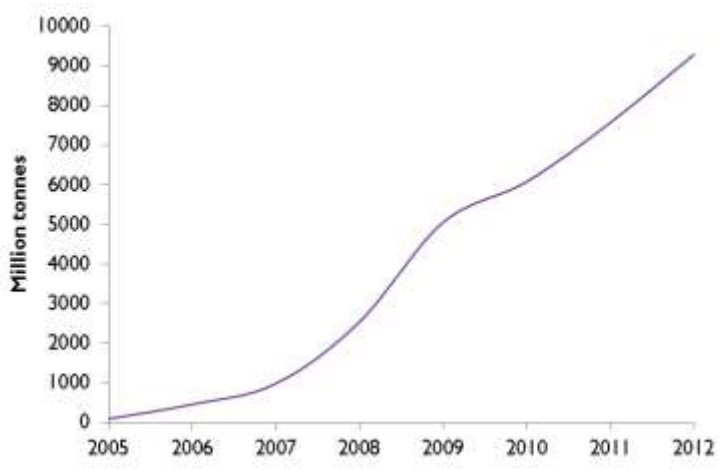
[134] They are companies which provide quotes for both buy and sell price of the financial instruments.

[135] http://www.eex.com/en/Transparency/Exchange%20owned%20data/Market%20Making/Admitted%20Market%20Ma kers.

[136] http://www.cmegroup.com/trading/energy/emissions/.

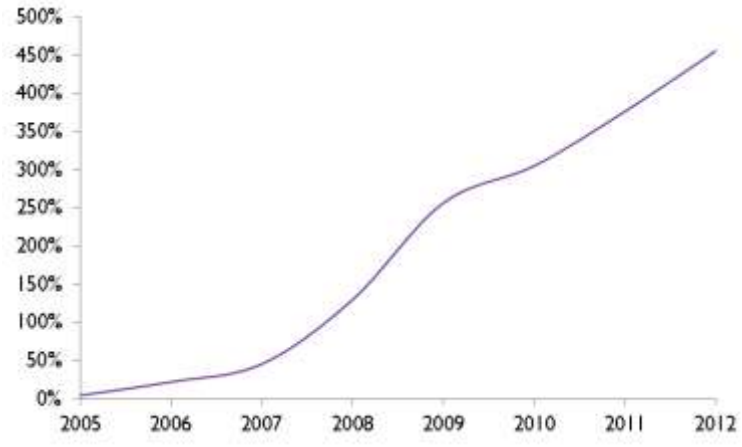
fluctuated from around 300 million tonnes of carbon dioxide to around 900 million tonnes in the past four years.[137] The main emission credits traded are EUAs which account for significant amount of the market volume. Given that ICE accounts for over 90 per cent of the market trading, the number of contracts cleared on ICE represents a good picture of the pattern of volumes traded in the EU carbon market. The figures below shows the annual total number of emission contracts traded — approximately 9,300 million tonnes of were traded in 2012 which corresponded to 456 per cent of the annual allocated allowances.

Figure 14.5: Annual total volume traded for all emission contracts



Source: Europe Economics analysis of ICE statistics.

Figure 14.6: Annual total volume traded as a percentage of allocated allowances

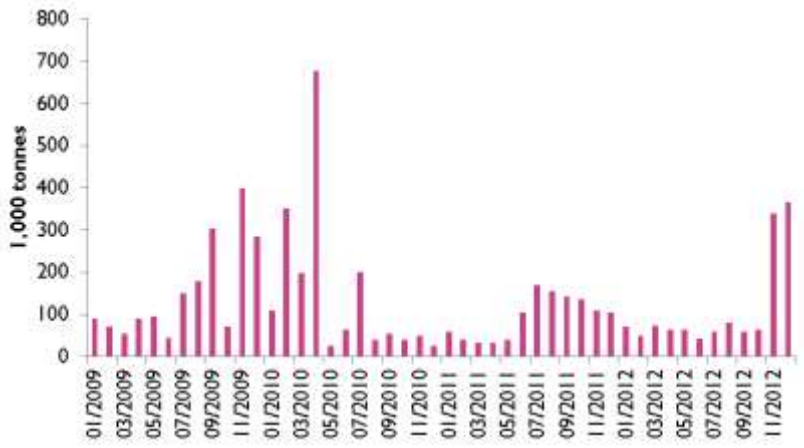


Source: Europe Economics analysis of ICE statistics and Carbon Market Data.

[137] Barclays quarterly report on Carbon Standard, January, 2013.

In 2011, the volume of EUAs trading represented approximately 81 per cent of all emission transactions in the ETS.[138] With a shrinking spot market following the allowance thefts, the derivatives markets has expanded over the recent years and the trading of EUAs is now dominated by the derivatives market. The volume of the EUA futures market had grown to 7 billion EUAs which represented over 88 per cent of total EUA trading value, while EUA options trading had risen to cover around 10 per cent of all EUA trading value in 2011. The daily volumes traded for different EUA products are shown in the following figures.

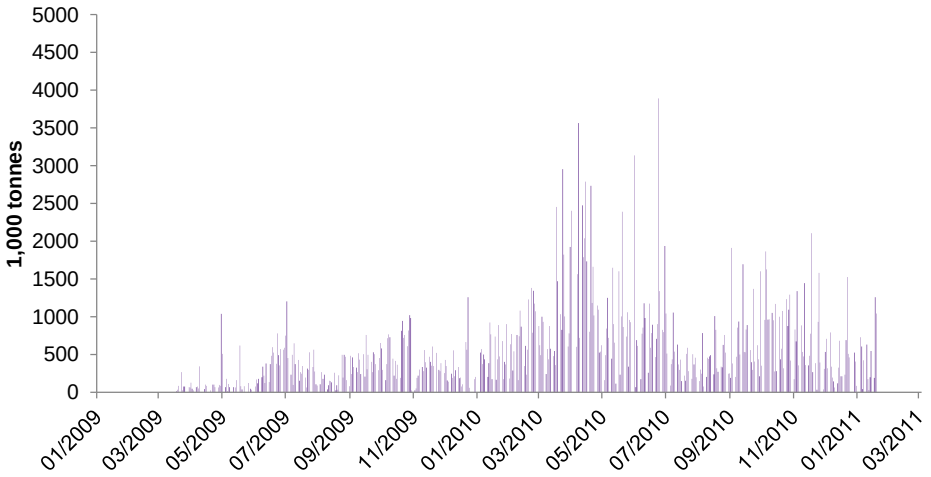
Figure 14.7: EUA spot market daily volumes traded



Source: Europe Economics analysis of Bloomberg data, market included: EEX.

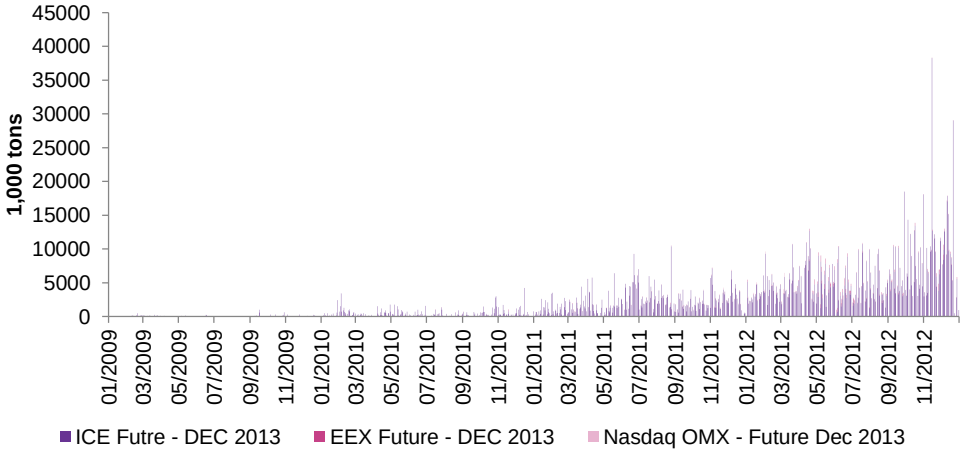
[138] World Bank (2012), State and Trends of the Carbon Market.

Figure 14.8: EUA daily futures market daily volumes traded[139]



Source: Europe Economics analysis of Bloomberg data, market included: ICE

Figure 14.9: EUA futures daily volumes traded

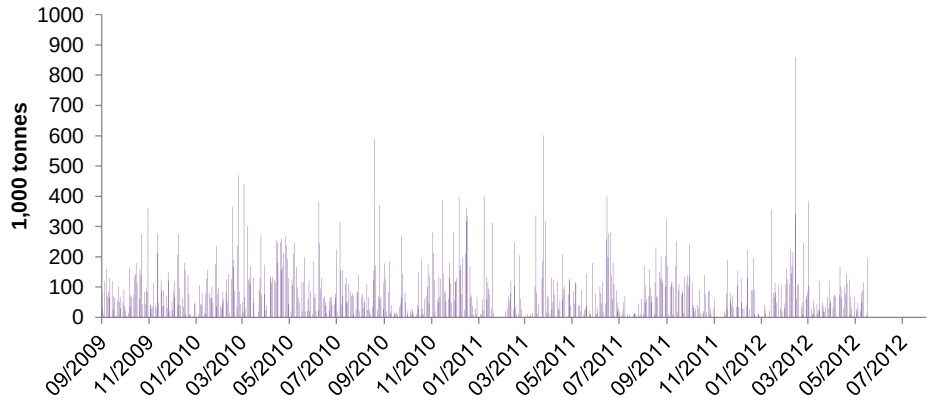


Source: Europe Economics analysis of Bloomberg data, markets included: ICE, EEX, Nasdaq OMX.

In contrast to EUAs, the transactions of the international credits (CERs/ERUs) are less frequent and the volumes traded are also significantly lower. The figures below illustrate the daily volume of the international credits traded in the spot and futures markets where data is available.

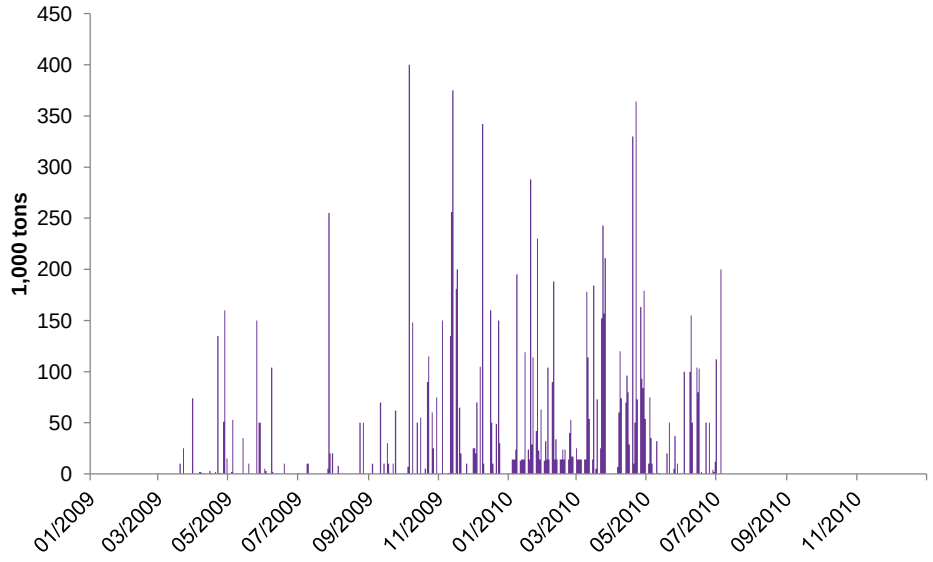
[139] According to World Bank report, ICE suspended the EUAs daily future contracts due to the security attacks in early 2011 and they were yet reintroduced to the market by April of 2012. Our analysis is therefore limited to the availability of the Bloomberg data in the period as shown in the figure.

Figure 14.10: CER spot market daily volumes traded



Source: Europe Economics analysis of Bloomberg data, market included: Bluenext.

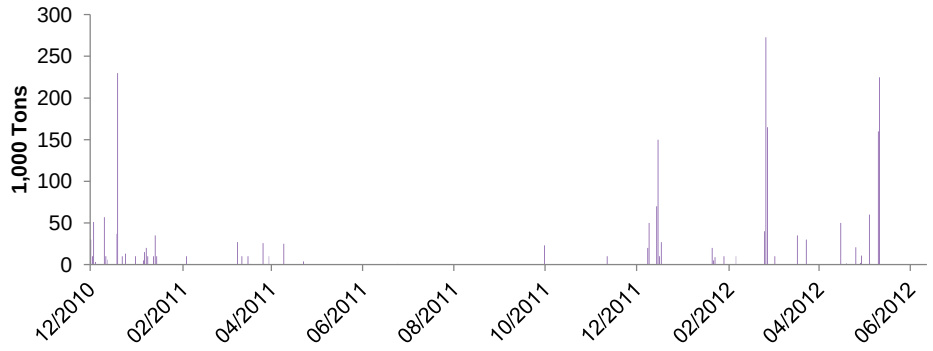
Figure 14.11: CER futures daily volumes traded[140]



Source: Europe Economics analysis of Bloomberg data, market included: ICE.

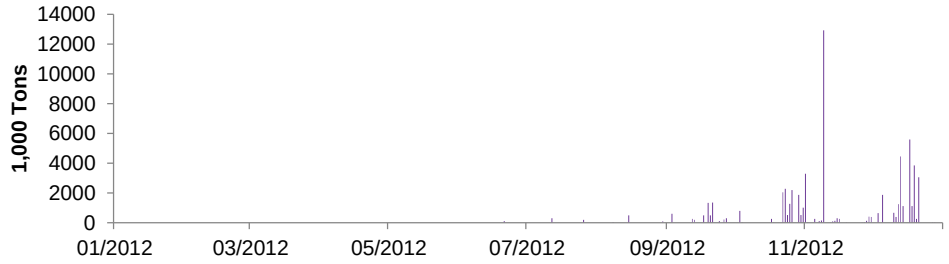
[140] Due to the limited data on trading of CERs futures, our figure only covers the period between 2009 and 2010.

Figure 14.12: ERU spot market daily volumes traded



Source: Europe Economics analysis of Bloomberg data, market included: Bluenext.

Figure 14.13: ERU futures daily volumes traded



Source: Europe Economics analysis of Bloomberg data, market included: ICE, EEX.

Price

In this section, we analyse the price movement and its volatility of each tradable emission credits in the period analysed. Across all type of trading products, this study focuses on the following products of each tradable unit where information is available:

- Spot contracts which are mainly traded on EEX.
- Daily futures derivative which is often known as an alternative form of spot contract.
- Futures with delivery set on the December of 2013.

The selection of products covers both spot and futures contracts that are commonly traded across all exchanges to allow comparative analysis. All prices presented below are the last price of each trading day and are calculated as an average of all exchanges where data is available.

EUAs

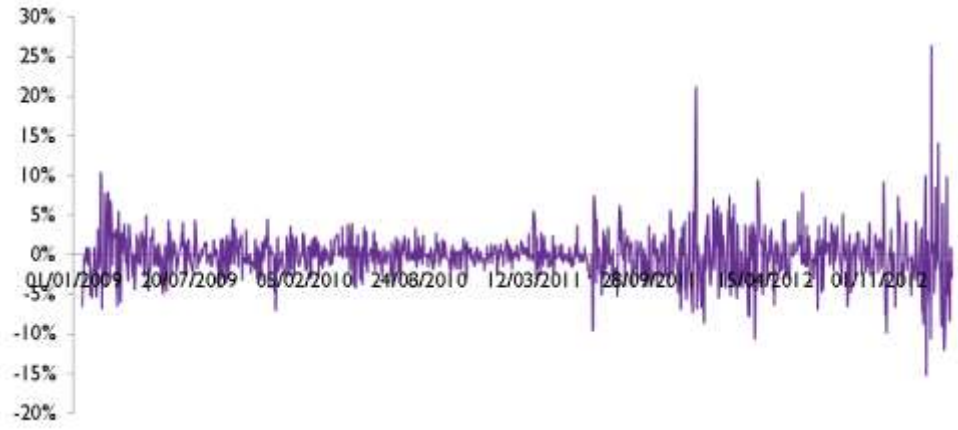
The changes introduced in Phase Two contributed to a more stable price path in Phase Two. The **Error! Reference source not found.** below shows the average EUAs future price across the exchanges. The price fluctuated within the range €10 to €20 subsequent to 2009 but started to decline in May 2011. Volatility presents a similar picture to the price movement which was low,

with the percentage change in inter-day price fall within five per cent change level. However, since the decline in price in 2011, the market became more unstable and the percentage change of inter-day price reached up to 25 per cent. This is illustrated in Figure 14.15 below.

Figure 14.14: Market averaged daily price movement of future derivative (December 2013)

Source: Europe Economics analysis of Bloomberg statistics, market included: ICE, EEX, Nasdaq OMX.

Figure 14.15: Percentage change in inter-day averaged daily price level of future derivative (December 2013)



Source: Europe Economics analysis of Bloomberg statistics, market included: ICE, EEX, Nasdaq OMX.

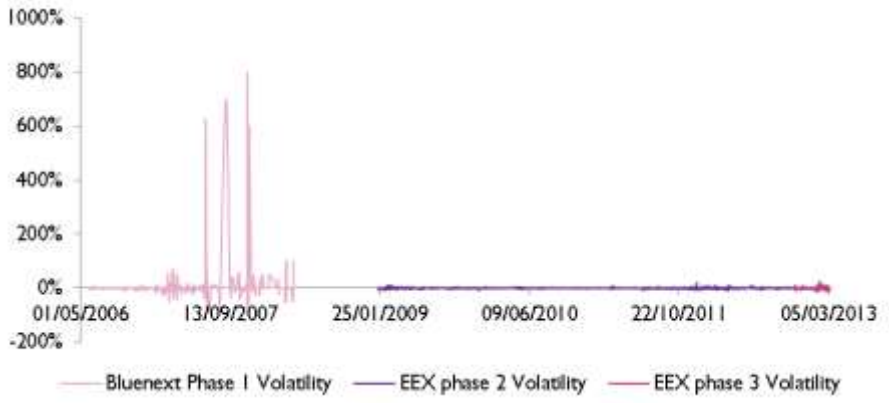
Research has suggested that the carbon market follows similar trading pattern to the energy market where the majority of the trades are in derivative contracts and it is the futures markets that are the key influence in the price setting mechanisms.[141] Both the price movement and volatility of the spot and daily futures of ICE confirm the findings and are shown in the figures below.

[141] Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".

Figure 14.16: Daily spot price movement

Source: Europe Economics analysis of Bloomberg statistics, market included:, EEX, Bluenext.

Figure 14.17: Percentage change in inter-day daily spot price

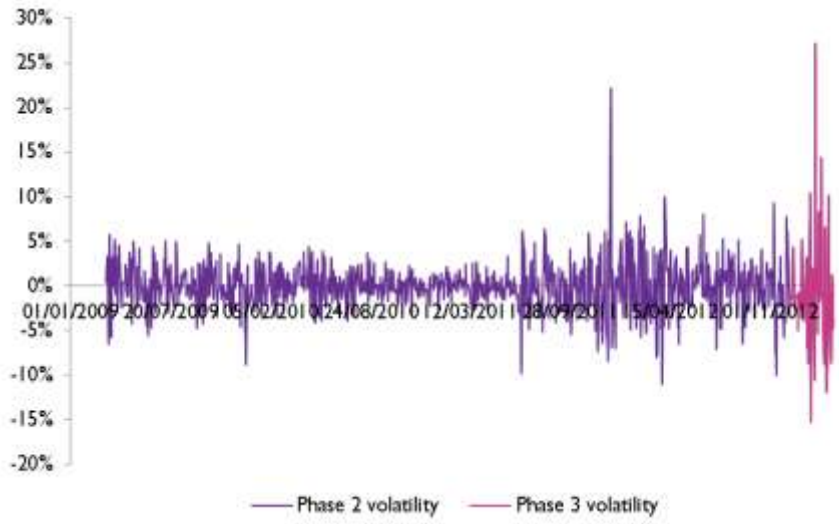


Source: Europe Economics analysis of Bloomberg statistics, market included:, EEX, Bluenext.

Figure 14.18: Daily futures price movement

Source: Europe Economics analysis of Bloomberg statistics, market included:, ICE.

Figure 14.19: Percentage change in inter-day daily futures price

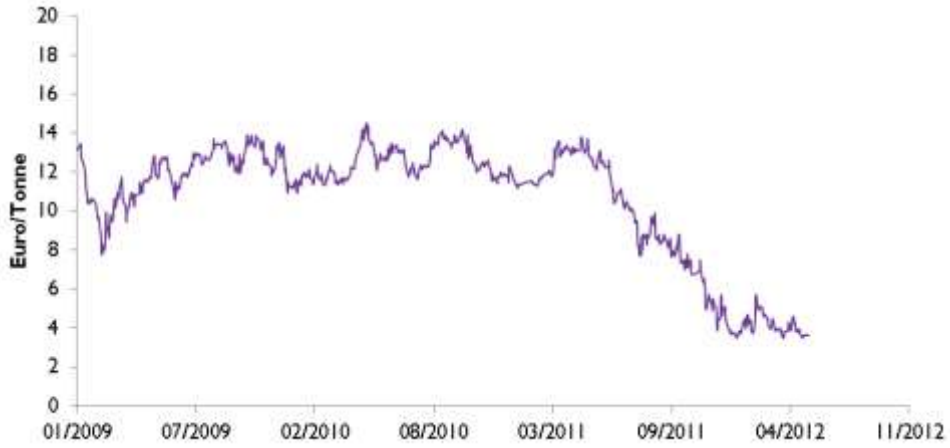


Source: Europe Economics analysis of Bloomberg statistics, market included:, ICE.

CERs

The average spot price for CERs ranges from €4 to €14 with a price path following the primary credit, EUAs. The market was relatively stable in 2009 and 2010 with the fluctuation of inter-day prices fall within 10 per cent but the volatility increased in June, 2011. The price movement and volatility of CERs is as shown in Figure 14.20 and Figure 14.21 respectively.

Figure 14.20: Market averaged daily spot price



Source: Europe Economics analysis of Bloomberg statistics, market included:, Bluenext, Nasdaq.

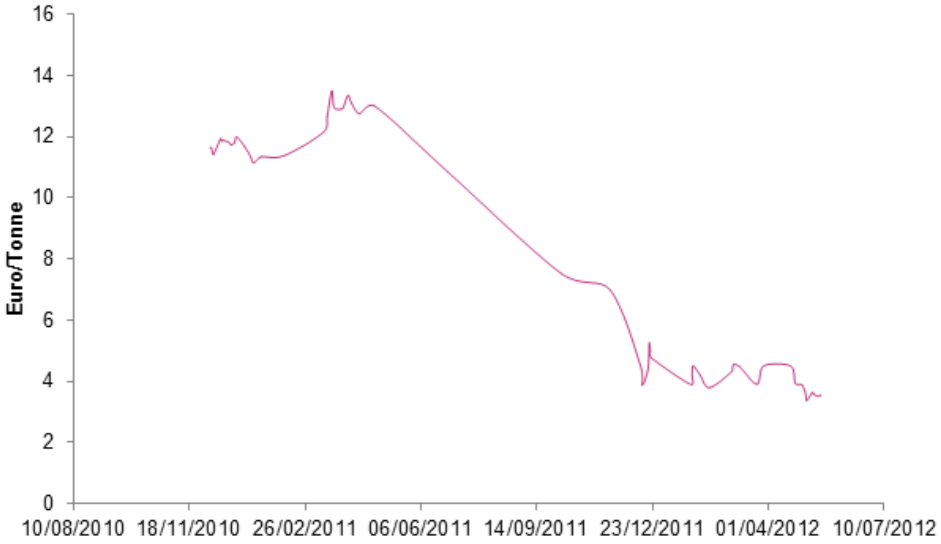
Figure 14.21: Percentage change in inter-day market averaged daily spot price

Source: Europe Economics analysis of Bloomberg statistics, market included:, Bluenext, Nasdaq.

ERUs

The trading of ERUs spot is considerably more infrequent compared with the other three credits with only 60 trades recorded by EEX in Bloomberg. The price movement is as shown below.

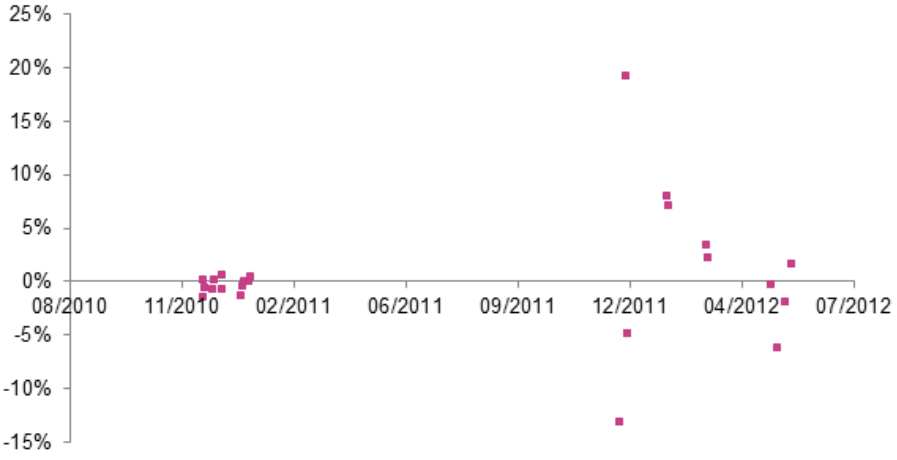
Figure 14.22: Daily spot price movement



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX.

It is clear from the price movement of ERUs that the market is very volatile. Despite the low number of trades, both price figures suggested a similar decline in price and increase in volatility in June 2011.

Figure 14.23: Percentage in inter-day daily spot price



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX.

EUAAs

Since its introduction in 2012, the average price of EUAAs futures (December 2013) ranged from €5 to €10 with a volatility of 10 per cent level measured by the percentage change in inter-day price. The market price movement and volatility are shown in the figures below.

Figure 14.24: Market averaged future price (December 2013) movement

Source: Europe Economics analysis of Bloomberg statistics, market included:, EEX, CME.

Figure 14.25: Percentage change in inter-day market averaged future price

Source: Europe Economics analysis of Bloomberg statistics, market included:, EEX, CME.

Relative bid-ask spread

The bid ask spread is calculated as the difference between the lowest ask price from the seller and the highest bid price from the buyer on a trading day.[142] It is often used as a form of liquidity

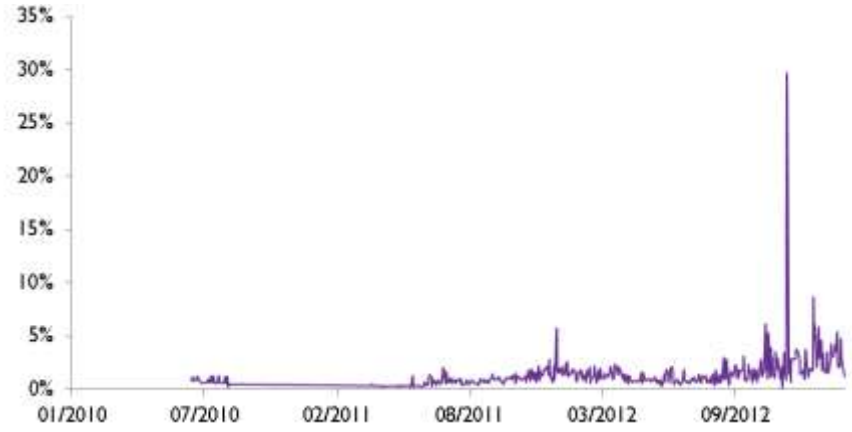
[142] EBA (2013), Discussion paper on defining liquid assets in the LCR under the draft CRR.

measure and an indication of the size of transaction costs. When the spread is wide, it indicates that the difference in the willingness to pay of the two parties of the transaction is large, leading to possible delays in making transaction with matched prices. As such, the trading delay could be classified as liquidity cost or transaction cost.

To separate out the effect of price volatility, we calculated the daily bid-ask spread as a percentage to the last transaction price of the trading day. Due to limited data availability, only the relative bid-ask spread of EUA and EUAA futures are constructed to represent the degree of liquidity in the carbon market.

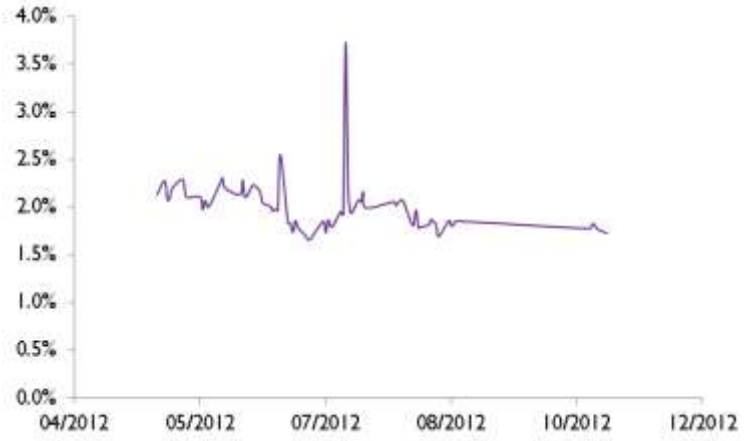
The relative spread of EUAs was below five per cent for most of the 2010 and 2011. By 2012, however, the spread rose to over 30 per cent. The spread of EUAAs stabilised within a narrow range of 1.5 per cent to 2.5 per cent in 2012. These are as shown in the two figures below.

Figure 14.26: Daily averaged bid-ask spread relative to last price (%) – EUAs futures (December 2013)



Source: Europe Economics analysis of Bloomberg statistics, market included: ICE, EEX, Nasdaq OMX.

Figure 14.27: Daily bid-ask spread relative to last price (%) – EUAA futures (December 2013)



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX.

15 Appendix 5: Stakeholder Engagement

15.1 Workshop

On 20th November 2013 we held a workshop at which nine organisations and one trade association participated. Setting a threshold for information disclosure was one of the topics discussed.

15.2 Workshop attendees

The table below sets out the attendees at the workshop. These have agreed to be named in the report as having attended the workshop (i.e. a minor modification to the Chatham House Rule under which the workshop was run), although nothing that was said will be attributed to any individual.

Table 15.1: Workshop attendees

First name	Surname	Organisation
Francois	Carre	BNP Paribas
Gunnar	Steck	E.ON
Nadine	Teychenne	Citigroup
Corrado	Catania	EcoWay
Andreas	Arvanitakis	Thomson Reuters Point Carbon
Alexis	Gillett	Statkraft
Timo	Schulz	EEX
Bernadett	Papp	Vertis Environmental Finance
Kathryn	Furhman	GDF SUEZ
Samuele	Repetto	IETA
Stefan	Feuchtinger	IETA
Deborah	Drury	Europe Economics
Ross	Dawkins	Europe Economics
Hannah	Meakin	Norton Rose Fulbright
Preeti	Capildeo	Norton Rose Fulbright
Ivan	Kuznetsov	DG MARKT
Milena	Damianova	DG CLIMA
Claire	Gavard	DG CLIMA
Piotr	Plizga	DG CLIMA
Polona	Gregorin	DG CLIMA
Vicky	Pollard	DG CLIMA

This summary of the workshop is set out following the structure of the day. We refer the reader to the workshop slides and the stakeholder consultation material to be read in conjunction with this summary.

15.3 Session 1a — Disclosure of non-public information

Information that affects the price of allowances

The first discussion was around the drivers of the market price in allowances. There was general consensus among the attendees that long-run prices are largely determined by macroeconomic variables, such as economic growth and production levels. Shorter-term prices are currently driven primarily by policy developments. In the current market conditions, non-public information ranks low in terms of relevance.

However, some attendees (market analysts) thought that once (if) political changes and structural reforms to the EU ETS slow down, other variables may increase in their impact on the carbon price. Macroeconomic variables were mentioned here — such as oil and gas prices, and the weather — as well as micro-economic variables such as production outages.

An interesting comparison was made between the sensitivity of carbon prices to outages, compared with energy prices. As allowances are a storable asset, their price is less sensitive to production changes. Energy, on the other hand, is not a storable asset and thus a production outage immediately affects the supply of energy and thus the price.

Appropriate threshold below which emitters should be considered not relevant to price formation

Attendees did not have an immediate sense of the size of company (in terms of emissions) whose production information would be of interest in terms of price formation. Ideas that emerged in the discussion were:

- Companies representing more than around one per cent of total emissions (around 20 million tonnes) would be interesting. According to the 2011 Carbon Market Data this would be around 18 companies.
- The threshold implied by the REMIT level of 100MW (0.5 million tonnes) is too low and would capture too many 'uninteresting' firms.
- A threshold of 10 million tonnes would also be too low.

It was suggested that the impacts of REMIT must be considered when setting the threshold and the disclosure requirements. Firms already required to disclose information under REMIT should not be required to do anything significantly different if they must disclose information under this requirement.

Suggestions of additional events that could help inform the appropriate threshold are:

- The French nuclear plant shutdown following the heatwave in 2008.
- The closure of Zeebrugge gas plant.

Impact of disclosure reporting

No specific details were given about the likely cost and resources entailed in disclosing information, although attendees said that quite a lot of effort went into setting up REMIT reporting. IT platforms would be required to compile and report the information. It was highlighted that for utility companies the information on usage, etc. is already there and accessing this information is not difficult — the main costs are IT and compliance costs. For entities that already have a separate trading arm, the implications of having to disclose inside information are less significant.

On the other hand, an information disclosure requirement would have a far greater impact on industrial emitters (i.e. non-utility companies). Attendees considered many of these companies only connect their production to emissions about twice a year — doing so daily would require some re-engineering of processes. If disclosure was to be event-driven, there would have to be an interpretation about what constitutes an 'event' and this communicated to all parts of the company (individual installation managers, etc.).

A discussion ensued about whether the disclosure requirement would have a further threshold to define what constitutes a 'significant event' for disclosure. DG CLIMA clarified that only a company-level threshold would be set to define the minimum size of company that when in possession of non-public information about its physical operations with impacts on emission allowances markets should disclose inside information. Companies would then be left to establish themselves in accordance with applicable rules of the Market Abuse Regulation whether a particular event or piece of information concerning their activity should be disclosed. Workshop attendees suggested that not having certainty about the types of events that should be disclosed could increase compliance costs, for example reporting costs and resources dedicated to decision-making.

It was also suggested that the efficiency of the threshold be tested somehow, although no insight was given as to how this might be done.

15.4 Session 1b — Trade Transparency

In this session, EE presented high-level details of pre- and post-trade transparency requirements from recent drafts of MiFID and MiFIR. As these policies are still subject to change, the level of detail in the discussion was limited.

On the whole, the attendees did not perceive there to be a lack in current levels of trade transparency in the carbon market. The majority of trading they undertook was conducted via exchange, where (the attendees felt) the levels of transparency mirrored those set out in the proposals. They felt the timing of post-trade information was good — almost real time. It was felt that MiFID and MiFIR would just formalise what was already in place.

Transparency waivers

The discussion then moved to concepts of liquidity to inform the setting of transparency waivers (regulators would be able to temporarily suspend the transparency requirements if liquidity fell below certain levels for a set of objective criteria). EE noted that the rationale behind these waivers could be driven by market participants' reluctance to take on large trades in an illiquid and

transparent market, whereby the market could move against them as they tried to unwind the trade.

Attendees did not have many opinions about useful measures of liquidity. The most relevant metric to some is the number of buyers and sellers available at a certain price; i.e. whether it is possible to repeat a trade at the same price many times.

The group could not see much benefit or relevance of the transparency waiver. The market currently operates at a good level of transparency, which is what it needs (at least the minimum). It would not make sense to *remove* this level of transparency at a time when the market was illiquid, as this would simply signal problems and dissuade trading. Attendees did not identify transparency with a reluctance to trade in an illiquid market.

15.5 Session 2: Post-trade infrastructure

15.5.1 Emission allowances as collateral

Attendees agreed that the latent demand for the use of EUAs as collateral was high, as it was natural for companies to want to use the assets they have on their balance sheet. It is difficulties with 'supply' that are the problem.

The group was asked to comment on the barriers to using EUAs as collateral as identified by EE and NRF:

- The efficiency and liquidity of the spot market (or the perceived absence of these).
- Past registry problems, undermining the spot market and increased the perceived risk to clearers of holding allowances as collateral.
- Low price and price volatility.
- "Exotic" nature of the asset class.
- Current lack of coverage by the Financial Collateral Directive (FCD). There remain differences in the way in which security over an emission allowance can be granted and the extent to which such security interests are capable of challenge by third parties in different Member States.

They agreed with this list, although it was felt that the 'past problems with the registry' was no longer an issue and that the Single Registry had improved the situation a good deal. It was considered that the final two bullet points were structural (i.e. requiring remedy) whereas the first three were cyclical and capable of solving themselves (with, indeed, the second point already resolved as noted).

The biggest barrier to using EUAs as collateral not identified in the above list, as seen by relevant attendees, was the concern around the legal nature of EUAs and whether a security interest over them is available. Banks have looked into taking EUAs as collateral on behalf of their industrial clients or counterparties. A particular barrier identified by the group was the possibility of selling EUAs in the case of a default. Credit officers within counterparties need certainty that the collateral can be liquidated when necessary. This certainty does not exist and thus EUAs would continue to be considered too risky. There are a number of steps required to protect the security interest of an instrument depending on its nature, but with the uncertainty over the legal nature of EUAs banks

do not know which steps to take. Usually, as the clearing counterparty, banks would take security interest over the EUAs offered as collateral, but this is not possible with EUAs.

The group identified that in order for EUAs to be used as collateral two things need to happen:

- The legal definition of EUAs needs to be made clear. This will have to be at the national level. It was felt that even if the definition was not aligned across Member States, at least having a certain definition in each Member State would be better that the current uncertainty.
- Security interest over EUAs must be possible.

Extending the coverage of the Financial Collateral Directive was seen as helpful, but not sufficient, the above two structural factors being the most important and necessary.

We discussed briefly whether the issues in accepting EUAs as collateral would be different for a clearing house compared to another financial institution such as a bank. The attendees felt that a CCP would still face the same issues around legal enforceability.

15.5.2 Interplay between registry regulation and post-trade infrastructure

The discussion here focussed on the use of Central Securities Depositories (CSDs) in the carbon market to reduce counterparty risk. The CSD regulation applies only to depositories operating a securities settlement system and imposes obligations on participants who "settle" their assets through such a system. The establishment of CSDs has helped to reduce the risks of settlement in financial markets generally (e.g. by ensuring simultaneous exchange of cash and securities between buyer and seller) but there is not currently a similar level of infrastructure in emissions markets. The workshop attendees considered the current use of CSDs was very low indeed, as were the benefits. Reasons given were that it adds a layer of cost, without delivering clear advantages. Potential advantages from a CSD could include payment versus delivery (DVP) capacity (to reduce settlement risk) and the provision of electronic interfaces. It was not felt that the carbon market as a whole would need or benefit from these functions, only financial institutions that would benefit from reduction of payment and operational risk in settlement.

Similarly, the use of CSDs for their custody and escrow services was not seen as worthwhile. The costs are prohibitive and this service is usually only used for very large OTC trades. It has been used in the past in the primary CER market to address counterparty risk, but the use is not widespread. Exchange-trading already addresses counterparty risk and thus for the majority of EUA trading, which is done on exchange, custody and escrow services are not needed.

It was not felt that the requirement for settlement of EUAs executed on a trading venue to take place at T+2 implied a need for CSDs.

On the other hand, it was felt that CSDs were the best option to provide DVP for the EUA market. Delivery and payment, as it occurs via two separate systems (the Registry for delivery and a banking system for payment) is currently dealt with on a contractual basis. The market would still only move towards using CSDs here if it felt the benefit outweighed the cost. It is not always possible for a market participant to hold an account with a CSD as the costs are often prohibitive, particularly for smaller market participants. If there were more investors in the market (as opposed to compliance buyers) then these would value the use of CSDs more. Similarly, if there were a

greater volume of traders in the market the value of CSDs would increase in smoothing the transaction process via DVP, as a greater volume of trading would increase counterparty and settlement risk.

15.6 Session 3: possible options for the future development of the Single Registry

The following options were discussed with the group:

- Adding functions to the Single Registry:
  - A payment function.
  - Trade repository functions.
- Involvement of a third party private partner:
  - Transfer of ownership.
  - Outsourcing arrangement.

Adding a payment function

Attendees were positive about the idea of adding a payments function to the Single Registry. However, they also emphasised the substantial progress made in the functioning of the Union registry since the consolidation and felt that *mandating* payment through the Registry would be a significant and unnecessary complication.

Settlement and counterparty risk are seen as an issue for traders (especially smaller compliance buyers). The Single Registry is not seen as meeting the criteria for settlement finality without a payment function.

In addition to the counterparty risk, the back office processes relating to the separate payment and delivery legs of an EUA trade are considered burdensome. Checks need to be conducted to ensure, for example, that cash has been transferred before the allowances are delivered, and this takes time and cannot be fully automated. A DVP function would ease this, and be particularly valuable in a situation of high trading volume.

However, it was emphasised that this would need to be voluntary as it would be most beneficial for smaller, EUA-only transactions. Many market participants will make use of cross-commodity netting, and being required to process payment for the EUA element through the Registry could significantly complicate matters. (It was later discussed that cross-commodity netting mainly affected margin requirements rather than payment and settlement, but nevertheless it was felt that mandating payment through the Registry would be a significant and unnecessary complication.)

We also discussed the need to clarify how a payment function would work in reality, i.e. who would provide the banking lines?

Transferring ownership to a third party private partner

The group did not have strong opinions about the transfer of the Single Registry to a private partner. It was felt that perhaps in the past the problems with the Registry would have been more

quickly dealt with if it had been owned by a private partner. But currently there is enough confidence in the European Commission running the Registry.

It was felt that some private-sector input would be valuable to encourage innovation and functionality that meets market needs (e.g. electronic interfaces). An example was given of modelling the registry on bank-account infrastructure, or at least keeping track of developments in this type of infrastructure and applying them where possible to the Registry. Comments were made that setting up an account at the Registry was very burdensome and the need for criminal records in particular creates problems. The Commission made the point that these measures were necessary to provide the necessary security for the system. Other comments from the group suggested that the trading hours were unhelpful as was the settlement delay of 26 hours.

DG CLIMA suggested that one possibility could be to limit the account offerings (i.e. only have a few financial participants) at the Registry to enhance security, which may reduce the burden of opening an account. Another option could also be to keep the issuing function of the Registry within the Commission but outsource the trading infrastructure to a third party. This raises some questions about the need to disclose serial numbers of allowances, or even to assign ISINs.

Any benefits from private-sector involvement would need to be weighed against the costs.

Other possible improvements suggested by the group included linking the EU ETS to registries in other countries. It was also suggested that an extended sub-account structure would be helpful for companies that had different legal entities across the EU, to enable them to separate their allowances by Member States.

15.6.1 Survey

In addition to the workshop, fieldwork was conducted to gather input from a wider range of stakeholders. In particular, a total of 51 companies and organisations across different groups were invited to contribute to a survey. The stakeholder groups were:

- Power generators.
- Industrial emitters.
- Industry associations of emission traders.
- Financial institutions including banks, clearing houses and trading exchanges.

A total of 13 responses were received. Of these, three were submitted by industry associations on behalf of a wider population of interested firms. Responses were received across all relevant stakeholder groups, as shown in the table below.

Table 15.2: Summary of respondents

Stakeholder group	Number of responses
Power generators	4*
Industrial Emitters	3
Associations of emission traders**	2
Financial institutions	4

* One respondent is a leading trade association for the European electrical power industry.

** These include industrial emitters and power generators.

We present a summary of the responses to each topic of the consultation survey.

15.7 Disclosure of inside information

All respondents indicated that the main drivers of price formation in the emission market are:

- Macroeconomic information, such as GDP, fuel prices etc.
- Data on annual verified emissions.
- Information on major policy changes and developments related to the EU ETS.

All of this information is either not entity-specific or else is already available in the public domain. Respondents do not consider entity-specific and non-public information held by individual market participants to be a significant driver of the price of EUAs.

However, some respondents do place some weight on entity-specific information, to the extent that this is available.

The responses indicate that the non-public information that could have a market impact relate to significant corporate decisions affecting the status of availability and usage of industrial facilities. These include:

- Outages, planned mothballing or closures.
- Investment decisions regarding the building of new plants.
- Changes in energy efficiency of large plants.
- Fuel-switching at individual plants.

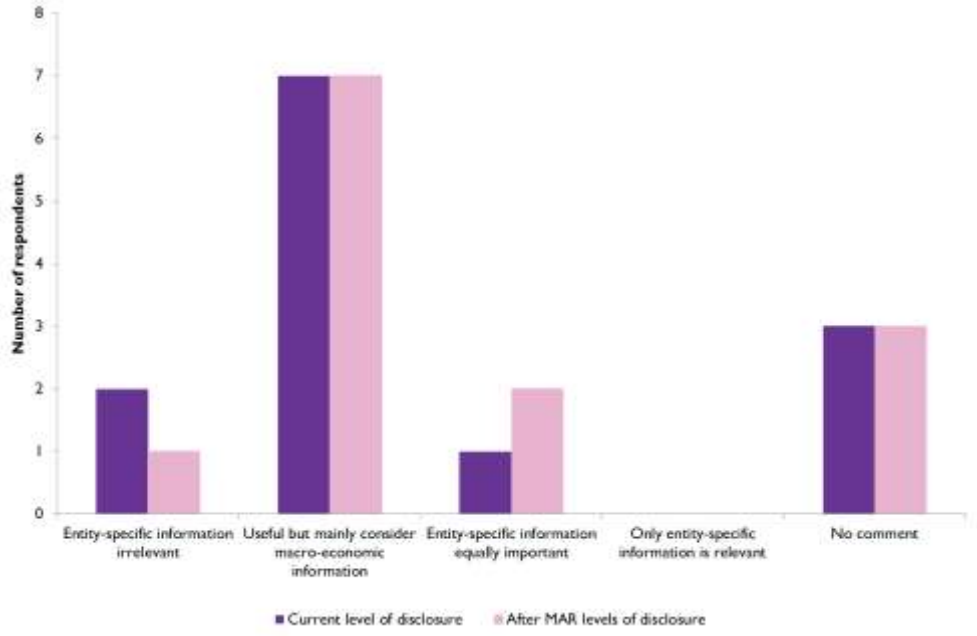
The majority of respondents did not identify any notable deficiencies in respect of the current disclosure of non-public information. Moreover, power generators which are subject to the disclosure rule under REMIT already provide information on electricity generation capacity and outputs which most respondents believe is sufficient for the purpose of the carbon markets.

Some industrial emitters considered the following types of non-public information held by power generators to be relevant to price formation in the carbon market. This information relates to EUA trading activities rather than production metrics:

- Ratio of forward purchased EUAs (i.e. have EUAs been purchased 1:1 in line with power sales or have generators purchased forward more or less EUAs than required).
- Percentage of future power generation that has already been forward sold.
- 'Stack' of forward sold power (e.g. gas, coal, nuclear, renewable).

We summarise below respondents' views on the importance of entity-specific information for price formation under current levels of information disclosure and under a situation in which EU ETS operators disclose entity-specific information. A greater provision of entity-specific information would only slightly increase its importance in price-formation decisions.

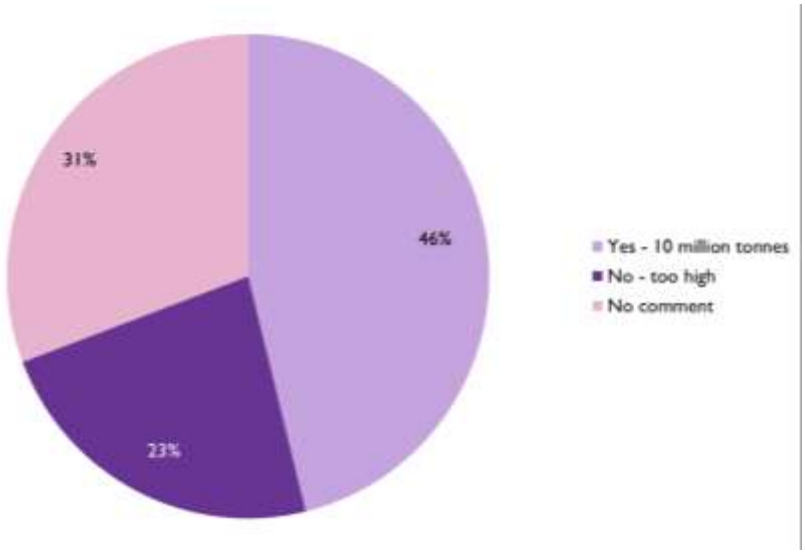
Figure 15.1: The importance of entity-specific information under current and proposed levels of information disclosure



Setting the minimum threshold

As shown in the chart below, just under half of the respondents agreed with the emission threshold proposed in the consultation survey of 10 million tonnes of CO_2 below which market participants would not be considered to hold useful information to a reasonable investor's decision. Approximately one quarter of respondents suggested that a threshold at this level would be too high and preferred the alternative threshold presented in the survey of 0.5–1 million tonnes (based on REMIT analysis).

Figure 15.2: Respondents' views on the minimum threshold



In terms of aviation credits (EUAAs), respondents preferred the application of a standard threshold across both the EUAs and EUAAs markets. This main reason given was the high price correlation between the two markets and the possible risks of regulatory arbitrage if two different thresholds were set.

Few respondents provided further comments on the approaches used in setting the minimum threshold. Some suggestions were made for alternative events that could be tested in our event analysis — these have been taken into account in the revised Task 5 report. Some respondents (notably power generators) suggest that the REMIT thresholds should be used as a threshold for consistency and to avoid duplication of disclosure requirement and additional cost burdens — at least for power generating firms. Other respondents pointed out an important difference between price formation in the energy and carbon markets — carbon markets being far less sensitive to production changes as allowances are storable assets — which would render a threshold benchmarked against REMIT less relevant.

Impact of information disclosure on companies

Respondents highlighted a number of costs of complying with information disclosure requirements, including:

- Developing IT systems.
- Training installation operators.
- Developing compliance strategies.

Some respondents thought the compliance process would have a significant resource and cost impact, although none were able to provide quantitative estimates. It was suggested that maximising the use of existing disclosure channels, particularly those established for the REMIT requirements, would minimise reporting costs.

In terms of the practicalities associated with disclosing relevant information, no major difficulties were anticipated by respondents, although it was thought that small market participants may face initial challenges in understanding and implementing the requirement due to limited internal resources compared to larger corporates.

Respondents suggested that the prohibition of trading whilst in possession of inside information under MAR could require internal restructuring of the organisation to separate out the trading activities from emission reporting activities. To avoid the risk of unintentionally trading with inside information, companies might choose to immediately disclose all information and would ensure their internal traders receive the information at the same time as the market. This could have potential cost implications for business restructuring and process developments of trading activities.

Impact of information disclosure on the market

The responses suggest that there could be small potential benefits due to increased information flow. This could help support confidence in the price formation process and improve liquidity and market participation.

We summarise the general views regarding the market impacts of information disclosure below.

Table 15.3: Summary of views on the market impacts of information disclosure

Market impact	Size of impact*
Price volatility	Small increase
Volumes traded	Neutral impact to small increase
Transactions costs (e.g. bid-ask spreads)	Neutral impact to small increase (with the exception of one respondent who suggested a negative impact)
Number of market participants	Neutral impact to small increase
Any other market impacts	None

*Small refers to an effect of less than 10 per cent.

15.8 Interplay between the Single EU ETS Registry, post-trade infrastructures in financial markets and legal certainty

The responding market participants do not see major hurdles preventing the mandatory clearing of EUA derivatives and — indeed — the majority of EUA derivatives are already cleared. Equally, there are no major hurdles faced by the respondents in complying with the risk mitigation obligations for non-cleared OTC derivatives contained within EMIR. Instead, the potential concerns raised — by some respondents —include additional cost related to the accounting of exchange-traded derivatives and the impact on non-cleared trades for portfolio reconciliation.

If the Union Registry were to come under the CSDR, then respondents did not perceive there to be any elements within the CSDR that would pose difficulties for the trading of emissions allowances. Potential cost increases were again the concern of a few respondents.

The majority of respondents were uncertain as to whether and how the Settlement Finality Directive (SFD) protections would apply to counterparties trading EUAs on primary auctions. With the limited knowledge on the application of the Directive in the emissions market, the impact of

the SFD was unclear to most respondents and they believe that more clarity was necessary to deepen their understanding.

A clearing house noted that, with allowances shortly to be defined as financial instruments, the Single Registry *should* be certified as equivalent to a CSD. The clearing house's interpretation is that — in order to fulfil the objective of adequately managing the risk of all counterparties —CCPs would need to conduct a detailed risk assessment unless there is a formal certification that the EU ETS is at least equivalent to a CSD. Equally a lack of equivalence also poses difficulties in implementing the segregation requirements of EMIR as currently the EU ETS does not support an account structure equivalent to a CSD and does not allow the pledging of accounts.

It was suggested by the same respondent that designating the Union Registry as a settlement system for the carbon market would be beneficial and contribute to increased transparency in the market. The respondent considered that not designating the Union Registry would pose difficulties for settlement finality for auction platforms and secondary markets.

Overall, most respondents agreed that the carbon market's post-trade infrastructure can be considered fully on a par with that serving the needs of broader financial markets. Some respondents believe that the features of the carbon market mean that a comparison with wider financial markets is not valid. Respondents do not consider there to be any significant deficiencies and believe that the post trade infrastructure in the carbon market is satisfactory. The strengths of the market are:

- Security features.
- Immediate transfer function between "trusted" accounts.

15.9 The use of allowances as collateral

The use of emissions allowances as collateral has been considered by some market participants, but has not been formally implemented.

Respondents generally agreed with the analysis of the barriers to the use and acceptance of emission allowances as collateral, namely:

- The weak efficiency and liquidity of the spot market.
- Past registry problems.
- Low price.
- Nature of the asset class.
- The lack of coverage in the Financial Collateral Directive.

Further, the majority of respondents agreed on the impact of legal uncertainties on the use of emissions as collateral. Some respondents noted that the absence of an EU-wide agreement regarding the legal nature of allowances and the significant differences between insolvency regimes within the EU are key barriers to the use of allowances as collateral. A financial participant suggested a possible improvement on the legal nature of EUAs as follows:

"….. greater clarity in this area could be achieved by amending Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a

system for greenhouse gas emission allowances trading within the Community so as to incorporate a provision specifying the legal nature of EUAs."

However, one clearing house did not believe that the legal uncertainties have any significant impact on the collateral use of emissions.

Views were split as to whether market confidence would significantly increase if there was greater certainty as to whether or not any claim over EUAs could be made. Whilst some expressed this view, others believed that the likelihood or otherwise of a third party making a successful claim over allowances in the registry account would have no major impact on their confidence in the market.

One suggestion to encourage the use and acceptance of allowances as collateral was enabling allowances registered with the EU ETS to be pledged legally and technically similar to the current standards for pledging. The view was that this could be achieved by setting up the EU ETS to be similar to a CSD or allowing custodianship of EU ETS by an established CSD.

In terms of costs and benefits of the use of allowances as collateral, respondents indicated that current systems could be adapted with low incremental costs and that there could be financial savings on the cost of raising other collateral (such as bonds) by leveraging on EUAs stored. The use of allowances as collateral was in any event only considered likely to be worthwhile when large volumes of allowances were held.

Overall, responses on the impact of extending the FCD to cover allowances were mixed, with over half not making a comment at all. Around 15 per cent of respondents believed that there would be large impact on the use of allowances as collateral but around 30 per cent of respondents thought that the impacts would be small to negligible. In terms of market liquidity, respondents generally suggested positive but limited impacts associated with the extension of the FCD.

The role of custodian services

The majority of responses show that the availability of custodian services would potentially improve the likelihood of a company using allowances as collateral. Respondents generally agreed with the analysis of the deterrents to custody services for allowances but some held divergent views. These suggested that the main deterrent is a general lack of market demand for such services since market participants are comfortable holding allowances in their own registry accounts. Respondents further noted that it would be important that the legal regime relating to holding assets and exercising rights arising from them is the same for emission allowances as it is for other types of security.

15.10 Preliminary consideration of longer-term options for the EU ETS Single Registry

Integration of additional functions to the Single Registry

While some respondents agreed with our analysis of the impact of the absence of a payment function, the majority do not favour the addition of a payment function to the Single Registry and

believe that the current infrastructure is satisfactory. If a payment function were to be introduced, respondents were clear this should not be mandatory.

Respondents are either not aware of CSD activity in the emissions allowance market or do not believe that increased CSD activity would alleviate the risks of not having a payment leg in the Single Registry. On the other hand, respondents agreed that the involvement of central counterparties (CCPs) in the auctioning and trading of EUAs on platforms would help to reduce the risks of not having a payment leg.

Few respondents commented on the advantages or disadvantages of the introduction of trade repository functions to the Single Registry (largely due to insufficient knowledge). Responses from clearing houses suggest that the benefits of the function would be limited to those trading participants who exclusively trade emissions allowances. Many companies trade a basket of financial products and there are already many trade repositories available. As such the benefit of adding this function to the Union Registry was not apparent. On the other hand, a respondent from the power generation sector thought that introducing a trade repository function would have the benefit of easing the administrative burden on carbon market participants imposed by EMIR.

Transferring functions to a third party private partner

Most respondents across the various stakeholder groups believe that the current Single Registry infrastructure is adequate and do not see benefits associated with outsourcing the Single Registry to a third party. Indeed it was even suggested that the transfer of functions to a third party could pose additional costs on the market and counterparty risk could become a concern. However, some respondents did favour the introduction of a third party private partner and agreed with our analysis of the potential benefits. This latter group believed that institutions such as CCPs would be capable of providing this service and could foster a more responsive environment to innovation and to suggestions for improvements from the Single Registry's users.

Task 2-4 Report

Europe Economics

16 Introduction and Background

16.1 Introduction

This draft report presents the fact-finding element of Tasks 2-4. The information gathered for this draft report represents our understanding of the requirements in light of the revised scope of Tasks 2-4. These tasks originally entailed the analysis of the current situation, development by the contractor of options for delegated acts relating to certain MiFIR articles on information transparency and assess the impacts of the identified options. The development of the MiFIR text means that these provisions are to be developed as technical standards by ESMA. Nevertheless, our work has covered fact-finding, the identification of missing data and also consideration of potential policy options and the associated impact analysis relevant to the carbon market.

The areas that the technical standards, to be developed by ESMA, will cover are:

- The liquidity threshold below which competent authorities may temporarily suspend the pre-trade transparency obligations (see Article 9(5) of MiFIR).
- The range of bid and offer prices or quotes and the depth of trading interests at those prices to be made public in accordance with Article 8(1) and (4), taking into account the necessary calibration for different types of trading systems as referred to in Article 8(2) (see Article 9(5) of MiFIR).
- The size of orders that are large in scale and the type and minimum size of orders for which pre-trade disclosure may be waived (Article 9(5) of MiFIR).
- The size specific to the financial instrument referred to in paragraph 1(b) and the definition of request-for-quote and voice trading systems for which pre-trade disclosure may be waived (see Article 9(5) of MiFIR) giving proper consideration as to whether, at such sizes, liquidity providers would be able to hedge their risks (since the EU ETS is not a retail market).
- The details of transactions that investment firms, including systematic internalisers (SI), and market operators and investment firms operating a trading venue shall make available to the public, distinguishing between those determined by factors linked primarily to the valuation of the financial instruments and those determined by other factors (see Article 11(4) of MiFIR).
- The time limit that would be deemed in compliance with the obligation to publish as close to real time as possible including when trades are executed outside ordinary trading hours (see Article 11(4) of MiFIR).
- The conditions for authorising investment firms, including systematic internalisers, and market operators and investment firms operating a trading venue to provide for deferred publication of the details of transactions, and the conditions for determining when deferment or omission of transaction information is allowed (see Article 11(4) of MiFIR).
- The systematic internalisers shall disclose quotes to their clients on request if they agree to provide a quote. That obligation may be waived where the conditions specified in Article 9(1) are met (see Article 18(2) of MiFIR).

Our interest is how these relate to the EUA spot and derivatives markets. The fact-finding supports the development of the subsequent analysis and describes the current situation for emission allowances and their derivatives in terms of:

- The availability of pre-trade information for trading venues.
- The availability of post-trade information for trading venues.
- The availability of trading information for systematic internalisers.

First, however, we provide an overview of the carbon market, which updates the analysis undertaken for Task 1 (included as an appendix to the report). This overview provides important context to the further discussion on trade transparency in the carbon market, and includes an analysis of the market characteristics in relation to elements to be specified pursuant to Article 9(5) of MiFIR, such as the range of bid and offer process, the type and size of orders, and the type of market participants.

The report describes what we currently know of trading transparency in the carbon market. We also identify areas where consultation with stakeholders will be necessary to corroborate or expand the available information.

16.2 Overview of the carbon trading market

We present an overview of the carbon trading market, covering the characteristics of the market and elements relevant to the analysis of pre-and post-trade transparency.

These include:

- The trading market micro-structure and the main trading venues.
- The liquidity profile of the market. Liquidity is a broad, multi-dimensional concept. A liquid market will typically exhibit the following overlapping characteristics: low transaction costs (which the relative bid-ask spread speaks to directly), immediacy (the speed at which orders can be transacted), depth (the scale of potential orders above and below the current price —the bid-ask spread speaks indirectly to this), breadth (whereby unfulfilled orders are large and abundant so that trading does not distort price formation) and resilient (price moves away from fundamentals are short-lived). We consider:
    - market participants;
    - trading volumes;
    - price volatility (price data are shown in the Appendix);
    - the size or type of orders and the size and type of an issue of a financial instrument; and
    - bid-ask spreads.

The Carbon Market is made up of four types of tradable allowances under the EU Emissions Trading Scheme (EU ETS). They are:

- EU Allowances (EUAs).
- EU Aviation Allowances (EUAAs).
- Certified Emission Reduction (CERs).
- Emission Reduction Units (ERUs).

Products traded in the market include spot products and daily futures (which are a proxy for spot contracts), as well as derivatives such as options, futures and forwards, and swaps.

16.2.1 Trading market micro-structure

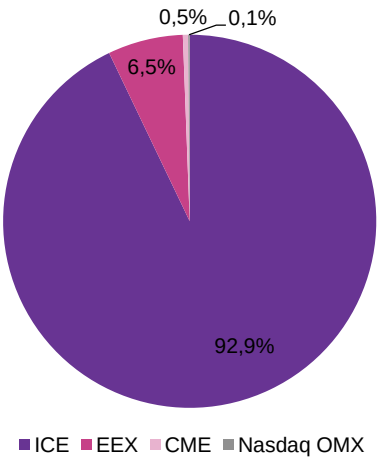
Emission allowances and their derivatives are traded on a number of venues, which have different existing levels of information transparency.

Regulated markets

Several regulated exchanges facilitate the trading of emission allowances. Among all the exchanges, the IntercontinentalExchange (ICE) of UK is the dominant exchange with around 93 per cent of the market shares in primary and secondary markets of all emission allowances products. It provides a comprehensive trading platform, as well as clearing facilities. It is also the largest exchange by volume traded in emission derivatives (8,674,000 contracts traded in the calendar year 2013).[143]

The second exchange by market share is EEX, an energy-based exchange in Germany. Although it only has less than seven per cent of the market (most of which relates to primary auction activity), it became the main exchange for spot trading after the collapse of Bluenext of Paris in 2012. Its market share in secondary spot trading was about 69 per cent in 2013, although its share has reduced slightly during the course of 2014, currently standing at less than 60 per cent. The other smaller exchanges include CME[144] and Nasdaq OMX, formally known as Nord Pool. Both the exchanges account for minimal market shares. The market share of each exchange is as shown in the figure below:

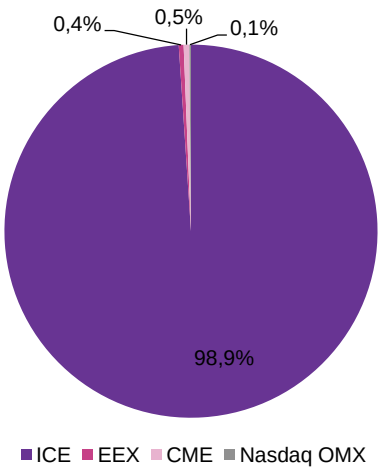
Figure 16.1: Carbon market shares of different exchanges (July 2014), including primary auctions



[143] Monthly overview of the Emissions Market by ICE Futures Europe, April 2014. https://www.theice.com/publicdocs/ICE_Emissions.pdf.

[144] It is used known as Green exchange which is now a subsidiary of CME Group Inc.

Figure 16.2: Carbon market shares of different exchanges (July 2014), excluding primary auctions



Source: ICE Futures Europe (2014) 'The Emissions Market'.

Each exchange offers a particular range of contracts for the tradable allowances and the trading within each is governed by their set of in-house rules as well as national/EU regulations. The range of contracts varies from derivatives only (ICE) to a mixture of spot and derivative products. The most common contracts are future derivatives contracts. The spot market has not recovered significantly from the issues encountered in 2010–11, however, the daily futures have attracted interest, amounting to 2.5 per cent of future derivatives activity in ICE in 2013.

There are a number of similarities in the contract specifications shared by each exchange such as contract size which is measured in lots of 1,000 EUAs and minimum fluctuation (tick size) of €0.01 per EUA. The figure below summaries the number of emission products available for trading in each exchange.

Table 16.1: Products traded across exchanges (March 2014)

		Spot	Daily future	Option	Future	Serial option	Forward	Auction	Auction Future	Spread	Swaps & Swats
EUAs	ICE		✓	✓	✓			✓			
	EEX	✓			✓			✓	✓		
	Nasdaq		✓	✓	✓		✓			✓	✓
	CME		✓	✓	✓	✓					
CERs	ICE		✓	✓	✓						
	EEX	✓			✓						
	Nasdaq	✓	✓	✓	✓					✓	✓
	CME			✓	✓	✓					
ERUs	ICE			✓	✓						
	EEX				✓						
	Nasdaq										
	CME			✓	✓						
EUAAs	ICE				✓			✓			
	EEX	✓			✓			✓			
	Nasdaq				✓						
	CME				✓						

Source: Europe Economics analysis of Bloomberg and the exchanges: ICE, EEX, Nasdaq OMX, CME.

Screen trading on regulated exchanges provides a liquid and transparent platform for the trading of emission allowances. This is the common marketplace shared by all market participants of each exchange and allows trading to be executed anonymously. The volume traded via exchange platforms has grown significantly since the launch of the ETS and covers wide range of emission products of the tradable allowances.

Other trading venues

Trading venues other than regulated markets that are covered by MiFID include multilateral trading facilities (MTFs) and organised trading facilities (OTFs). According MiFID, an MTF is considered as a multilateral system which can be operated by an investment entity or a market operator, and in which multiple third-party buying and selling interests in financial instruments are able to interact in the system in a way that results in a contract in accordance with the provisions of Title II of MiFID[145]. On the other hand, an OTF is defined as a multilateral system which is not a regulated market nor an MTF and in which multiple third-party buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in the system in a way that results in a contract in accordance with the provisions of MiFID and MiFIR.[146] The new

[145] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0065&from=EN.
[146] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0065&from=EN.

category encompasses systems eligible for trading clearing-eligible and sufficiently liquid derivatives.

MTFs where CO_2 trading has taken place are:

- Austrian energy exchange (a power exchange).
- Gfi energymatch (an OTC energy market place).
- Tfs green screen (an inter-dealer broker with an electronic emissions trading platform).

There is no publically available information about the extent of trading activity that currently takes place at these MTFs, although the indications of stakeholders are that it is trivial in an EU context, at most serving occasional local needs.

The position is less clear in terms of potential OTFs. Data from Trayport indicate (at July 2014) that three per cent of the total emissions volume were executed on a bilateral basis; another 18 per cent was brokered and cleared, and 79 per cent was executed on exchange. The data for exchange executed trades are derived from various trading venues recognised as Regulated Markets. Bilateral trades could not be on an OTF. The remaining fraction may be partly (or largely) executed on platforms that could in future be treated as an OTF.

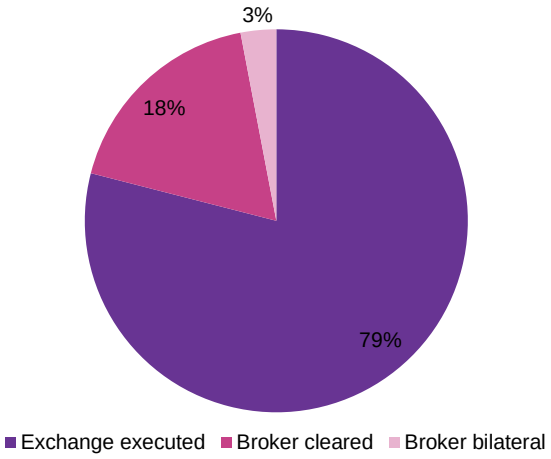
Some electronic platforms offer more bespoke products (i.e. less standardised and less frequently traded) than classic exchanges, for which a central order book trading facility does not exist. In the latter cases prices may be provided on a request for quote (RFQ) basis where the nature of the trading makes continuously updated actionable prices infeasible.

The electronic platform would typically collect indicative prices for a particular instrument from participating dealers and display composite prices in real time to other members of the platform and also to data vendors. These prices give an indication of where customers might trade, but are not actionable. Based on these a customer's request for a quote will be routed to several brokers, who will then provide a quote representing an actionable interest. These are not visible to other dealers in real-time, i.e. they are provided to the customer on a bilateral basis — only the customer has all the information in real-time. Since these are binding offers the customer can execute trades at the firm prices quoted.

OTC trading activity

At the beginning of the ETS, the majority of trading took place via brokers over the counter (OTC). However, derivative contracts have become more standardised over time, reducing the need for customised deals executed through brokers. Market commentators suggest that uncertainty over the ETS and Kyoto progress has led to the lack of appetite for long-term forward contracts; most traded contracts are thus relatively near-date and homogenous. This has facilitated the shift in trading from OTC-dominated to exchange-traded. As indicated above, the most recent Trayport data indicate that only a small fraction of overall emissions traded volume is on a bilateral basis. We show below the estimates on emission market composition by broker bilateral, broker cleared and exchange execution. We do not have access to market information indicating the composition of trading for any type of emission allowances which indicate that a majority of allowances are traded via exchanges.

Figure 16.3: Market structure of emission allowances (July 2014)



Source: Trayport, "Euro Commodities Market Dynamics Report", July 2014 (Trayport does not break down its analysis further into product categories).

Market participants

The number of trading participants can have an important impact on the liquidity of the market and on the relevance of trading information. One definition of market liquidity is the number of buyers and sellers available at a certain price; i.e. whether it is possible to repeat a trade at the same price many times. This form of liquidity contributes to price discovery and means that real-time price information is valuable to market participants (as there is some certainty that the revealed prices represent prices that can be traded on by others).

In relatively illiquid markets, where trades occur infrequently, the relevance of pre-trade price information for market participants is likely to be low as price information may become outdated and not representative of a price at which a trade could be executed.

There are different types of participants in the secondary market for emissions. The majority of market participants are general traders who could be sole traders or companies with memberships registered in different exchanges. There are over 100 emission members of ICE while more than 130 members of Nasdaq OMX.[147] There are also a number of market makers[148] operating in different exchanges - three market makers are listed on EEX with two for spot trading and one for futures trading[149] and three listed on Nasdaq OMX.[150] There are over 90 clearing membership

[147] http://www.nasdaqomx.com/commodities/markets/.
[148] They are companies which provide quotes for both buy and sell price of the financial instruments.
[149] http://www.eex.com/en/Transparency/Exchange%20owned%20data/Market%20Making/Admitted%20Market%20 Makers.
[150] http://www.nasdaqomx.com/digitalAssets/74/74664_categories.pdf.

registered with the exchanges with majority of international financial service companies operated in multi exchanges, for instance, 24 members are listed on ICE and over 70 members are accessible by the trading participants in CME.[151] It is unlikely that there are any retail traders in the emissions market given the compliance nature of the products traded. The majority of installations in the EU ETS scheme trade via professional financial institutions that are members of exchanges and execute trading on the behalf of their clients. Only very few large energy companies that have the internal resources to trade for their own accounts. This means there is no visibility as to the ultimate share of compliance buyers as the motivators of trading activity.

Table 16.2: Number of market participants across regulated exchanges

	Clearing members	Other trading members	Auction trading partners	Market Makers
EEX	15	176	3	3
ICE	24	106		NA
Nasdaq	38	39		3
CME	70	NA		NA

Source: Websites of the regulated exchanges.

16.2.2 Trading volume

We focus on the trading period between 2009 and 2013 which covers most trading within the Phase Two of ETS and some products from Phase Three which began to trade in 2012. The products covered in this report are summarised in the table below.

Table 16.3: Trading products

	Spot	Daily Future	Future			
			Dec 2013	*Dec 2014*	*Dec 2015*	*Dec 2016*
EUAs	✓	✓	✓	✓	✓	✓
CERs	✓	✓	✓	✓	✓	✓
ERUs	✓		✓	✓	✓	
EUAAs	✓		✓	✓	✓	✓

Source: Europe Economic analysis of Bloomberg, Bluenext and ICE data.

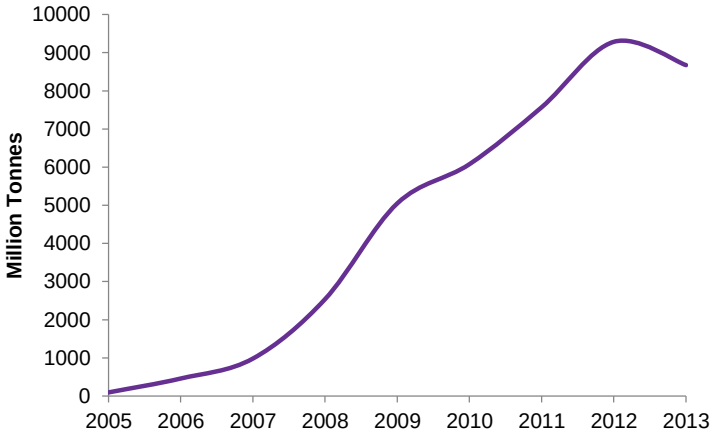
We collected all market data from a mix of sources which include commercial databases from Bloomberg for market data reported by EEX, CME and Nasdaq OMX as well as exchanges data published directly from ICE and Bluenext (for historical information). We cover trading activities in all exchanges for all products where information is available. The degree of information availability varies across different types of financial products. Pricing information is more commonly reported but not volume. As such, analysis on trading volume is limited to products with adequate level of volume information. Where volume data on one financial product, such as EUAs futures contract, is available from more than one exchange, we report the sum of market volumes and the markets covered are indicated in the footnote below each figure.

[151] http://www.cmegroup.com/trading/energy/emissions/.

Since the introduction of the EU ETS, the volumes traded of all allowances contracts have increased significantly. The main emission allowances traded are EUAs which account for significant amount of the market volume. Market reports show that the monthly volume of all EUAs trading has fluctuated from around 300 million tonnes of carbon dioxide to around 900 million tonnes in the past four years.[152]

Given that ICE accounts for around 93 per cent of market trading, the number of contracts cleared on ICE represents a good picture of the overall pattern of volumes traded in the EU carbon market. The figures below show the annual total number of emission contracts traded — approximately 8,700 million tonnes of carbon emission were traded in 2013 which corresponds to 1,026 per cent and of the 847.6 million tonnes of allowances allocated for free[153] or 1640 per cent of the 530.5 million tonnes of allowances auctioned[154] in that year.

Figure 16.4: Annual total volume traded on ICE for all emission contracts



Source: Europe Economics analysis of ICE statistics.

This means that the annual volume traded represents a significant multiple (4–5 times now) of outstanding allowances in circulation, after taking into account the allowances already surrendered for compliance with the EU ETS.

16.2.3 Information on type and size of orders

The publication of historical data on individual transaction level is currently not a mandatory requirement for exchanges or other financial institutions, and it is not a common practice for exchanges to report detailed transaction information, such as type and size of orders. Bloomberg, one of the main commercial providers of market data also provides information on aggregated trading information on a daily basis. As the key exchange for the emission allowances derivatives market, ICE publishes historical information on all trading products but only on daily basis. There is

[152] Barclays quarterly report on Carbon Standard, January, 2013.
[153] http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/process_overview_nat_2014_en.pdf.
[154] http://ec.europa.eu/clima/policies/ets/cap/auctioning/docs/cap_report_201312_en.pdf.

real-time information (with minor time delay) reported by all exchanges and commercial sources, like Bloomberg, but mainly only pricing information is available. Within the analysed period and products covered, we have not found useful information to indicate the typical type and size of orders of different type of emission allowances.

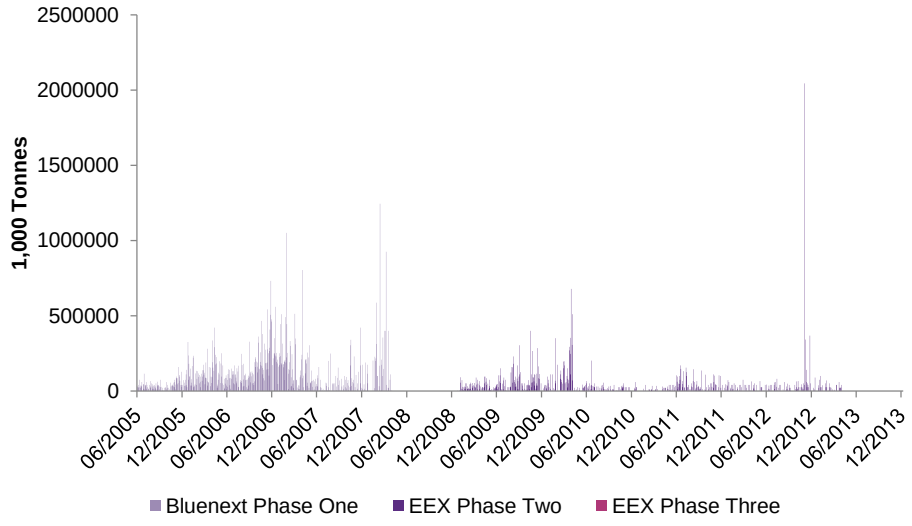
We now present our analysis on the traded volume of each type of emission allowance contract between 2009 and 2013 below.

EUAs

In 2013, the volume of EUAs trading represented approximately 97 per cent of all emission transactions in the EU ETS as reported by Bloomberg and ICE statistics.[155] With a shrinking spot market following the allowance thefts, the derivatives market expanded over the recent years and the trading of EUAs is now dominated by the derivatives market. In 2013, the volume of the EUA futures market had grown to around 8.6 billion tonnes. EUA spot trading had fallen to around 80 million tonnes.[156] The daily volumes traded for different EUA products are shown in the following figures.

As shown in the Figure 16.5 below, majority of the spot trading took place on Bluenext during the Phase One of the EU ETS and the traded volume in the two subsequent phases has reduced significantly. In particular, there is very limited volume information reported by EEX in Phase Three.

Figure 16.5: EUAs spot daily volumes traded, including primary activity



Source: Europe Economics analysis of Bloomberg data, markets included: Bluenext, EEX.

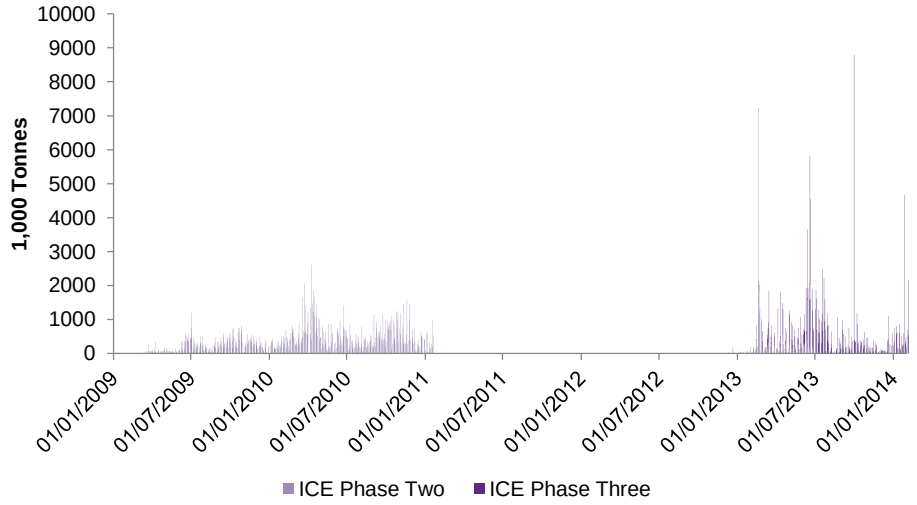
Daily future EUA contracts are offered by ICE and represent a proxy for spot contracts. Greater volumes of daily futures have recently been traded on ICE as compared to the spot trading on EEX.

[155] However, the percentage of total trading represented by EUA trading is be marginally overestimated since trading on EUAAs was not reported to Bloomberg.

[156] This figure is derived from EEX trading data and its estimated market share.

However, ICE suspended its EUA daily future contracts due to the security attacks in early 2011 and trading only resumed in 2013. The annual total of EUA daily futures (phase one and two) traded is estimated to be around 141 million tonnes in 2013 (i.e. about 1.6 per cent of total volume across all markets).

Figure 16.6: EUA daily futures daily volumes traded

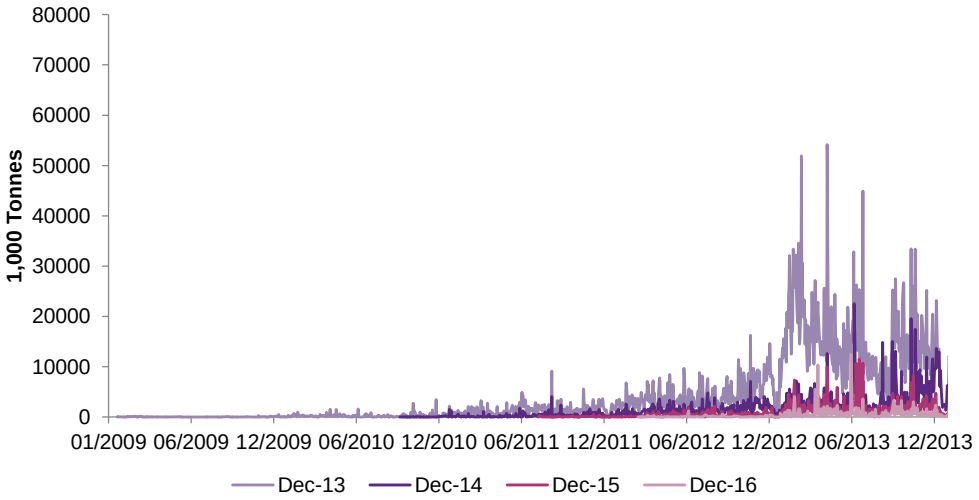


Source: Europe Economics analysis of ICE data, market included: ICE.

The figure below shows the sum of market volumes of EUA futures traded across all four exchanges where data are available. As reflected in the market share, ICE is the exchange where majority of trading of future contracts has taken place and it accounted for around 98 per cent of all traded volume for the December 2013 contracts.

The futures market for EUAs started to pick up in 2012 and the future contracts with the delivery date in December 2013 were the most frequently traded product among all four types of future contracts. The future contracts for Dec 2014 became more active towards the end of 2013 and the demand for future contracts with delivery dates on December 2015 and December 2016 remained low throughout the period. This suggests that trading pattern is mainly driven by compliance purpose. The demand for the contract tends to rise in the year in which it would be delivered and hence allows market participants to exchange the contracts to meet the required number of emission allowances for compliance purposes.

Figure 16.7: EUAs futures daily volumes traded



Source: Europe Economics analysis of Bloomberg data, markets included: ICE, EEX, Nasdaq OMX for all products but only ICE, EEX and Nasdaq OMX for Dec 2013.

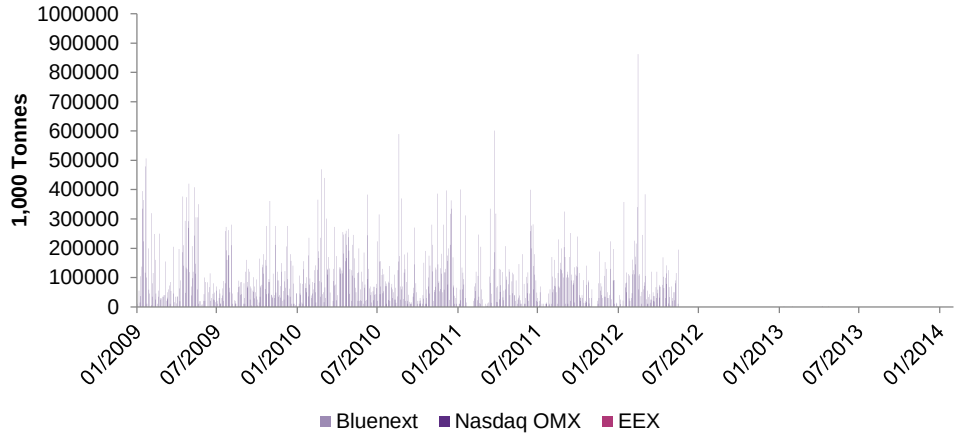
CERs

The transactions of the international credits (CERs) are less frequent than EUAs and the volumes traded are also significantly lower. The total volume traded in ICE is estimated to be around 180 million tonnes in 2013, representing around two per cent of the trading volume of all emission allowances. The figures below illustrate the daily volume of the international credits traded in the spot and futures markets.

The total volume traded of CERs spot contracts are reported by Bluenext, EEX and Nasdaq OMX. The majority of the trading took place on Bluenext before its closure in 2012 and since then, Nasdaq OMX and EEX became the main exchanges for CERs spot contracts (as reported in Bloomberg). However, the volume information reported by Nasdaq OMX and EEX is relatively infrequent. Between 2009 and 2013, there exist many gaps in volume information between the trading days where last price information is available, in particular, there was only three end-of-day traded volumes reported by EEX in Bloomberg between January and April 2013. The spot market has become smaller with the maximum volume traded being 200,000 tonnes,[157] far lower than the daily traded volume on Bluenext.

[157] It is the highest end-of day traded volume reported by Nasdaq OMX in Bloomberg.

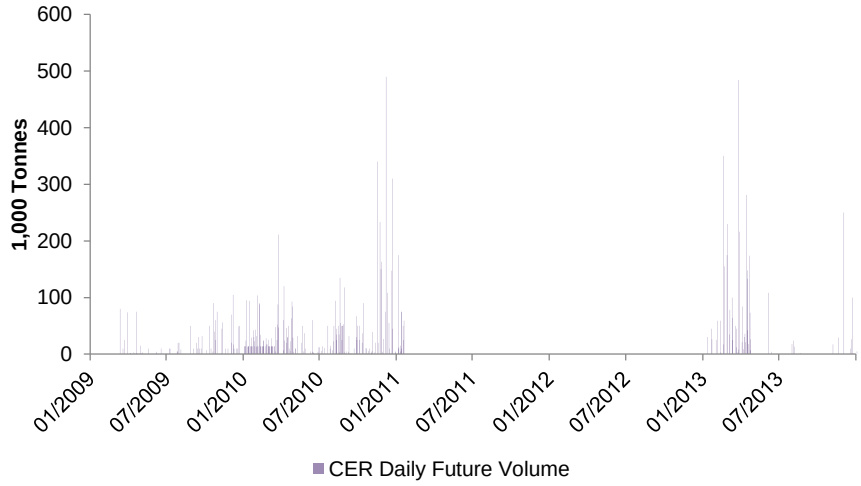
Figure 16.8: CERs spot contracts daily traded volumes



Source: Europe Economics analysis of Bluenext and Bloomberg data, market included: EEX, Bluenext and Nasdaq OMX.

Similar to the EUAs daily futures contracts, ICE suspended the trading of CERs daily futures contracts due to the theft incidents and reopened the market after the European Commission improved oversight and rebuilt market confidence in 2013. The market was more active in terms of the traded volume reported by ICE before the suspension, as shown in the figure below. In 2013, the volume of CERs daily futures traded is estimated to be around four million tonnes (i.e. a negligible share of total emissions trading volume).

Figure 16.9: CERs daily futures contracts daily traded volumes

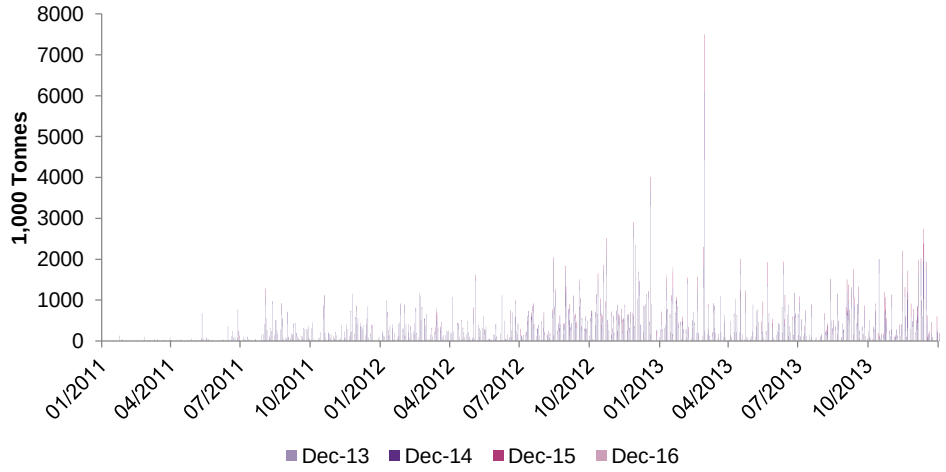


Source: Europe Economics analysis of ICE data, market included: ICE.

The trading of CERs futures contracts started in 2011 and although pricing information is provided by EEX in Bloomberg, there is no volume data available. Using information from ICE data only, the futures contracts for December 2013 was the most frequently traded product which was then

replaced by the December 2014 contracts towards the end of 2013. The annual total volume traded is estimated to be around 176 million tonnes in 2013, representing around two per cent of total emission allowances derivatives trading.

Figure 16.10: CERs futures contracts daily traded volumes

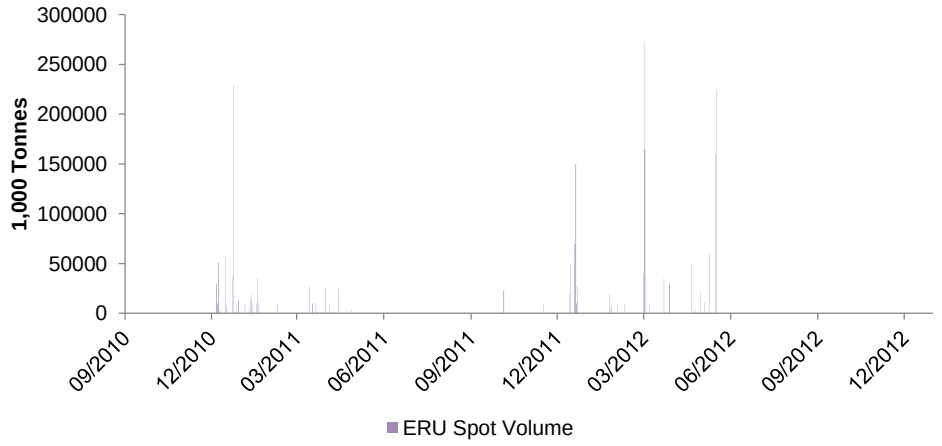


Source: Europe Economics analysis of ICE data, market included: ICE.

ERUs

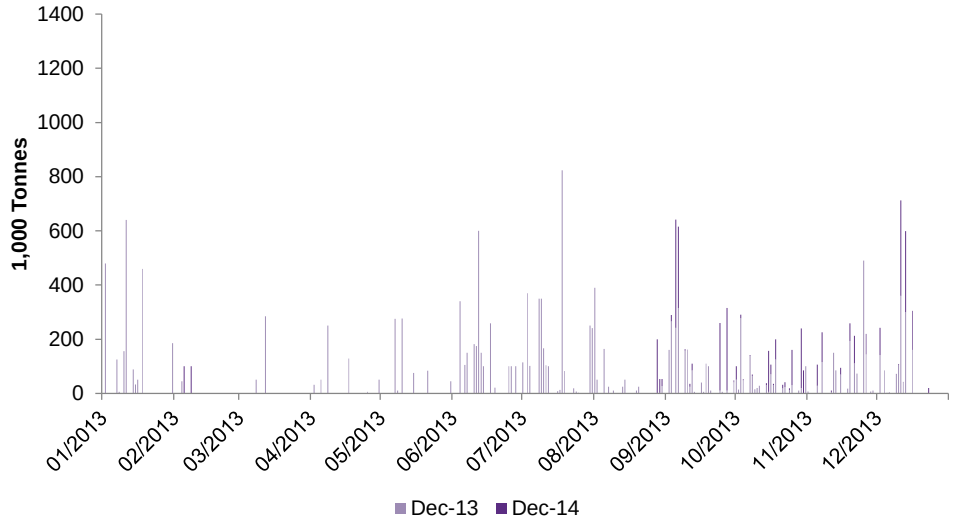
A far smaller volume of trading of ERUs has taken place between 2010 and 2012 compared with EUAs and CERs. We present below the volume traded for spot contracts on Bluenext and two futures contracts traded on ICE. The data on volume is relatively limited as compared to pricing information available and data are not available for all futures products on all trading days. For instance, there is no volume data published by EEX in Bloomberg for futures contracts with delivery date of December 2013. Using volume data provided by ICE, the total volume of ERUs derivatives traded is estimated to be around 30 million tonnes in 2013, representing around 0.3 per cent of all emission allowances trading.

Figure 16.11: ERUs spot contracts daily traded volume



Source: Europe Economics analysis of Bloomberg data, market included: Bluenext.

Figure 16.12: ERUs futures contracts daily traded volumes



Source: Europe Economics analysis of ICE data, market included: ICE.

EUAAs

Although EUAAs are traded in the spot market at EEX and the futures markets at several exchanges, mainly ICE, there was very limited volume data reported in all markets. The only volume data available is on future contracts with expiry date in December 2012 from ICE and the total volume traded is estimated to be around 151,000 tonnes in 2012. As auctioning of EUAAs is expected to restart in September 2014 following the amendment of the EU ETS rules on aviation activities for 2013-2016, secondary trading in EUAAs may also pick up as of then.

16.2.4 Volatility

In this section, we analyse the volatility of each tradable emission unit. Volatility is calculated as the percentage of price change between two consecutive trading days.

As stated in the volume section, we used three main sources of information — Bloomberg (for market data reported by EEX, Nasdaq OMX and CME), Bluenext and ICE to collect pricing information of all trading products in different exchanges. The table below summarises the available pricing information for our analysis.

Table 16.4: Summary of pricing information

	Last Price	Settlement Price
ICE Data	No	Yes*
Bluenext Data (to end 2012)	Yes*	No
Bloomberg Data for other exchanges	Yes*	Yes

* chosen price information.

Source: Europe Economics analysis of ICE, Bluenext and Bloomberg data.

In order to ensure our analysis reflects as much market information as possible, we used settlement prices from all ICE data while last price from Bluenext and Bloomberg data. According to the definition provided by Bloomberg, the last price is the last available price provided by exchanges while the settlement price is the closing price of a trading day. Both prices reported by Bloomberg are the same for the trading products in our analysis. Also, the availability of last price data is greater than settlement price, i.e. last price information has more data points. Therefore, we conclude that in this instance, last price is optimal to be used as the substitute to settlement price.

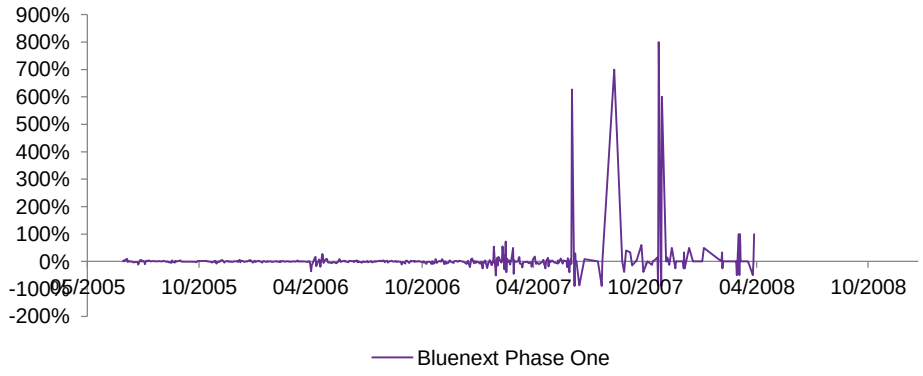
Daily pricing information is collected from all three sources to cover all exchanges and we report the average market price of exchanges where pricing data is available from more than one exchange for the same product.

EUAs

The carbon market follows a similar trading pattern to the energy market where the majority of the trades are in derivative contracts and it is the futures markets that are the key influence in the price setting mechanisms.[158] Both the price movement and volatility of the spot and daily futures of ICE confirm these findings. Our analysis of volatility in the spot price goes back to 2005 to capture the pricing behaviour in Phase One (the spot price itself is shown graphically in the Appendix). The market experienced periods of high volatility towards the end of Phase One — indeed, Phase One and the later period are not shown together due to the differential in the scale of volatility involved). The no banking or borrowing rule between the first (2005 – 2007) and the second trading period (2008–2012) were revised in the subsequent phases, and the market experienced a smoother transition between Phase Two and Three with no significant price impact. The average market price volatility in absolute percentages is around four per cent for both the spot and daily futures markets in 2013.

[158] Bourse Consult Report for the City of London Corporation (2010), "The Post-Trade infrastructure for Carbon Emissions Trading".

Figure 16.13: Percentage change in inter-day daily EUAs spot price (Phase One)

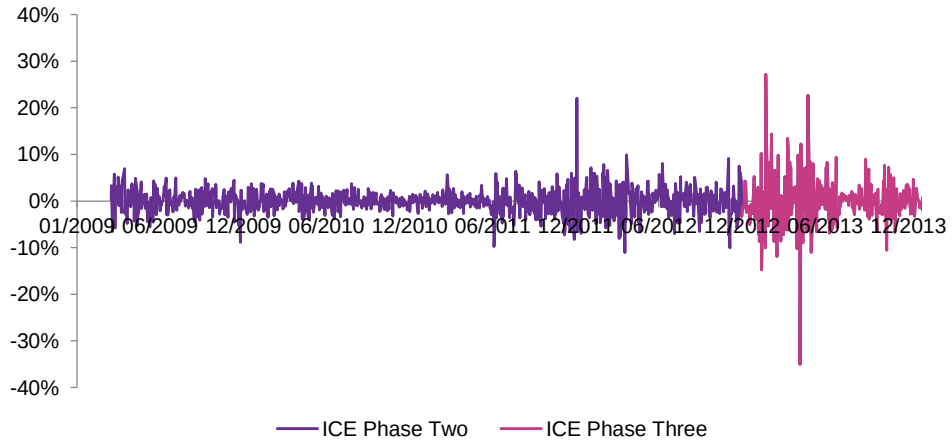


Source: Europe Economics analysis of Bluenext data, market included: Bluenext.

Figure 16.14: Percentage change in inter-day daily EUAs spot price (Phase Two and Three)

Source: Europe Economics analysis of Bloomberg data, market included: EEX.

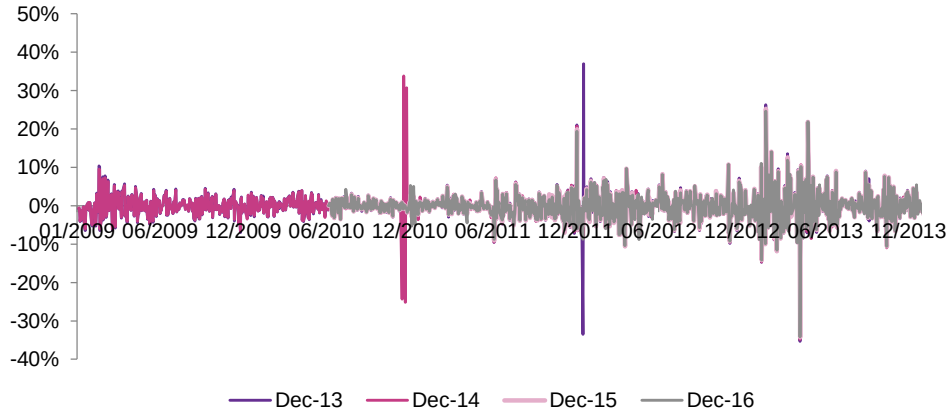
Figure 16.15: Percentage change in inter-day EUAs daily futures price



Source: Europe Economics analysis of ICE statistics, market included: ICE.

The regulatory changes introduced in Phase Two contributed to a more stable price path for EUAs. Since the decline in price in 2011, the market has become more volatile and the percentage change of inter-day price reached up to 37 per cent in January 2012, with an average daily volatility of around three per cent in 2013. This is illustrated below.

Figure 16.16: Percentage change in inter-day EUAs futures price



Source: Europe Economics analysis of Bloomberg and ICE data, market included: EEX, ICE, Nasdaq, CME.

CERs

Before the impact of the crisis, the market was relatively stable between 2009 and 2010 with the fluctuation of inter-day prices within 10 per cent but the volatility has increased since June, 2011. The average price volatility is estimated to be around 25 per cent in the first half of 2013. By June

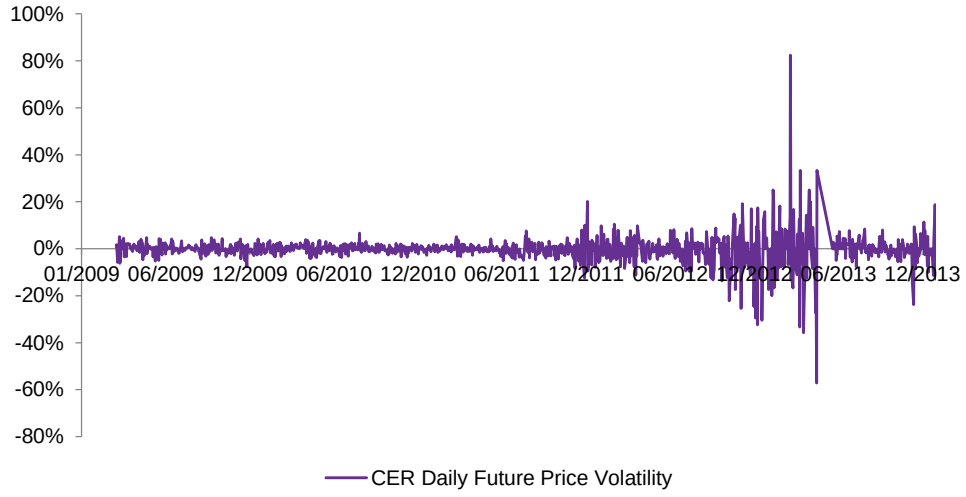
2013, the price level remained constant at a fairly low level of €0.01 and the market experienced zero price volatility. The price volatility of CERs is as shown below.

Figure 16.17: Percentage change in inter-day market CERs daily spot price

Source: Europe Economics analysis of Bloomberg statistics, market included: EEX, and Bluenext, Nasdaq.

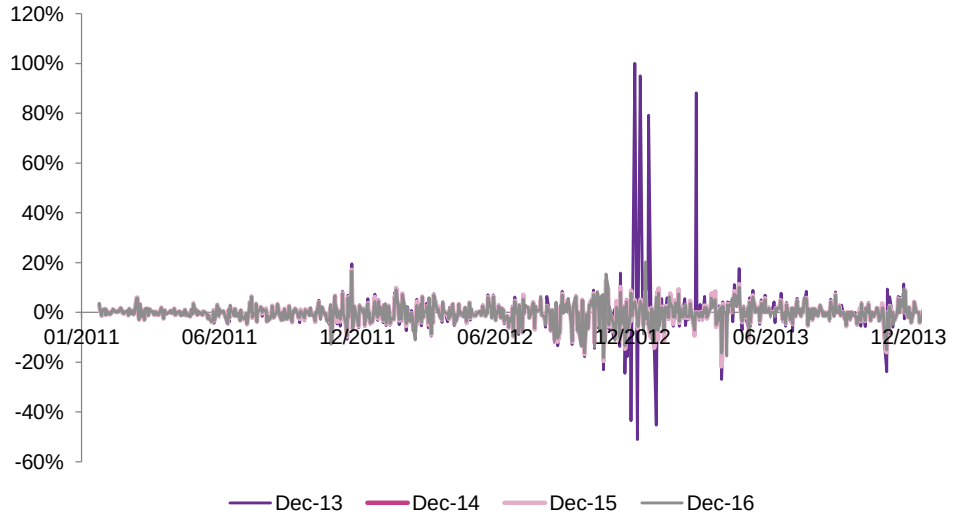
Alongside a negative change in market demand, the CERs derivative markets also become more volatile in 2013, in particular, the futures contract market reached as high as 100 per cent of price change in February 2013. The average annual price volatility for daily futures market is estimated to be around six per cent while the futures market (excluding daily futures) is found to be less volatile, with an average daily price change of around three per cent in 2013. The volatility of the derivative markets is as shown in the figures below.

Figure 16.18: Percentage change in inter-day CERs daily futures price



Source: Europe Economics analysis of ICE data, market included: ICE.

Figure 16.19: Percentage change in inter-day CERs futures price



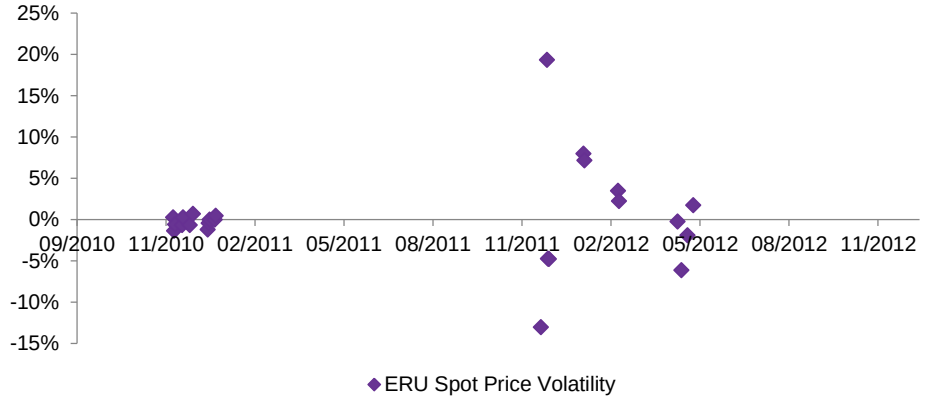
Source: Europe Economics analysis of Bloomberg and ICE data, market included: ICE and EEX (Dec 2013), ICE (Dec 2014, Dec 2015, Dec 2016).

ERUs

ERU spot contracts were considerably less frequently traded as compared to the EUAs and CERs spot contracts. The ERUs futures market was traded with a period of low volatility before 2011 but became very volatile between December 2011 and March 2012. Despite the low number of trades, both price and volatility figures suggested a similar decline in price and an increase in volatility

after June 2011, which is in line with the price behaviour as seen in the CERs and EUAs markets. In 2013, the average price change is estimated to be around five per cent for all contracts.

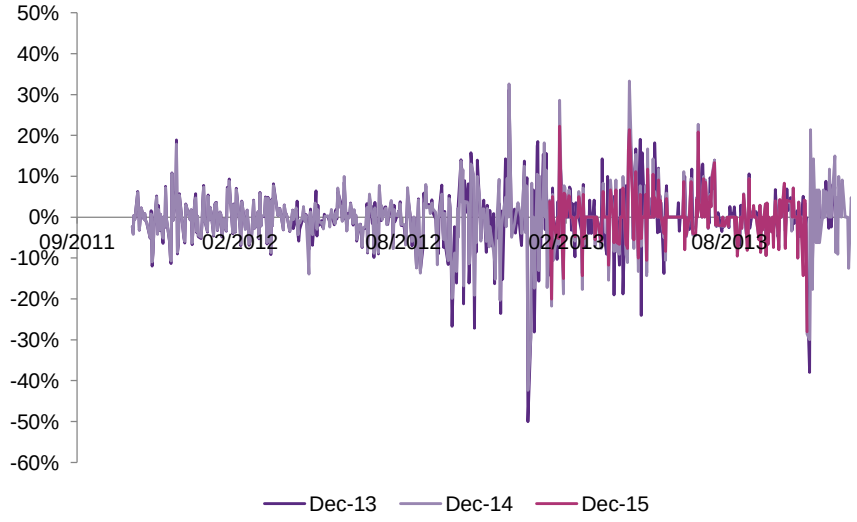
Figure 16.20: Percentage change in inter-day ERUs spot price



Source: Europe Economics analysis of Bluenext data, market included: Bluenext.

The ERUs derivate market was traded with periods of high volatility since October 2012.

Figure 16.21: Percentage change in inter-day ERUs futures price

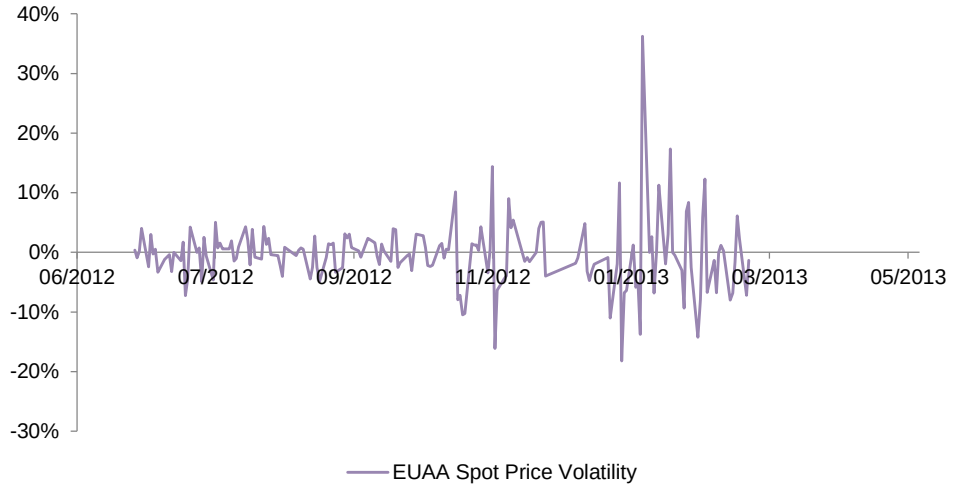


Source: Europe Economics analysis of ICE and Bloomberg data, market included: ICE and EEX (Dec 2013), ICE (Dec 2014 and Dec 2015).

EUAAs

The market volatility in the spot and daily futures contracts are shown below.

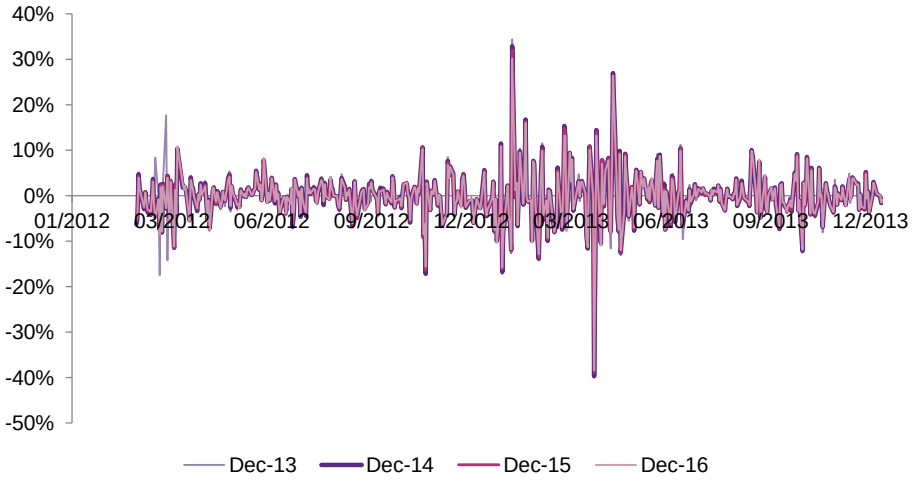
Figure 16.22: Percentage change in inter-day EUAAs spot price



Source: Europe Economics analysis of Bloomberg data, market included: EEX.

The EUAAs futures contract of December 2013 were traded in EEX, CEM and ICE but contracts with delivery date of December 2014, 2015 and 2016 are only traded in ICE. The derivative market had a sharp fall in price in March 2012 but afterwards, the price movement became relatively stable with price volatility below 10 per cent level until November 2012. Over 2013, the EUAAs market traded with periods of high volatility as the December 2016 contract price averaged €5 and traded in price range of €2 to €7. The average change in price for all contracts is estimated to be around four per cent in 2013. The daily price movement and volatility are as shown in the figures below.

Figure 16.23: Percentage change in inter-day EUAAs futures price



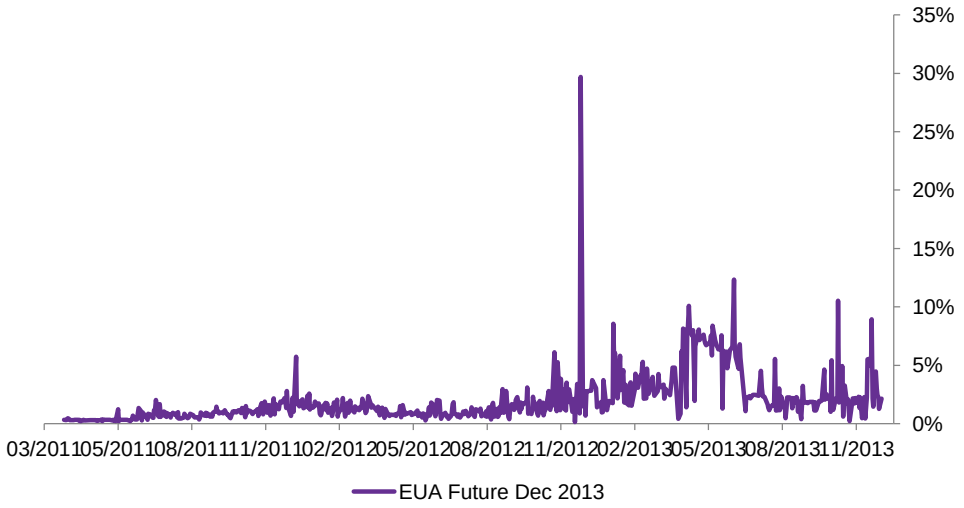
Source: Europe Economics analysis of Bloomberg and ICE data, market included: ICE, CME and EEX (Dec 2013), ICE (Dec 2014, Dec 2015, Dec 2016).

16.2.5 Relative bid-ask spread

The bid-ask spread is calculated as the difference between the lowest ask price from the seller and the highest bid price from the buyer on a trading day.[159] It is often used as a form of liquidity measure and an indication of the size of transaction costs. When the spread is wide, it indicates that the difference in the willingness to pay of the two parties of the transaction is large, leading to possible delays in making transaction with matched prices. As such, the trading delay could be classified as liquidity cost or transaction cost.

To separate out the effect of price volatility, we used relative bid-ask spread which is calculated as the daily bid-ask spread as a percentage of the last transaction price of the trading day. The relative bid-ask spread is presented as a percentage. The historical data on bid-ask information are only available from Bloomberg and only for a limited number of derivative contracts reported by two exchanges. Due to lack of data availability, we can only construct the relative bid-ask spread of EUAs for December 2013 and December 2016 contracts and EUAAs futures for December 2013 contracts to represent the degree of liquidity in the carbon market. The daily average relative bid-ask spreads for EUAs and EUAAs are three per cent (2013) and two per cent (2012) respectively. These are shown in the three figures below.

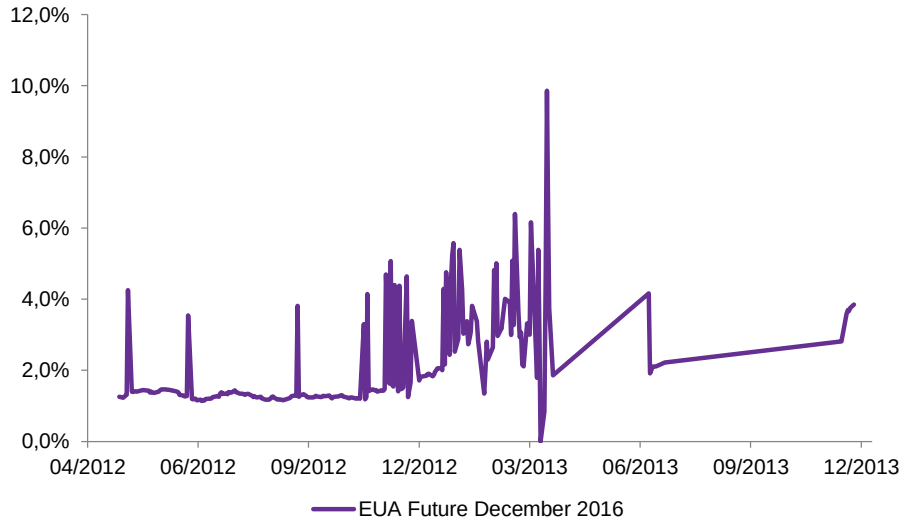
Figure 16.24: Daily averaged bid-ask spread relative to last price (%) – EUAs futures (December 2013)



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX, Nasdaq OMX.

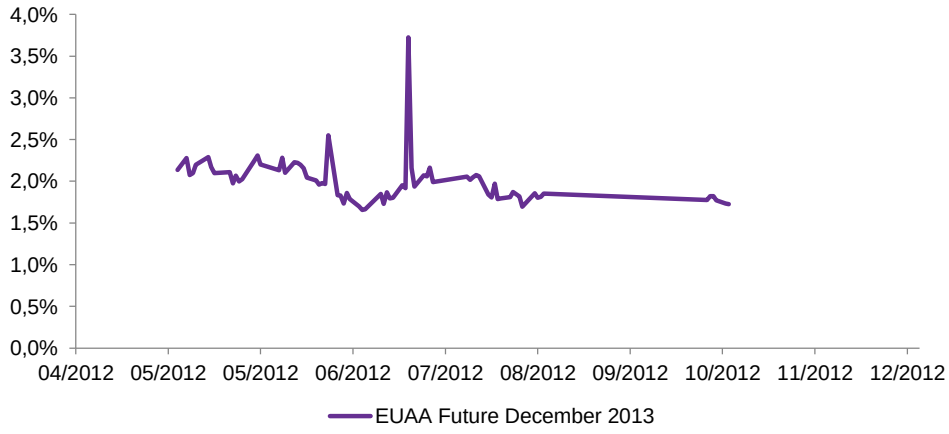
[159] EBA (2013), Discussion paper on defining liquid assets in the LCR under the draft CRR.

Figure 16.25: Daily bid-ask spread relative to last price (%) – EUAs futures (December 2016)



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX.
Note: the availability of data between June 2013 and July 2013 is very limited information provided in July and December respectively.

Figure 16.26: Daily bid-ask spread relative to last price (%) – EUAAs futures (December 2013)



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX.

The relative spread on EUA December 2013 contracts was below five per cent for most of 2010 and 2011. By 2012, however, the spread has become more volatile and rose up to even 30 per cent. It has since recovered to more "normal" levels, typically 2–3 per cent.

The spread on EUAs December 2016 was mostly below two per cent before becoming more volatile and spiking towards the end of 2012. Trading has been less frequent since, bit with the relative spread declining to 2–4 per cent. The spread on EUAAs has generally been within a

relatively narrow range of 1.5 per cent to 2.5 per cent in 2012, with an exceptional spike to 3.7 per cent in July 2012.

These results can be compared to the spreads seen in other non-equity markets. For example, corporate bonds in 2013–14 have experienced relative spreads as follows:

- Investment grade corporate bonds have averaged relative spreads of 1–1.5 per cent (£-denominated bonds) and below one per cent (€-denominated bonds, this being a deeper, more liquid market).
- High yield bonds have higher spreads 1.5–2 per cent (£-denominated bonds) and 1–1.5 per cent (€-denominated bonds).[160]

Individual bonds can of course see both lower and higher relative spreads than these. Spreads in commodity products can be more volatile, and are also more heterogeneous (i.e. more specific to a particular instrument in a particular commodity group at any one time). For example, the day ahead natural gas spot market typically has relative spreads of 3–4 per cent but has seen spikes substantially above this. On the other hand, the relative spread on gold is normally at or below one per cent.

[160] Market Axess, "A more informed view of market liquidity in the European corporate bond market".

17 Policy Proposals due to MiFID and MiFIR

17.1 Pre-trade transparency

17.1.1 Current situation

Task 2.1 requires an analysis of the current situation for emission allowances and their derivatives as regards the availability of information on the prices and the depth of trading interest at those prices for orders or quotes advertised through systems of regulated markets, multilateral trading facilities (MTFs) and venues which would qualify as an organised trading facility (OTF) under the proposal for MiFID. The analysis should take into account the characteristics of the spot and derivative carbon market, including the liquidity profile and characteristics of trading activity. Any gaps or deficiencies in the availability of information should be identified.

All emission allowance derivatives are already considered as financial instruments and subject to existing transparency rules for non-equity markets (although these will change with the implementation of MIFID). Under the current MiFID framework, there are no mandatory pre- or post-trade transparency requirements for non-equity markets.[161] However, Member States are given the option to extend a pre-trade and post-trade transparency regime to other financial instruments admitted to trading. Member States that have exercised this option are Germany, Estonia, Spain, Finland, France, Italy, Romania, Sweden and Slovakia.

As shown above, the majority of EUA spot and daily future contracts, EUA futures and EUAA futures are screen-traded on regulated exchanges. Trading on regulated exchanges is governed by each venue's trading rules, which include specifications about what information market participants must make available. The trading rules differ across exchanges and are shaped by the national regulations on transparency requirement for non-equity markets. For instance, in Germany, regulated exchanges, such as EEX are required to publish prices on emission trading.

Many of the exchanges run limit order books,[162] where the levels of bids and offers and the depth of trading interest at each price are available (anonymously). Feedback from exchanges indicates

[161] Article 44 of Directive 2004/39/EC, with respect to equities, regulated exchanges are required to publish bid and offer prices and the depth of trading interests at those prices on reasonable commercial terms and on a non-discriminatory basis to the public, unless a pre-trade disclosure wavier is granted. For post-trade transparency, information on price, volume and time of transactions executed shall be available by the exchanges on a reasonable commercial basis and as close to real time as possible. Under certain market conditions, the deferred publication of trades may be granted by national authority.

[162] It is a record of unexecuted limit orders placed by members of the exchange. Limit orders are conditional trading orders to buy or sell a financial instrument at its specified price limit or better and for a specified size.

that the level of pre-trade transparency related to limit order books is high, and that they are not aware of significant information gaps to market participants. However, there are limits to the information transparency of some limit order trades, such as block trades.

Regulated exchanges also facilitate OTC trades that occur off-book. Currently there are no regulatory requirements for the publication of pre-trade information with respect to OTC trading in financial instruments— this cannot be done anonymously as with a limit order book. Pre-trade transparency relating to OTC contacts is considered to be low according to the feedback gathered during our fieldwork. The exchanges receive some level of price information from brokers but would welcome more. These respondents also highlighted that market participants would welcome an increase in information transparency regarding OTC trades.

Currently, the lack of OTC information is more of a concern for EUAAs and CERs than for EUAs, as the latter are in the main electronically traded on regulated exchanges. A greater proportion of EUAAs and CERs are traded OTC and price discovery for EUAAs is considered to be rather poor.[163]

The table below summarises the availability of pre-trade information on regulated exchanges. This information has been gathered through initial interviews with the exchanges and from their rule books.

Table 17.1: Summary of availability of pre-trade information on regulated exchanges

Venue	ECX/ICE	EEX	CME	Nasdaq OMX
Market share (2013–14)	92.9%	0.1%	6.5%	0.5%
Trading platforms	Screen and OTC clearing	Screen and OTC clearing	Screen and OTC clearing	Screen and OTC clearing
Limit order book	Levels of bids and offers and market depth of the book are visible on an anonymous basis.	A range of information in the order book is published: the orders, volumes, prices and market depth	Information on screen trading is all available. These include real time information with at least 10 minutes delay on - last price, change, prior settlement price, open price, high price, low price, volume, high/low limit, open interest and updated time etc.	Information available includes bid price, ask price, last price, price change, high price, low price, daily fix, on order book volume, total volume, open interest, size.

Source: Regulated exchanges' rulebooks and interviews.

Pre-trade information in derivative markets comes from three main sources, namely market price data in support of transaction execution and price discovery; information provided by exchanges

[163] Stakeholder interview.

and brokers; and third party price publication services in support of settlement and valuation activity. The main general source is inter-dealer brokers, but additional sources also include:

- Electronic exchanges, as discussed.
- Electronic broker platforms, e.g. supporting RFQ.
- Voice brokerage services.
- Newswire-based platforms such as Reuters or Bloomberg for up-to-date market pricing.

17.1.2 Gaps and deficiencies

There are no clear gaps with regard to information transparency for contracts traded on exchanges. As discussed at 16.2.1 above there is limited information on the volume of contracts being traded on other venues which might be defined as MTFs or OTFs, although the indications of stakeholders are that the volume traded on MTFs at least is trivial. The information typically available in support of Voice and RFQ trading in the emissions market appears broadly in line with that available for these trading systems in other markets, but is less than that required under ESMA's proposed technical standards (as we discuss further below).

17.1.3 ESMA's policy proposals

We provide here analysis of the impact of ESMA's proposed technical standards would have specifically on the emissions market. The areas that the technical standards, to be developed by ESMA, will cover are:

- The liquidity threshold below which competent authorities may temporarily suspend the pre-trade transparency obligations (see Article 9(5) of MiFIR).
- The range of bid and offer prices or quotes and the depth of trading interests at those prices to be made public in accordance with Article 8(1) and (4), taking into account the necessary calibration for different types of trading systems as referred to in Article 8(2) (see Article 9(5) of MiFIR).
- The size of orders that are large in scale and the type and minimum size of orders for which pre-trade disclosure may be waived (Article 9(5) of MiFIR).
- The size specific to the financial instrument referred to in paragraph 1(b) and the definition of request-for-quote and voice trading systems for which pre-trade disclosure may be waived (see Article 9(5) of MiFIR) giving proper consideration as to whether, at such sizes, liquidity providers would be able to hedge their risks (since the EU ETS is not a retail market).

17.1.4 Temporary suspension of pre- and post-trade transparency

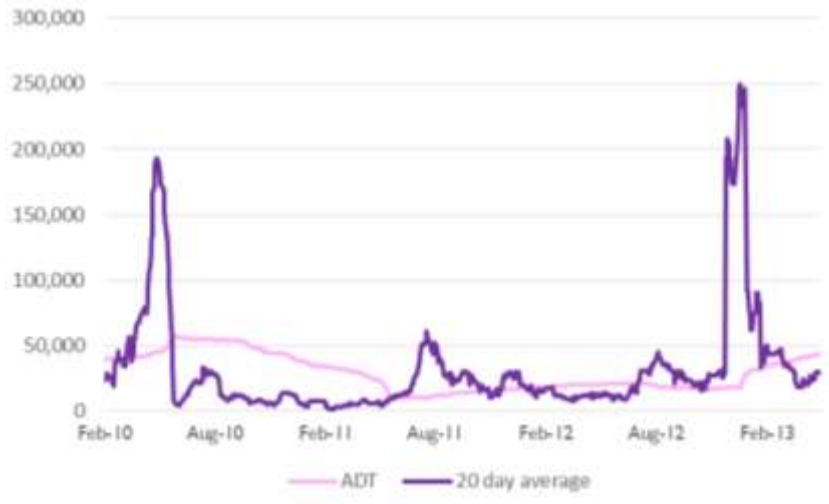
Under MiFIR Article 9(5)(a) ESMA is to determine the parameters and methods for calculating the threshold of liquidity referred to in Article 9(4) in relation to the financial instrument. The objective is that when this threshold is reached, it represents a significant decline in liquidity (which ESMA proposes to proxy as average daily turnover) across all venues within the Union for the financial instrument. A significant decline is likely to be set at 60 per cent for illiquid instruments and 80 per cent for liquid ones. ESMA's proposed technical standard would complement these quantitative

thresholds by the qualitative assessment by national competent authorities of other potentially relevant liquidity measures (e.g. spreads, number of participants).

In order to understand the relative frequency of such declines we undertook the equivalent historic analysis: comparing the average daily turnover (ADT) in the most recent 20 trading days to the ADT of the past year. Since at this point ESMA has not categorised emission allowances as either liquid or illiquid, we have considered both thresholds below.

The results of this analysis depend upon the product analysed and the granularity adopted. If we first consider spot trades in EUAs, the dramatic shifts in trading volumes are immediately apparent. Both the 60 and 80 per cent thresholds would have been triggered on multiple occasions during this period. The most recent occasions are in June 2012 and May 2011 respectively. Given the relatively low levels of transactions on the spot market such volatility is made more likely.

Figure 17.1: Spot EUA (Phase 2) trading volume since 2010



Source: EE analysis of EEX trading data (EEX has over 99 per cent of exchange-based spot trading).

This all indicates that — on current trends — a request for such a temporary waiver of transparency obligations in the spot EUA market is at least conceivable in any one trading year.

If we now consider all of the futures traded upon ICE there have been no declines of more than 60 per cent over the entirety of the period considered. (A slowdown in trading around Christmas and New Year 2013–14 comes very close even when days when the market was shut are — correctly — left out of the calculation).

Figure 17.2: Comparison of EUAs futures trading volumes, 2006–2014

Source: EE analysis of ICE trading data.

The equivalent analysis for CER futures highlights the significant decline this market experienced in the past two years, and also the considerable volatility in volumes traded. Both thresholds are exceeded on multiple occasions. The most recent occasions are in November 2013 and July 2013 respectively.

Figure 17.3: Comparison of CERs futures trading volumes, 2006–2014

Source: EE analysis of ICE trading data.

The temporary suspension of the transparency requirements is not automatic: it enables national competent authorities to suspend the transparency obligations. Any suspension would be for an

initial period not exceeding three months, although this can be extended for a period of no more than an additional three months (after discussion with ESMA).

The main rationale behind the waiver is to preserve fair and orderly markets in the face of rapid and adverse market development. This could be driven by market participants' reluctance to take on trades in an illiquid but well-lit market, whereby the risk that the market could move against them would be heightened. This increased reluctance to trade could further reduce liquidity, prompting a downward spiral.

A dramatic decline in liquidity in line with the parameters proposed by ESMA is conceivable in any market, and there is evidence from recent historic experience that such a decline is quite probable — given a sufficient time-horizon — in any particular emissions instrument. This would result in the temporary suspension of the affected emissions instruments from the pre- and post-trade transparency requirements.

It is worth noting that, at the workshop held as part of this project on 20th November 2013 (please see section 15), stakeholders were sceptical of the role of a temporary suspension in transparency at a time of a significant loss in liquidity. The counterargument put forward at the workshop was that this would simply signal problems and dissuade trading. Nevertheless many stakeholders do see advantages in reducing transparency at times of market stress so as to ensure that market makers are not discouraged from committing capital and this remains part of the MiFID/MiFIR framework.

17.1.5 Large in Size Waiver

According to MiFIR Article 9(1)(a) orders in non-equity financial instruments that are large in scale compared with the normal market size are able to benefit from a waiver from pre-trade transparency. This is only applicable for financial instruments for which liquid markets exist.

ESMA is considering two proxy measures:

- Average Daily Turnover (ADT).
- Average Value of Transactions (AVT).

ESMA has a preference for linking this threshold to ADT.

In terms of setting the threshold, ESMA proposes the following options:

- a threshold based around a measure of central tendency (e.g. the mean of trading); or
- a threshold orientated such that a set proportion of transactions would be transparent, e.g. the CFTC[164] has set thresholds to ensure that at least 67 per cent of traded volume would be transparent.

The purpose of the Large in Size (LIS) waiver is to avoid market impact (i.e. the extent to which buying or selling a particular instrument moves the market against the buyer or seller) distorting the price discovery process. ESMA has not as yet given a clear indication as to how the Large in Size waiver would be set.

[164] U.S. Commodities Futures Trading Commission.

The main advantage of ADT is that it is being calculated anyway as part of the determination of liquid markets in financial instruments and therefore data are most readily available for it. It is not clear that it is otherwise a wholly satisfactory proxy measure, whereas AVT speaks more directly to the issue (but conversely data availability may be worse). Neither of the proposed methodologies for setting the threshold are particularly well-specified to assess the extent of market impact, although the first (considering the distribution of trades) comes closest. On the other hand, the consideration of the distribution by scale of trades — either by class of financial instrument approach (COFIA), or even instrument by instrument approach (IBIA) — and to assess the extent of market impact (which will anyway vary according to market conditions) would be a highly cumbersome solution to both develop the thresholds and subsequently monitor proper adherence to the regime.

We do not have good data on orders, but the data available on completed trades can at least provide a sense of scale of what constitutes normal market size. The EUA spot market had about 660 trades in the twelve months to mid-2014, with a reported value of €157.7 million. Given the average spot price in this period of about €4.90 per tonne this implies about 30–35 million tonnes were traded on the spot market (the price was not static over this time). This implies 45–53,000 tonnes per trade (with the average value of a trade being about €240,000). The EUA futures market sees considerably more activity than this. Based on Q2 2014 data, over 2300 trades per day were occurring on ICE, and trade on Nasdaq OMX was at a level whereby about 2000 trades would be made per annum. The average trade on Nasdaq OMX related to about 6–7 lots (i.e. 6–7,000 tonnes) whereas the average trade on ICE was somewhat larger (at about 16 lots). This means that these average trade sizes (assessed in terms of the number of tonnes) were below that of the spot market — but, with respect to ICE at least — this was dwarfed by the frequency with which trades occur.

These data relate to exchange *trading*. The visibility on OTC activity is less good, but is widely understood to involve average trade sizes above those seen on trading venues.

The heterogeneity even between spot and the futures trading highlights the importance of any assessment being made at a suitably granular level: if not, and the threshold is set too low then market makers may be exposed to additional trading risks, and as a consequence decrease trading activity — and trades with significant market impact could distort price formation (at least in the short-term) and raise transaction costs for participants. On the other hand, if the LIS threshold is too high then many trades can avoid pre-trade transparency rules and price discovery may be impaired. This implies that the thresholds should be set on a basis closer to IBIA than a COFIA[165] one (at least distinguishing between spot and derivatives in emission allowances, and likely between EUAs and other instruments).

17.1.6 Waiver for RFQ and voice trading systems

Article 9(1)(b) of MiFIR allows national competent authorities to authorise a waiver from the pre-trade requirements for RFQ/Voice trading systems for transactions above a certain size, the latter

[165] COFIA considers the class of financial instruments (i.e. emission allowances) whereas IBIA would be more granular.

to be specific to the instrument (the SSI threshold). This does not mean these larger transactions are exempted from transparency, instead Article 8(4) requires that at least indicative pre-trade bid and offer prices close to the price of trading interest are available.

As we have noted above, RFQ and Voice are trading systems currently in use in the emissions market, accounting for a substantial minority of trades. This is therefore a highly relevant waiver. The description and information required to be made public for each type of trading system are presented below.

Table 17.2: Overview of trading systems

Type of trading system	ESMA's description of system	Information to be made public
Request-for-quote system	A trading system where a quote or quotes are only provided to a member or participant in response to a request submitted by one or more other members or participants. The requesting member may conclude a transaction by accepting the quote or quotes provided to it on request.	- bids and offers submitted by each responding entity - volumes submitted
Voice trading system	A trading system where transactions between members are arranged through voice negotiation.	- the bids and offers from any member or participant which, if accepted, would lead to a transaction in the system - volumes submitted - the pre-trade transparency data should be made public via at least one electronic publication channel in a machine readable way

There is an important distinction to be drawn between actionable and non-actionable indications of interest. In RFQ systems the latter are available in real-time whereas actionable (i.e. firm) offers are not. At face value then, upon application of the waiver, these data would appear to be already available in the trading system.

On the other hand, it is not current practice to make public actionable RFQ responses in real-time. This is typically justified on the basis that it would expose the liquidity provider to additional risk, e.g. that other dealers might trade against the price quoted creating a "winner's curse". Therefore below the waiver such trading systems would need to change fundamentally their basis of operation compared to today.

In voice, it is more complex: it is not necessarily the case that even non-actionable pricing data are recorded and collated at present in a form suitable for publication. Therefore even those trades benefitting from the waiver would face additional costs to conform to Article 8(4).

In terms of setting the threshold, ESMA has suggested some percentage of the LIS threshold (although it has not indicated the likely level of that percentage). Industry feedback does not understand the applicability of the LIS — and more importantly considers there to be a material risk that if the SSI threshold is not well calibrated then Voice and RFQ trading systems as currently constituted could become unviable.

There are several possible outcomes:

- At one extreme would be a significant withdrawal of activity from Voice and RFQ systems (or of the systems themselves), which would either be "lost" to the market or else (and perhaps more likely) migrate to an exchange environment. This would not be costless: participants choose to locate trades in these systems today in order to lower total transaction costs (such as market impact costs). Against the potentially reduced liquidity and raised transaction costs, we can set an increase in transparency and an associated enhancement in price discovery.
- With a well-calibrated threshold brokers in Voice and RFQ trading environments still would need to migrate towards platforms facilitating the transparency requirements. This would incur some element of compliance cost for affected brokers. There still could be a volume impact as marginal costs increase.

It is intended that the SSI threshold will also determine the size of trade at which an SI is required to make its quote public. We discuss SIs separately below.

17.2 Post-trade transparency

17.2.1 Current situation

Task 3.1 requires an analysis of the current situation for emission allowances and their derivatives regarding the availability of information on the price, volume and time of transactions executed on regulated markets, MTFs and venues that would quality as an OFT under the MiFID rules. This should include the identification of any deficiencies and gaps.

As set out in the analysis of pre-trade transparency, the majority of EUA contracts (spot, daily futures and futures) and EUAA futures are screen-traded on regulated exchanges through limit order books, which facilitates the collection and publication of post-trade information. The two largest exchanges in terms of market share publish real-time data (with a 10 – 15 minute delay in some circumstances) on last price, settlement price, and volumes traded per day.

Exchanges also publish end of day reports on opening, high, low and closing prices, settlement prices and total volumes traded. Information published by exchanges is either available publically on their websites, or via data vendors (such as Bloomberg) which generally require paid subscription.

In generating the charts on trading prices and volumes in sections 16.2.4, 16.2.2 to 16.2.5, we drew on data available on Bloomberg and the websites of exchanges. In general, the pricing information on end of day or settlement prices is reported on a daily basis and readily available via Bloomberg or database of the exchanges. However, volume information is not always available for all products with market prices reported and where volume information is available, it is reported less frequently than pricing information, with gaps between trading days. While trading information on EUAs and CERs is reported by most exchanges, ERUs and EUAAs are less frequently reported by the exchanges. The price and volume information available for products offered in different exchanges is summarised in Table 18.1.

The availability of post-trade information on OTC trades is more limited. Exchanges generally publish volumes traded OTC on their websites, but do not publish price data. OTC deal prices are reported to ICE but not published. A notable exception is Nasdaq OMX where all OTC trade prices and volumes are reported within 15 minutes and published on the website (although from our investigation this information appears to be restricted to member access).

We have been unable to gain any insight into the possible trading activity on other trading venues such as MTFs and those which qualify of OTFs. For our research and initial fieldwork it appears that the majority of trading occurs either on regulated exchanges or over the counter.

The table below summarises the post-trade information available on regulated exchanges.

Table 17.3: Post-trade information available via regulated exchanges

Trading Venue	ECX/ICE	Nasdaq OMX	EEX	CME
Market share (2013–14)	92.9%	0.1%	6.5%	0.5%
Trading platforms	Screen and OTC clearing	Screen and OTC clearing	Screen and OTC clearing	Screen and OTC clearing
Limit order book	Price data: Real time data with 10 minutes delay: price, settlement price and percentage change Tick information of trades available on their website (and data vendors). All deals are crossed and matched. Settlement prices are published at end of day. End-of-day report is published for all derivatives: open, high, low and close price; settlement price; price change; total volume; open interest, change, EEP, EFS, Block volume, spread volume. Historical information is also available	Price data: Information available on last price, high price, low price, price change, daily fix. Volume data: on-order book volume, off-order book volume, total volume, open interest, size, updated time. Historical information of the above data is also available. Daily market and trading reports available: number of deals, aggregated volume, products traded. Broken down by OTC and exchange.	Real time publication via Bloomberg, and around a 5 minute delay on their website. Information available on derivatives markets: best bid, best ask, number of contracts, last price, absolute change, last time of trade, last volume of trade, Settlement price, Volume, Volume trade registration, Open interest of previous day Information available on spot market: last price, last time, settlement price and daily volume For primary auction market: market area, date, time, price and volume.	Real time information with at least 10 minutes delay on: last price, change, prior settlement price, open price, high price, low price, volume, high/low limit, updated time. Settlement, volume and time and sale[166] reports are available to public. Historical data also available
OTC	Volumes published on website but not prices	All OTC trade prices and volumes reported within 15 minutes and published on website	OTC volume published on website.	No information on post-trade transparency on website.

Note: It is not clear from available sources whether traders would have access to the similar level of information transparency, in terms of price and volume data via the OTC trading platform as compared to that via the limit order book platform.

[166] Provides the price and time of every trade executed and bids/offers conditionally represented on the previous trading day.

17.2.2 Gaps and deficiencies

The industry does not consider the state of post-trade data on exchange to be a market failure in emissions. Attendees at our 2013 workshop, who conducted the majority of business on exchange, considered the levels of current transparency mirrored that set out in the proposals. OTC post-trade data conforms much less well to the proposals, although currently wholly bilateral trade is only a small part of the market.

17.2.3 ESMA's policy proposals

ESMA is to develop technical standards covering:

- The details of transactions to be made available to the public, distinguishing between those determined by factors linked primarily to the valuation of the financial instruments and those determined by other factors, and the time limit to comply with the obligation to publish as close to real time as possible including when trades are executed outside ordinary trading hours.
- The conditions for deferred publication and the criteria to be applied when determining the size or type of a transaction for which deferred publication and publication of limited details of a transaction, or publication of details of several transactions in an aggregated form, or omission of the publication of the volume of a transaction with particular reference to allowing an extended length of time of deferral for certain financial instruments depending on their liquidity, is allowed.

17.2.4 Nature and timing of post-trade reporting

ESMA has proposed the following information set to be published by trading venues in emissions products. Most of these fields are common to all products — the final two rows are specific to emissions trading.

Table 17.4: List of details of public information to be published for post trade transparency

Trading day	
Trading time	
The identifier of the financial instrument	
The price at which the transaction was concluded	
Venue identification or: i. if the transaction was executed via a systematic internaliser the code 'SI' ii. otherwise the code 'OTC'	
Price notation	
Quantity notation	
Quantity	
Reference period	The period specified in the Directive 2003/87/CE e.g. [2013-2020 or subsequent trading periods][167]
Type	EUA, [EUAA],[168] CER , ERU

The above list is actually less detailed than much post-trade reporting today (e.g. no currency field). Key differences compared to the current information sets available are: the flagging of SI trades and (potentially) re-conforming fields to a particular format. This implies that venues may need to upgrade systems to populate additional fields (or at least tweak pre-existing fields to match ESMA terminology). In the context of the EU ETS these costs should be relatively trivial, given (a) our analysis of the current situation, and (b) that the bulk of these costs would relate to systems which are common across a range of products (e.g. developing an approach to map who is and is not an SI in a particular instrument) with the marginal cost of extending to emission allowances — even with the emissions-specific fields — likely to be of a much lesser magnitude.

However, over and above such compliance costs, there could be negative consequences arising from the flagging and identification of SI activity in the post-trade data. These are broadly similar to the expected negative consequences of increased transparency pre-trade, namely that competitors may be able to price strategically to the disadvantage of the SI. It would create an un-level playing field between investment firms qualifying as an SI and those who do not so qualify but nevertheless trade OTC.

An SI provides liquidity by advancing its own capital. Without anonymity in the post-trade reports it could allow competitors to reconstruct trading activities and to identify the position taken — adversely affecting the ability of the SI to manage and unwind the associated risk. This would create disincentives for SIs from performing this function.

If substantial this could even prompt some reduction in liquidity as participants withdraw from the market. Industry groups responding to ESMA's Discussion Paper do consider this potentially extremely harmful across all non-equity asset classes (including emissions, but not specifically so). In some non-equity markets, e.g. the bond market, liquidity is provided almost exclusively by market makers (or "dealers") — this is therefore a significant risk in those markets. In emissions, at

[167] ESMA's draft referred to other periods. We have included the earliest possible reference period for trading in the years around the transition into the subsequent period.

[168] ESMA's draft did not include EUAAs. However DG CLIMA has identified to ESMA that these are separate to EUAs, etc.

present, bilateral trade is dwarfed by multilateral trading systems. The scope of SI activity is unclear, but is likely small (and must, by definition, be less than the total of bilateral activity). It follows that any reduction in liquidity — whilst disadvantageous — would be very unlikely to have material consequences in the emissions markets.

On timing, ESMA proposes that post-trade reports be published within five minutes. This is in line with EEX, but faster than ICE and CME (which have a ten minute lag). Current bilateral reporting practice is not clear, but is clearly not in real-time or anything close to it. When OTC trades are cleared through an exchange reporting follows: on Nasdaq OMX this is within fifteen minutes. Where voice is part of the trading system, five minutes may be functionally difficult to achieve. It is worth noting that US practice is fifteen minutes.

This implies some additional compliance cost (investing in greater automation to reduce reliance on manual processes slowing reporting). This would be greater the shorter the window for reporting (the industry is seeking fifteen minutes). Emissions market participants would largely be able to ride on the back of investments made in other, larger markets.

17.2.5 Deferred publication

The deferral of publication may be authorised by a National Competent Authority for:

- Large in scale transactions compared with normal market size for the financial instrument or for the asset class.
- Transactions that are related to financial instruments (or to the related asset class) for which there is not a liquid market.
- Transactions that are above a size specific to that financial instrument or that class of financial instruments traded on a trading venue, which would expose liquidity providers to undue risk and takes into account whether the relevant market participants are retail or wholesale investors.

Where an NCA has authorised a deferral, Article 11(3) MiFIR permits NCAs to require market participants to make some information public during the deferred period whilst omitting or aggregating other information during an extended time period of deferral.

Table 17.5: ESMA's proposals on deferred publication

Size of transaction	Deferral period, (if deferral authorised by Competent Authority)	Details to be published after the deferral period	Details to be published during the deferral period if requested by Competent Authority
Non-equity instruments assessed as having a Liquid Market[169]			
Size is below the thresholds for the size specific to the instrument and large in scale	NA	Publication of all details as close to real time as technically possible and no later than 5 minutes	NA
Size is equal to or above size specific to the instrument but below the large in scale threshold	60 minutes to 120 minutes	All details to be published after the deferral period is over	All details to be published as close to real time as technically possible and no later than 5 minutes except volume, which can be omitted (indicated by a flag) for xx minutes
Size is equal to or above large in scale threshold	120 minutes to End of Day	All details to be published after the deferral period is over	All details to be published as close to real time as technically possible and no later than 5 minutes except volume, which can be omitted (indicated by a flag) for xx minutes
Size is below the thresholds for the size specific to the instrument and large in scale	NA	Publication of all details as close to real time as technically possible and no later than 5 minutes	NA
Non-equity instruments assessed as <u>not</u> having a Liquid Market			
Illiquid instruments	End of Day +1	All details to be published after the deferral period is over	All details to be published after end of day 1 except the volume, which can be omitted (indicated by a flag) until EOD + 1

The key thresholds for deferred publication are the Large in Scale (LIS) threshold and the Size Specific to the Instrument (SSI) threshold noted above in the discussion on waivers in the pre-trade transparency regime.

They key issues around deferral relate to the ability of market participants to hedge risks and unwind positions in an orderly fashion. The industry's argument is that too rapid post-trade disclosure to trading peer groups would consequently feedback to reduced pre-trade provision of

[169] According to MiFIR a liquid market for a financial instrument or a class of financial instruments is a market where there are ready and willing buyers and sellers on a continuous basis.

liquidity and capital commitments. The consensus from the financial services industry is that the deferral time limits proposed by ESMA would be insufficient to achieve this in many non-equity markets and therefore make a poor trade-off between transparency and other interests.

The less liquid the market, the greater these risks are likely to be. This implies that the materiality of these risks in the emissions market would likely be greater in products other than EUAs, and greater in spot rather than derivatives markets. On the other hand, the structure of the emissions market — whereby financial services industry market makers are less important than in say corporate bonds — would act to dampen any negative impacts arising.

17.3 Systematic internalisation

17.3.1 Participation of current systemic internalisers

Task 4.1 requires an analysis of the current situation regarding the activity of systematic internalisers (SIs) in the market for emission allowances and their derivatives. Pursuant to MiFIR systematic internalisers are investment firms which, on an organised, frequent, systematic and substantial basis, deal on own account by executing client orders outside a regulated market, MTF or OTF without operating a multilateral system. This could include, for example, single-dealer platforms. A systematic internaliser is not allowed to bring together third party buying and selling interests in functionally the same way as trading venue.

The table below presents the list of SIs that is kept by ESMA. A number of these organisations participate in the emissions market, in some way, by virtue of having carbon trading membership at one or more regulated exchanges. However, we have not been able to ascertain from the available information the nature of this activity, i.e. whether the organisations participate in the carbon market as SIs or as regular traders, brokers or market makers. Our discussion with market participants suggested that there is limited or no participation of systemic internalisers in the carbon market.

Table 17.6: Systematic Internalisers and indicative emissions market activity

Name	Country where authorised	Emission market participation
Citigroup Global Markets Limited	GB	Carbon trading activity: Trading and/or clearing member of EEX, ICE and Nasdaq OMX
Citigroup Global Markets U.K. Equity Limited	GB	No membership of carbon trading market discrete from Citigroup Global Markets Limited
Credit Suisse Securities Europe Ltd	GB	Carbon trading activity: Trading and clearing member of ICE
Danske Bank	DK	Performs OTC trading and trading member of EEX and Nasdaq OMX
FINECOBANK s.p.a.	IT	No membership of carbon trading market

Name	Country where authorised	Emission market participation
Goldman Sachs International	GB	Carbon trading activity: Market maker for a number of EEX and ICE products
Knight Capital Europe Limited	GB	No membership of carbon trading market
Nomura International Plc	GB	Carbon trading activity: Trading member of ICE
Nordea Bank Danmark A/S	DK	Carbon trading activity: Clearing and/or trading member EEX, ICE and OMX
SOCIETE GENERALE	FR	Carbon trading activity: Heavily involved in emission trading in 2006 - 2008. Clearing and trading member of EEX
UBS AG (London Branch)	GB	Carbon trading activity: Clearing and/or trading member of EEX and ICE
UBS Ltd	GB	No membership of carbon trading market (discrete from UBS AG (London))

Source: Europe Economics analysis based on individual websites of Systematic Internalisers, exchanges websites and other online sources.

17.3.2 ESMA's policy proposals

SI status is to be determined instrument by instrument under MiFID 2. The key is frequent, systematic and substantial bilateral OTC trade by a firm on its own account. Whilst ESMA asked for feedback on appropriate thresholds for these concepts for emission allowances, nothing meaningful was contributed by stakeholders.

By way of reference, the calculation method and proposed threshold for different types of financial instruments are as shown in the table below:

Table 17.7: ESMA's SI thresholds in non-equities

	Calculation method	Bonds	SFP[170]	Derivatives
Frequent and systematic basis threshold (liquid instruments)	Number of transactions executed by the investment firm on own account OTC / total number of transaction in the same financial instrument in the EU	2 to 3%	3 to 5%	2 to 4%
Frequent and systematic basis threshold (illiquid instruments)	Minimum trading frequency	at least once a week	at least once a week	at least once a week

[170] Structured Finance Product.

Substantial basis threshold Criteria 1*	Size of OTC trading by investment firm in a financial instrument on own account / total turnover in the same financial instrument executed by the investment firm	25%	30%	25%
Substantial basis threshold Criteria 2*	Size of OTC trading by investment firm in a financial instrument on own account / total turnover in the same financial instrument in the European Union	0.5 to 1.5%	1.5 to 3%	1.5 to 3%

* only one of the two thresholds must be breached for the substantial basis criterion to be met.

We note that:

- In general, investment firms that undertake systematic internalisation are to be expanded compared to ESMA's current listing as a result of the new definition and quantitative tests. It is not clear how many firms might be classified as SIs in emission allowances. We return to this point below.
- Non-investment firms, specifically large energy firms are understood to be undertaking some trading functions on behalf of smaller market participants. This is understood to include aggregating and executing orders on a trading venue, but may also include OTC business. Article 2(1)(j) exempts from MiFID persons dealing on own account, including market makers, in (inter alia) emission allowances or derivatives thereof, unless dealing on own account when executing client orders or providing investment services, other than dealing on own account, in emission allowances or derivatives thereof to the customers or suppliers of their main business. In both cases the exemption is subject to the condition that the activity is individually and on an aggregate basis an ancillary activity to the main business, and that high frequency algorithmic trading techniques are not employed. (Article 2(I)(e) exempts operators with compliance obligations under Directive 2003/87/EC who, when dealing in emission allowances, do not execute client orders and who do not provide any investment services or perform any investment activities other than dealing on own account, provided that those persons do not apply a HFT technique.) This implies that any large energy firms acting as market makers would generally not fall within MiFID's SI regime.

17.3.3 Future participation of systemic internalisers

Various investment firms are currently authorised as SIs. As we have noted above this list is likely to lengthen, at least for some categories of financial instrument, subject to any change in business models by these firms. The extent to which emission allowances are part of the standard product offering is far from clear: for the existing SIs, emission allowances do not appear to be systematically part of the offering at present. The total part of the emission allowances spot market conducted OTC is historically low at present. It may be that the number of SIs specific to emission allowances is low (or even nil). On the other hand, ESMA has not yet set out its proposed thresholds for systematic internalisation: i.e. provided that emission allowances are part of the offering, ESMA may choose to set the thresholds at a level which does capture at least some firms in the regime.

ESMA's intention is to capture a larger fraction of the residual bilateral OTC trading within the new SI regime. We have noted at present that current bilateral trading in emissions are very low, both by comparison to past experience in this asset class and by comparison to many other non-equity instruments, e.g. corporate bonds. To the extent that firms are captured (i.e. there are SIs in emission allowances) many of the direct compliance costs would be incurred as part of system changes and upgrades driven by activities in other financial instruments (e.g. equities, bonds and (commodity) derivatives). An investment firm that acts as an SI only in emission allowances is not a realistic possibility.

Setting the thresholds too low could result in a barrier to entry for new market participants by effectively forcing them to deal as an SI from the outset. On the other hand, setting the thresholds too high could result in an uneven playing field between true market makers. If the intention is to capture SI activity in emission allowances then the frequent and systematic thresholds would likely need to set at lower levels than those proposed for other instruments.

Article 2(I)(j) implies that the energy firms would not be caught by inter alia the SI provisions unless they are using HFT techniques. Nothing in our fieldwork to date has indicated a significant (indeed, any) presence of such techniques in this category. However, there may well be some use we are not aware of. In this case, these firms would need to determine the appropriate trade-off between maintained use of such techniques and the likely one-off and ongoing cost implications of becoming an authorised firm under MiFID. In the latter case, these firms would likely not benefit from pre-existing systems and hence the marginal costs associated with this would be significantly higher than for an investment firm. We consider it likely that the view taken on this trade-off would be towards ending the use of HFT strategies. It is worth noting that the discussion paper responses from energy firms are focused upon the exemption rather than any technical aspect of MiFID 2.

17.4 Summary of impacts

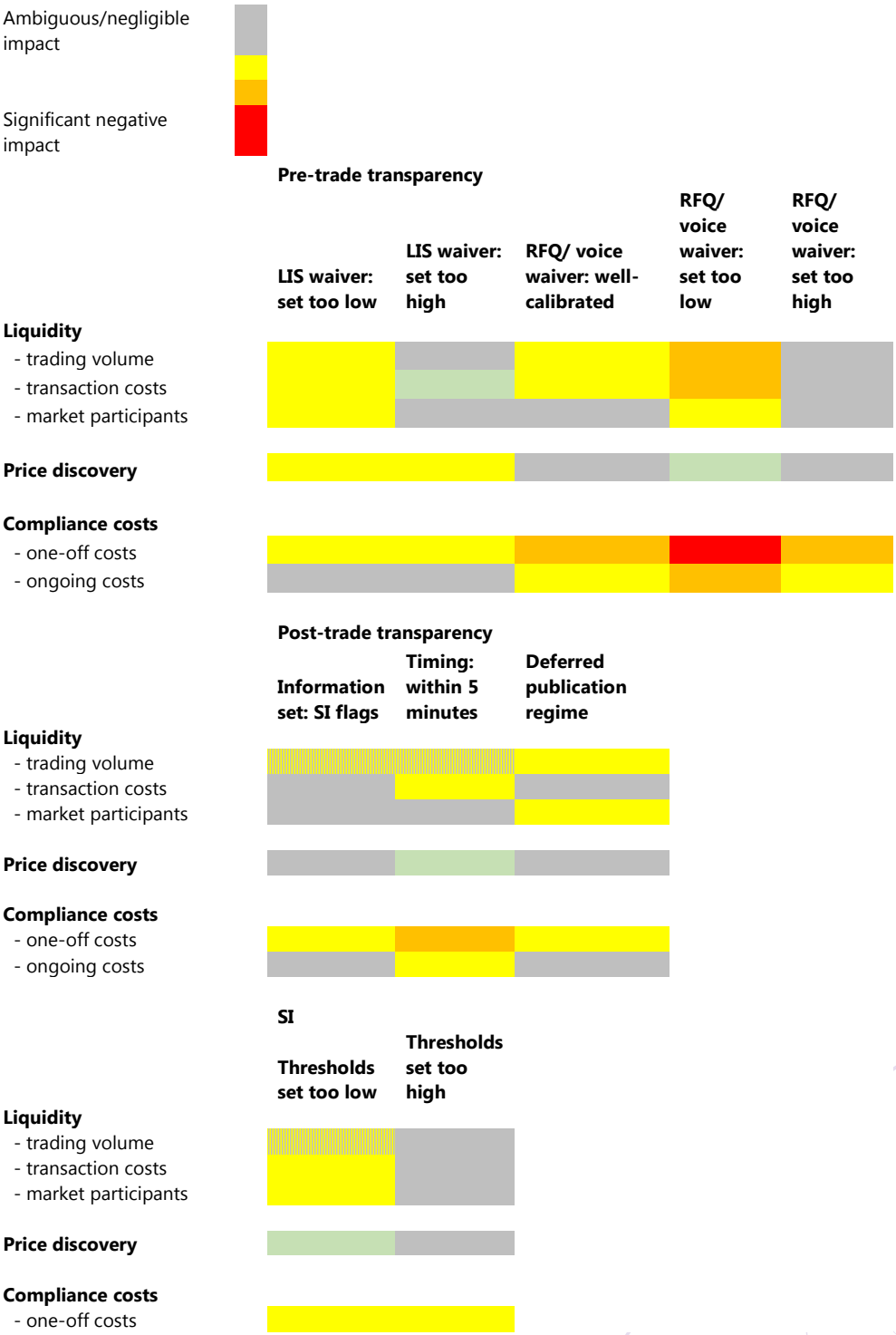
It is not possible at this stage to conclude definitively on the impacts of the potential Technical Standards on the EU ETS given that (a) the Standards are draft, and in many instances do not contain firm proposals for the various thresholds at which certain waivers would come into effect, and (b) the data available on the EU ETS, as described above, are fragmentary and incomplete.

Notwithstanding these important riders we are able to make some observations here around the range of likely impacts expected to arise, which we have discussed in the preceding sections. We summarise these here according to the following:

- Market liquidity and transaction costs.
- Price discovery.
- Compliance costs.

Table 17.8: Summary of impacts

Key:
Significant positive impact 


Ambiguous/negligible impact
Significant negative impact
Pre-trade transparency
LIS waiver: set too low
LIS waiver: set too high
RFQ/ voice waiver: well-calibrated
RFQ/ voice waiver: set too low
RFQ/ voice waiver: set too high
Liquidity
- trading volume
- transaction costs
- market participants
Price discovery
Compliance costs
- one-off costs
- ongoing costs
Post-trade transparency
Information set: SI flags
Timing: within 5 minutes
Deferred publication regime
Liquidity
- trading volume
- transaction costs
- market participants
Price discovery
Compliance costs
- one-off costs
- ongoing costs
SI
Thresholds set too low
Thresholds set too high
Liquidity
- trading volume
- transaction costs
- market participants
Price discovery
Compliance costs
- one-off costs

- ongoing costs

18 Appendix: Additional Background

18.1 Summary of market information

Based on market information reported in Bloomberg and ICE exchange, we summarise below the price and volume information available on each products traded across different exchanges. The level of information is indicated by the number of "star" next to a "tick" which indicates the product is offered in an exchange. While one "star" indicates only pricing information is reported, two "stars" shows that both volume and price information is published for the product offered.

Table 18.1: Information availability on products traded across exchanges (March 2014)

		Spot	Daily future	Option	Future	Serial option	Forward	Auction	Auction Future	Spread	Swaps & Swats
EUAs	ICE		✓**	✓*	✓**			✓			
	EEX	✓**			✓**			✓	✓		
	Nasdaq		✓	✓	✓**		✓			✓	✓
	CME		✓	✓	✓*	✓					
CERs	ICE		✓**	✓*	✓**						
	EEX	✓**			✓*						
	Nasdaq	✓**	✓	✓	✓					✓	✓
	CME			✓	✓	✓					
ERUs	ICE			✓*	✓**						
	EEX				✓*						
	Nasdaq										
	CME			✓	✓						
EUAAs	ICE				✓*			✓			
	EEX	✓*			✓*			✓			
	Nasdaq				✓						
	CME				✓*						

Source: Europe Economics analysis of Bloomberg and the exchanges: ICE, EEX, Nasdaq, CME.

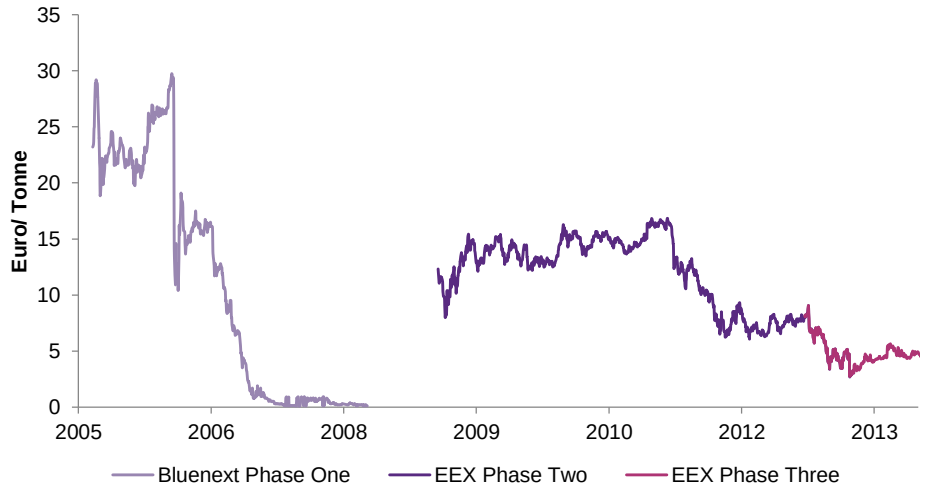
18.2 Summary of price movements

EUAs

The spot price analysis is extended back to 2005 to capture the pricing behaviour in Phase One. The sharp fall in spot price to nearly zero in value at end of Phase one can be attributed to the limitation of the scheme to bring forward excess EUAs to the next trading phase.

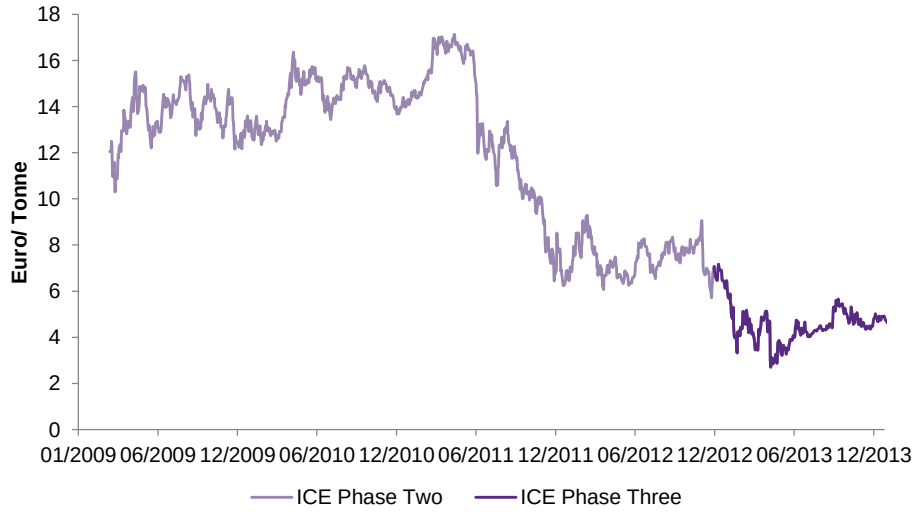
The price of EUAs has fallen steadily since May 2011, in large part this is due to renewed fears of a widening economic crisis in EU. An economic crisis which would impact supply-side of the general economic activities, such as power generation, industrial production, and in turn, would affect the demand for allowances would closely be reflected in the price movement of all emission allowances products.

Figure 18.1: EUAs daily spot price movement



Source: Europe Economics analysis of Bloomberg and Bluenext data, market included: EEX, Bluenext.

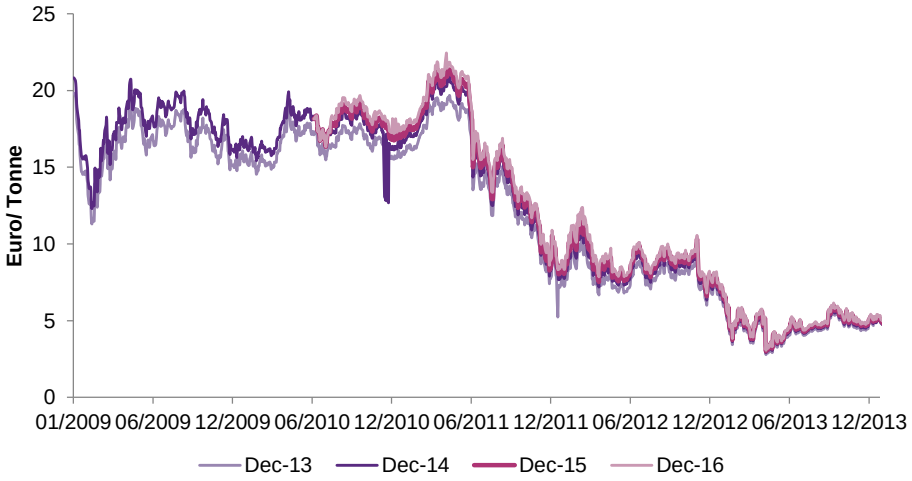
Figure 18.2: EUAs daily futures price movement



Source: Europe Economics analysis of ICE statistics, market included: ICE.

The regulatory changes introduced in Phase Two contributed to a more stable price path for EUAs. The figure below shows the average EUAs futures price of different delivery dates across exchanges. The price fluctuated within the range €10 to €25 subsequent to 2009 but started to decline in May 2011.

Figure 18.3: Market averaged daily price movement of EUAs futures derivative (December 2013)

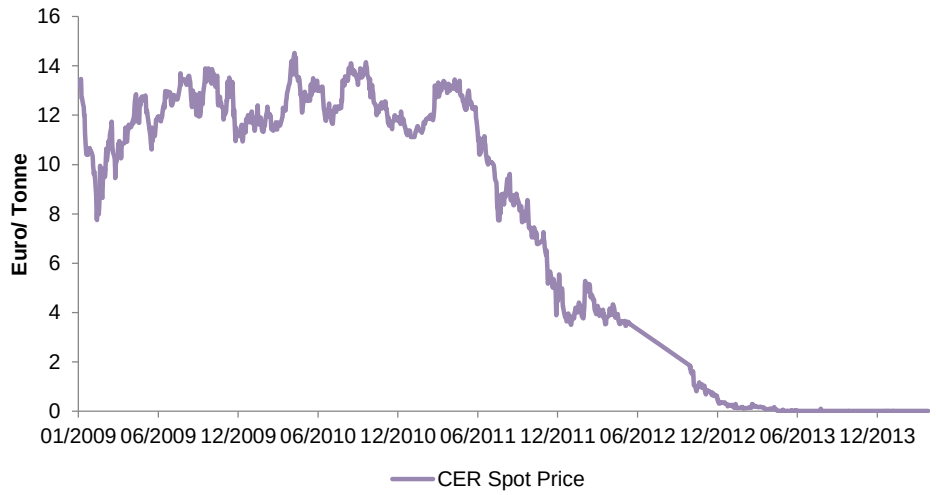


Source: Europe Economics analysis of Bloomberg and ICE data, market included: EEX, ICE, Nasdaq, CME.

CERs

Similar to the downward price movement of EUAs, the market for CERs was negatively impacted in the EU economic crisis and the average spot price fell from around €13.5 in April 2011 to less than €0.1 in April 2013. By June 2013, the price reduced to €0.01 and stabilised at this price level for the rest of 2013.

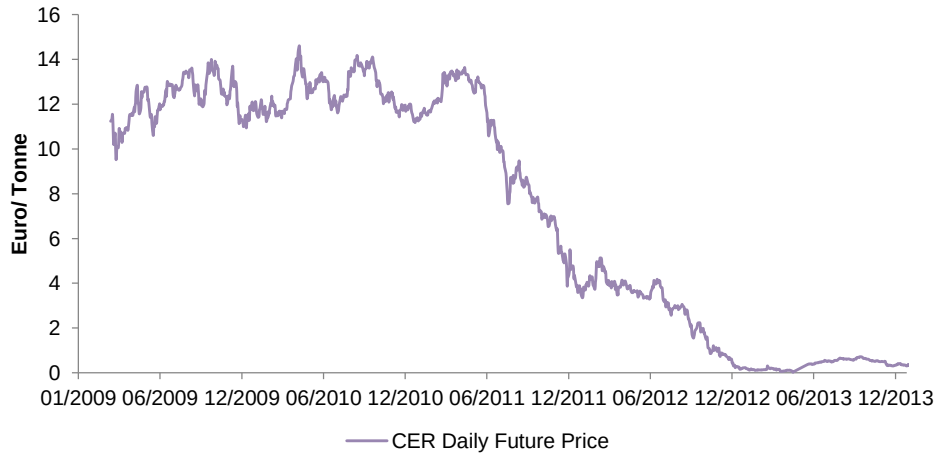
Figure 18.4: CERs daily spot price



Source: Europe Economics analysis of Bluenext and Bloomberg data, market included: EEX, Bluenext and Nasdaq.

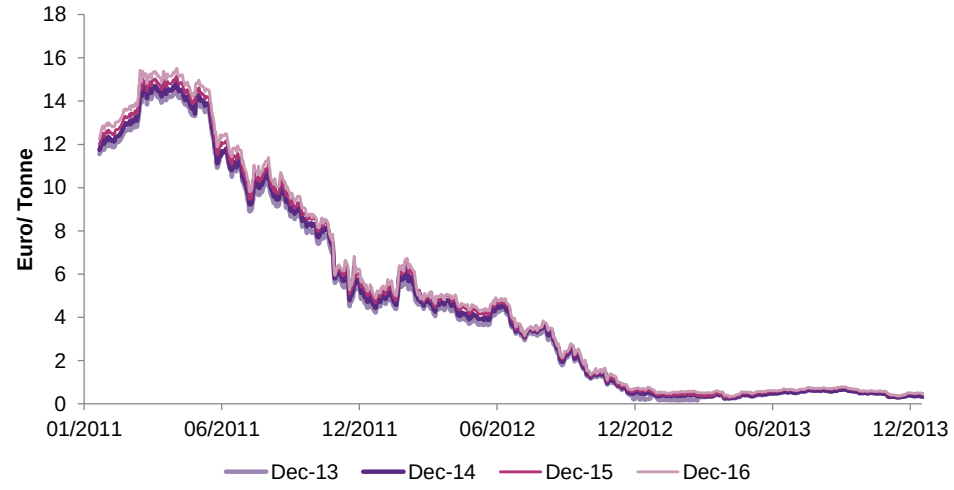
Both daily futures and futures contracts markets experienced a similar price movement with the spot market. The derivate market for daily futures contract traded with average prices around €12.4 between Mar 2009 and June 2011 before the price started to move downward and dropped to less than €1 in 2013. On the other hand, the futures contracts with delivery dates between 2013 and 2016 started trading in EEX and ICE in 2011 and ICE was the main exchanges with the largest range of contracts available. The price paths of futures contracts were a steadily rise at first but have started to fall towards €0 in June 2011. Besides the negative change in market demand, the CERs derivative markets also become more volatile in 2013, in particular, the futures contract market reached as high as 100 per cent of price change in February 2013.

Figure 18.5: CERs futures daily price movement



Source: Europe Economics analysis of ICE data, market included: ICE.

Figure 18.6: CERs futures market-averaged price

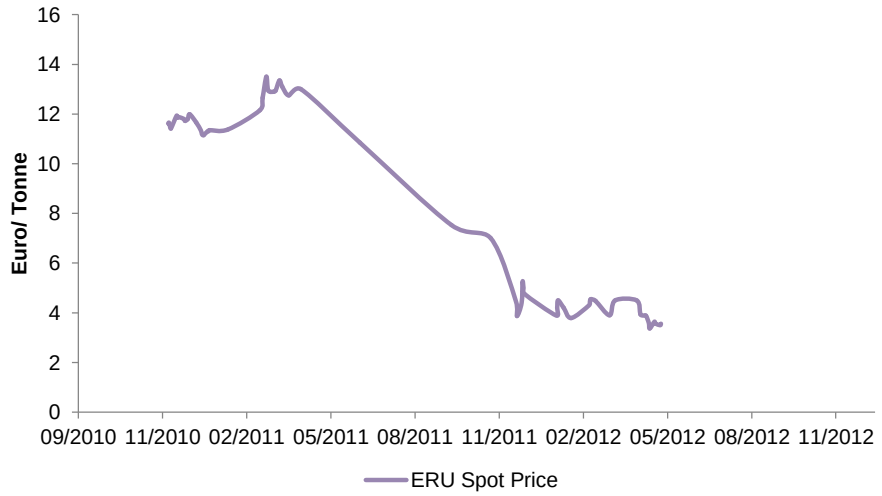


Source: Europe Economics analysis of Bloomberg and ICE data, market included: ICE and EEX (Dec 2013), ICE (Dec 2014, Dec 2015, Dec 2016).

ERUs

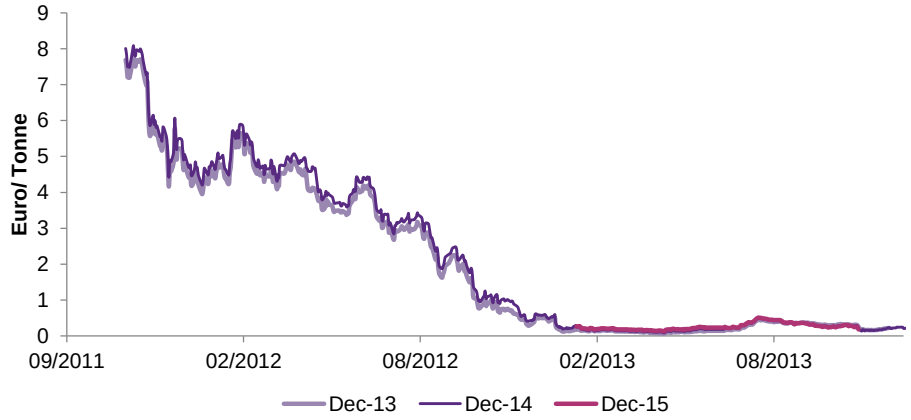
We present the market averaged price movement and volatility of three EUAs futures contracts below. Since November 2011, there was a graduate decline of the price of ERUs futures contracts. For instance, the December 2014 contract was traded around €7.33 in November 2011 but dropped to €0.23 in December 2013.

Figure 18.7: ERUs daily spot price movement



Source: Europe Economics analysis of Bluenext data, market included: Bluenext.

Figure 18.8: ERUs futures market-averaged price

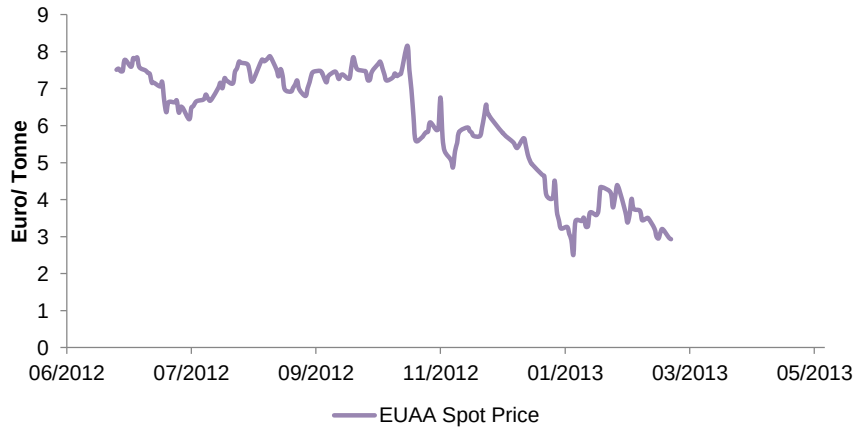


Source: Europe Economics analysis of ICE and Bloomberg data, market included: ICE and EEX (Dec 2013), ICE (Dec 2014 and Dec 2015).

EUAAs

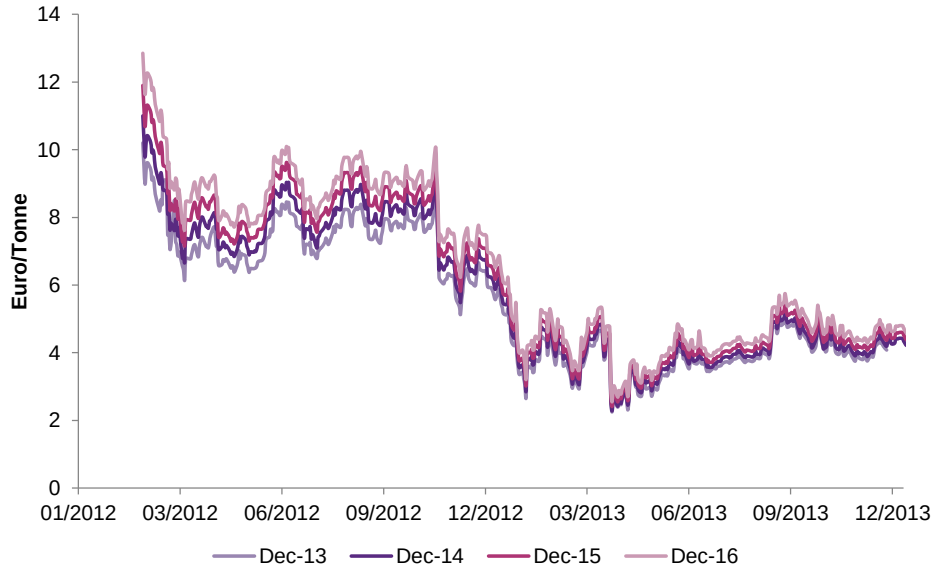
Since the introduction of EUAAs in 2012, the average price for spot contracts ranged from €2 to around €9. The price reached its peak of €8.16 in November 2012 and declined to €2.93 in March 2013. The market was traded with price volatility below 10 per cent but has become more volatile since the decline of the price.

Figure 18.9: EUAAs spot price movement



Source: Europe Economics analysis of Bloomberg data, market included: EEX.

Figure 18.10: EUAAs futures market-averaged price



Source: Europe Economics analysis of Bloomberg and ICE data, market included: ICE, CME and EEX (Dec 2013), ICE (Dec 2014, Dec 2015, Dec 2016).

Task 5 Report

Europe Economics

19 Setting a Threshold for the Disclosure of Non-public Information on Emission Allowances

19.1 Market Abuse Regulation and its application to the EU ETS

Article 7(1)(c) of the Market Abuse Regulation (MAR)[171] defines inside information in relation to emission allowances or auctioned products based thereon as non-public information which, if made public, would have a significant effect on the prices of emissions allowances or their derivatives:

> information of a precise nature, which has not been made public, relating, directly or indirectly, to one or more such instruments, and which, if it were made public, would be likely to have a significant effect on the prices of such instruments or on the prices of related derivative financial instruments

According to Article 7(4) this means information that a reasonable investor would be likely to use as part of the basis of his/her investment decisions:

> For the purposes of paragraph 1, information which, if it were made public, would be likely to have a significant effect on the prices of financial instruments, derivative financial instruments, related spot commodity contracts, or auctioned products based on emission allowances shall mean information a reasonable investor would be likely to use as part of the basis of his or her investment decisions.

Furthermore, according to the second subparagraph:

> In the case of participants in the emission allowance market with aggregate emissions or rated thermal input at or below the threshold set in accordance with the second subparagraph of Article 17(2), information about their physical operations shall be deemed not to have a significant effect on the price of emission allowances, of auctioned products based thereon, or of derivative financial instruments.

Article 17(2) of the MAR states that:

[171] REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC, 4 April 2014, hereafter MAR.

an emission allowance market participant shall publicly, effectively and in a timely manner disclose inside information concerning emissions allowances which it holds in respect of its business, including aviation activities or installations.

With regard to installations, such disclosure shall include relevant information about the capacity and utilisation of installations, including planned or unplanned unavailability of such installations.

A firm lacks an incentive to share such information — the social value of enhanced price discovery is essentially an externality to individual compliance buyers (not least because these are a fragmented group, with many relatively small players). If price- or investment-relevant information affecting emissions is not disclosed in a timely manner then this could hamper price discovery and the efficiency of the carbon market. This in turn could affect the carbon price, the integrity of the market and thus the overall goals of the EU ETS as an infrastructure for reducing carbon emissions in a cost-effective manner.

This disclosure of information shall *not* apply to a participant in the emission allowance market where the installations or aviation activities that it owns, controls or is responsible for, in the preceding year have had emissions not exceeding a minimum threshold of carbon dioxide equivalent and, where they carry out combustion activities, have had a rated thermal input not exceeding a minimum threshold.[172] In other words, those market participants, whose activity on an individual basis should have no material impact on investment decisions in the carbon market would be excluded from the disclosure requirement. This is

"in order to avoid exposing the market to reporting that is not useful and to maintain cost-efficiency of the measure foreseen".[173]

19.2 Objectives of this report

This threshold is effectively a materiality threshold in recognition that not all non-public information held by EU ETS participants about their physical operations will be considered material for the purposes of disclosure. To the extent that information about the physical operations is deemed to be non-material for the purposes of disclosure, it is also deemed not to have a significant effect on the price of the relevant instruments.[174]

The primary objective of this report is to identify possible options for setting this threshold and to assess the economic impacts of the various options identified. In order to achieve this we first consider the current situation as regards the non-public information held by emission allowance market participants and its materiality for price formation in emission allowances.

The assessment also considers equivalent measures applicable to main categories of emission allowances market participants by virtue of other sectoral legislation (e.g. Regulation on wholesale energy market integrity and transparency, REMIT).

[172] MAR, Article 17(2).
[173] MAR, Recital 51.
[174] It is noted that all such participants are nevertheless covered by the prohibition of insider dealing in relation to any information they have access to and which is inside information (MAR, Recital 51).

The threshold is not to be used to ascertain a significant effect of particular information on price,[175] but, to the contrary, it will tell when a significant effect on price *cannot* be expected. For example, non-public information held by a market participant above threshold value in relation to its physical operations will not be automatically regarded as having a significant effect on price.

The Market Abuse Regulation provides the framework for determining a threshold below which emission allowance market participants would be exempt from the information disclosure requirements. We emphasise that our work on the threshold, set out at 19.5, is strictly limited to the notion of disclosure of inside information for the purposes of emission allowances, and does not have any relevance to the interpretation of the notion of inside information for the purposes of other financial instruments.

We also provide a non-exhaustive list of typical disclosures expected from the various categories of non-exempt emission allowance market participants pursuant to Article 17(2) of the MAR. This is set out in section 19.6.

We begin with an overview of the non-public information which emission allowances market participants hold in respect of their businesses. The assessment takes into account the size of emissions of installations and aviation activities of market participants, or their parent or related undertakings (as appropriate), and the extent of their effect on the price formation of emission allowances or related derivatives.[176]

19.3 Background

This section presents an overview of price formation in the carbon market and the relative importance of company-specific non-public information and public information.

19.3.1 The drivers of commodity prices

The market in emission allowances is typically analysed as a form of commodity market. Before discussing those price drivers particular to emission allowances we briefly discuss price determination in commodity markets more generally.

The drivers of commodity prices are fundamentally those factors that affect the demand for and supply of the commodities in question. Simplistically, the price of a commodity will increase if there is a negative supply-shock that reduces the availability of the commodity, all else remaining equal. The price of a commodity will also increase if there is an increase in demand for that commodity, all else remaining equal. Production constraints (specifically difficulties in varying supply to match changing demand) are a common factor affecting the supply and price volatility of commodities.

[175] It has been commonly accepted in the past that fixed threshold of price movements or quantitative criteria alone are not a suitable means of determining the significance of a price movement. See CESR's 2nd set of guidance to MAD, Ref. CESR/06-562b.

[176] Emissions data used in our analysis is reported on a consolidated, company-level basis and therefore covers parent or related undertakings of installations where relevant.

Demand for a particular commodity is partly specific to it, but also a function of overall economic activity.[177] This influence of (global) macroeconomic activity (i.e. GDP) makes it unsurprising that the empirical evidence suggests that primary commodity prices display a degree of co-movement, albeit that the degree of such co-movement varies over time and with the commodities being considered. Other common price determinants are real interest rates, uncertainty and risk.[178] A negative relationship between the real interest rate and commodity prices is suggested by Frankel (2008) and Svensson (2008). A rise in the real interest rate will reduce the present value of future returns of a commodity by raising the discount factor, leading to a fall in price today. Risk-averse investors may reduce their demand for a commodity with volatile prices and this would be related to a fall in its price. The role of uncertainty as a determinant of price is also confirmed by Dixit and Pindyck (1994).

Where a commodity is storable real interest rates have a particular effect by changing the cost of holding inventories. High real interest rates lower the demand for inventories, which in turn contributes to lower total demand for commodities, and lower prices.[179]

Public policy can also be influential: for example, trade policy changes have been found to influence both price levels, and in particular the price volatility, of agricultural commodities.[180]

We now turn to the price determinants of emission allowances in particular.

19.3.2 Specific factors affecting the price of emission allowances

The literature around the pricing of emission allowances identifies the following factors as the main price drivers:[181]

- Public policy, including the structure of the EU ETS;
- Macro-economic factors such as economic growth and other commodity prices; and
- Internal company-specific or installation-specific factors.

These factors are broadly in common with those for commodities in general. We now discuss these in turn. (Exogenous variables such as the weather, including temperature and precipitation are also cited: the effect of these is understood to be direct, i.e. warm or cold weather impacts upon energy consumption, which has a relation to the demand for emission allowances and hence their price).

Public policy

[177] Byne, Fazio & Fiess (2011), "Primary Commodity Prices – Co-movements, Common Factors and Fundamentals", Policy Research Working Paper 5578.

[178] Byne, Fazio & Fiess (2011), "Primary Commodity Prices – Co-movements, Common Factors and Fundamentals", World Bank Policy Research Working Paper 5578.

[179] Frankel (2013), "Estimated Effects of Speculation and Interest Rates in a "Carry Trade" Model of Commodity Prices" (https://www.imf.org/external/np/seminars/eng/2012/commodity/pdf/frankel.pdf).

[180] See the ULYSSES project examining food price volatility and its summary of current knowledge (http://www.fp7-ulysses.eu/about/approach.html#Iterative-modelling.html).

[181] For example, Alberola, Chevallier & Cheze (2007), "European Carbon Prices Fundamentals in 2005 – 2007: The effects of energy markets, Temperatures and Sectorial Production".

Carbon markets have emerged as a result of public policy by governments and EU and international institutions, with the objective of using market mechanisms to achieve climate policy goals. Supply and demand in the EU carbon market is thus heavily influenced by public policy, which sets the structural features and key parameters within which the market must operate. The overall supply of emission allowances is capped by the EU ETS, and policies regarding the allocation of allowances by Member States influence, to some extent, how allowances are distributed (in addition to the auction mechanism).

Changes in policy, for example with regard to the setting of caps or the allocation of allowances, can alter the short- and long-term supply and demand of emission allowances, which can create fluctuations in carbon prices. This effect may be reinforced by market uncertainty about future policy developments, i.e. uncertainty about whether a particular policy proposal will be adopted or not. For instance, the first phase of the EU ETS shows high levels of EUA price variation which can be interpreted as a phase of high uncertainty. In comparison, the second phase shows a lower level of variation in EUA prices, which suggests a lower level of uncertainty as the market matured.[182]

Structural changes to the EU ETS have also had an influence on the carbon price. For example, the introduction of the ability to bank allowances from one phase to the next has helped to stabilise the transition period between phases and avoid the collapse in price seen towards the end of Phase 1 in Figure 19.1 below. The length of the trading period can have an impact on the sensitivity of the carbon price to unexpected events like cold winter which create additional demands for energy and thus emission allowances.[183] (This is simply because factors such as these that could influence the price of emission allowances are averaged out over a longer period.) Bankability of emission allowances should minimise this effect.

Public policy can indirectly impact the demand for allowances, such as a country's investment in renewable energy sources which reduce the demand for coal-fired production.

[182] Lutz, Pigorsch & Rotfub (2013), "Nonlinearity in Cap-and-Trade Systems: The EUA Price and its Fundamentals", Centre for European Economic Research.

[183] Carraro and Favero (2009), "The Economic and Financial Determinants of Carbon Prices", Journal of Economics and Finance, 59, 2009, no5.

[184] Nordby (2011), "Price relationships between EUAs and energy and commodity prices", Norwegian University of Life Science.

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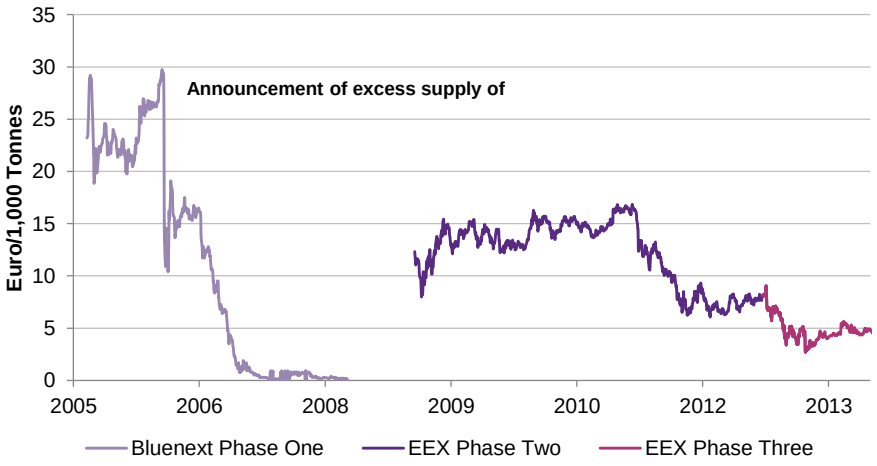
Figure 19.1: Evolution of EUA prices, 2005 – 2013 (daily spot price movement)



Source: Europe Economics analysis of Bloomberg statistics, market included: EEX, Bluenext.

External factors

Economic performance (current and forecast GDP growth), movements in the Purchase Managers' Index (PMI) and industrial production (again current and forecast) can be expected to directly affect carbon consumption and hence the demand for emission allowances.[184] Monitoring how these variables develop (i.e. changed forecasts, or the variance of outturns against expectations) matter to price formation. Similarly market participants may consider stock market performance variables which also have predictive power: for instance, the European equity index was found to be positively correlated to EUA prices in both phases one and two.[185] Information on economic factors is publically available and would not be considered inside information, although the way in which companies respond to economic factors may not be publically known (e.g. if they change their fuel mix or production techniques).

Another influential driver of the price of emission allowances is the price of energy, such as of natural gas and coal.[186] Different energy inputs have different rates of carbon emission and it is the relative price ratio between two commodities that plays a role in carbon price formation. For instance, a falling price of gas relative to coal reduces the switching costs between the two fuels, and given gas is the lower emitting fuel, the price of carbon would be expected to fall with the reduction in demand for emission allowances.[187] Policy developments in Member States in relation

[184] Nordby (2011), "Price relationships between EUAs and energy and commodity prices", Norwegian University of Life Science.

[185] Lutz, Pigorsch & Rotfub (2013), "Nonlinearity in Cap-and-Trade Systems: The EUA Price and its Fundamentals", Centre for European Economic Research.

[186] Alberola, Chevallier & Cheze (2007), European Carbon Prices Fundamentals in 2005 – 2007: The effects of energy markets, Temperatures and Sectorial Production.

[187] Carraro and Favero (2009), "The Economic and Financial Determinants of Carbon Prices", Journal of Economics and Finance, 59, 2009, no5.

to fuel sources are also likely to have an impact on the demand for certain types of fuel and hence emissions. For example, the potential development of shale gas in the UK may change the current fuel mix among emitters and lead to lower emissions and thus lower demand for allowances.

Other external factors affecting the demand for energy, or other carbon-emitting processes, will indirectly affect the price of allowances. These could include, among other things, unexpected changes in weather (e.g. a prolonged cold winter) that increase the demand for energy.

In line with the findings referred to earlier, co-movement between allowance prices and wholesale electricity prices were found across exchange venues in different regions, with the strongest correlation found on EEX. Since the emission of CO_2 is highly linked to the price of oil (through oil's high correlation to the price of natural gas, which in turn determines the competitiveness between gas and coal), the movement in the oil price will also play an important role in the determination of the emissions price. Such a correlation is shown to be positive and statistically significant in a study by Nordby (2011).[188]

Overall, empirical evidence shows that commodity prices are likely to play a significant role in the formulation of future EUA prices, as the change in energy prices affects in particular the ability of power generators to switch between their fuel inputs and hence change their carbon emissions. In the EU ETS, the power and heat sector has a crucial role in influencing supply and demand. As utilities are the main players in this market, their need for carbon allowances and their buying strategies significantly influence the evolution of carbon prices.[189]

However, evidence does suggest an unstable relationship at times: the influence of energy price drivers is found to be unstable within phase one of the EU ETS. Alberola (2007) showed that the impact of various energy prices varied significantly before and after the first compliance year of phase one.[190] This price relationship instability may have been driven by other factors as well, such as uncertainty surrounding the beginning of the EU ETS.

Changes at installations not part of the EU ETS may also impact the carbon price. For example, a major outage of a nuclear power station (such as the German government's decision to close all nuclear power stations by 2022 following the Fukushima disaster) would have an impact, as the shortfall in nuclear energy output would need to be taken up primarily by fossil-fuelled power plants. The likely substitution with fossil fuels would increase carbon emissions and impose upward pressures on the price of emission allowances. For instance, the future value of EUAs (cf. the current price) was expected to increase by more than 10 per cent due to the German nuclear phase out.[191]

Outages of even large offshore wind farms are less likely to have an impact because they tend to affect only a small proportion of the capacity, at least at present. Again, the controlled release of

[188] Nordby (2011), "Price relationships between EUAs and energy and commodity prices", Norwegian University of Life Science.

[189] World Bank analyst Carine Hemery, Energy Market Analyst, Orbeo.

[190] Alberola, Chevallier & Cheze (2007), European Carbon Prices Fundamentals in 2005 – 2007: The effects of energy markets, Temperatures and Sectorial Production.

[191] Roques & Ferrario (2011), "Implications of the Fukushima accident on the European Power sector", CERA, ifri.org/downloads/comptes_rendu/fichiers/96/ihsceraifri7julyweb.pdf.

such information into the market is primarily a concern of the authorities — the concern in terms of non-public information would be the behavioural reaction by installation owners to such news.

Internal factors

Carbon emitters may experience changes in their expected CO_2 emissions and thus demand for allowances due to internal factors (i.e. those beyond changes in production caused by wider economic factors). These could include plant breakdowns or decisions to shift to different fuels.

The stakeholder engagement indeed indicated that significant corporate decisions affecting the status of availability and usage of industrial facilities could have a material market impact — and as such should be above any threshold if sufficiently large-scale. The type of such decisions could include:

- Outages, planned mothballing or closures.
- Investment decisions regarding the building of new plants.
- Changes in energy efficiency of large plants.
- Fuel-switching at individual plants.

Summary

Price changes can be driven by increased information in the market about the demand and supply of allowances, as found in the announcement of new information and events, e.g. the annual release of emissions data. According to the Prada Report, a lack of transparency relating to the supply of allowances would be detrimental to the attainment of market equilibrium by participants and could hamper the decision-making of investors in response to changes in market information.[192] The Prada report recommended informational improvements for carbon markets in Europe to achieve better market confidence and a more robust market price for CO_2.

The most significant impact of new information was seen in April 2006 during which the price of allowance fell rapidly right after the first publication of emissions data which suggested an excess supply of allowances (seen in Figure 19.1).[193] The effects of the excess supply were exacerbated by the inability of market participants to carry credits over to the next period. The introduction of banking of allowances has resulted in investors being less sensitive to announcements on the status of the market as they are no longer limited to a single phase period in which to buy, sell or yield allowances.

The table below summarises the factors influencing the price of emission allowances. These are separated into supply-side and demand-side factors. Supply-side factors are — in part — politically driven.[194] Factors on the demand-side are broadly shaped by market activities, such as fuel prices and production levels.

[192] Prada (2010), "The regulation of CO_2 markets", Emeritus General Inspector of Finance, France.
[193] Nordby (2011), "Price relationships between EUAs and energy and commodity prices", Norwegian University of Life Science.
[194] Betz, "What is driving price volatility in the EU ETS?" University of New South Wales, Australia.

Table 19.1: Summary of factors affecting the price of emissions

Supply Side	Demand Side
Total available EUAs	Fuel prices (particularly oil and gas) and the costs of abatement options
Supply of CDM credits (CERs)	Weather
Structural features of the EU ETS	Current and forecast GDP growth, including industrial production
	External events (such as earthquakes)
	Internal events (such as breakdown of power plant)

19.3.3 Role of non-public information in the carbon market

Information availability is an important criterion for the efficient operation of a financial market. It is necessary that companies release relevant (non-public) information as soon as it is available, and all those who wish to trade should have access to the same information at the same time. Non-public information in the carbon market is analogous to that in equity markets. Insider knowledge on a firm's net position in carbon allowances and its future carbon consumption would be known to only a selected group of employees, leading to an asymmetry of information in the market.

Under the EU ETS legislation, emissions data of the installations covered are only published only once a year and market participants therefore need to rely on emissions data from previous years and economic data to forecast demand for the current year. Sophisticated analytical tools on market price have been developed by leading investment banks and market analysts but these would only be accessible to their clients. Forecasts prepared by the banks have also indicated continuing market uncertainty and increased risk of price volatility.

In terms of non-public information in the carbon market the obligation to disclose inside information will be effectively placed on companies with large installations within the EU ETS, as it is they that possess the relevant information rather than the issuer. The information to be disclosed will normally concern the physical activity of the disclosing party (e.g. on capacity and utilisation).[195]

As discussed above, there are idiosyncratic factors, specific to individual firms or installations, that affect the carbon price and which are not necessarily publicly known. These factors are linked to productivity, production levels and production methods. The production process may experience an unexpected increase in emissions due to some problem in the facilities. This may not affect the overall production level or profit of a firm, but it may cause an increase in demand for allowances. Therefore unexpected production problems are another form of non-public information that may affect the allowance price.

Many emission allowance market participants will carry on other commodities business so the information relating to those other activities, if they affect emissions, could also constitute inside information for the purposes of the ETS. Examples of relevant non-public knowledge could include:

[195] The latest Council text on MAR specifies that the information to be disclosed should not concern the disclosing party's own plans or strategies for trading emission allowances.

- fuel-switching options available to a company with large installations which alter the company's demand for emission allowances;
- changes in production methods that impact emissions; and
- closures or capacity reductions/extensions of installations.

Financial firms may also have large positions in the carbon market which, if changed, could affect the price. However, as these are not carbon-using companies any information they have about carbon demand would not be considered for disclosure, and neither would information concerning any carbon market participants' own plans (including with respect to ETS installations) and strategies for trading.

19.4 Current situation with regards to the disclosure of non-public information

In order to provide context to our analysis of the impact of different thresholds for information disclosure under MAR, we consider the current situation as regards the company-specific information which emission allowance market participants hold in respect of their businesses, and provide an overview of how this information is currently used (to the extent that it is available).

Our research on this topic includes a review of a wide range of analyst reports (specifically Point Carbon, Tschach Solutions, Barclays Carbon Reports, World Bank and Bloomberg) in order to assess the extent to which individual ETS operators have been judged to influence the market. Besides reference to general sectors of emitters (e.g. the heat and power sector is held to be the most influential in the carbon market), these analyst reports make no mention of the impact of actions taken by individual emitters. It is worth highlighting that this could be influenced by the restricted availability of such information at present.

Information held by market participants

Much of the information investors currently use in their decisions regarding the buying and selling of emission allowances relates to macro-economic variables, such as changes in economic circumstances (e.g. GDP and industrial production), and policy information about the supply of allowances or the structure of the EU ETS. These types of information are usually publicly available and, importantly, not uniquely held by individual firms.

This view is supported by those market participants who contributed to our survey exercise (a total of thirteen responses were received).[196] There was consensus among those firms participating in our fieldwork that the long-run prices in the EU ETS are largely determined by macroeconomic variables, and that in the shorter-term, the direction of prices is driven primarily by policy developments. At present non-public information is ranked lower in terms of relative importance than macroeconomic data by those emissions allowance market participants taking part in our fieldwork. However, some participants (particularly market analysts) thought that as and when political changes and structural reforms to the EU ETS slow down, other variables may increase in

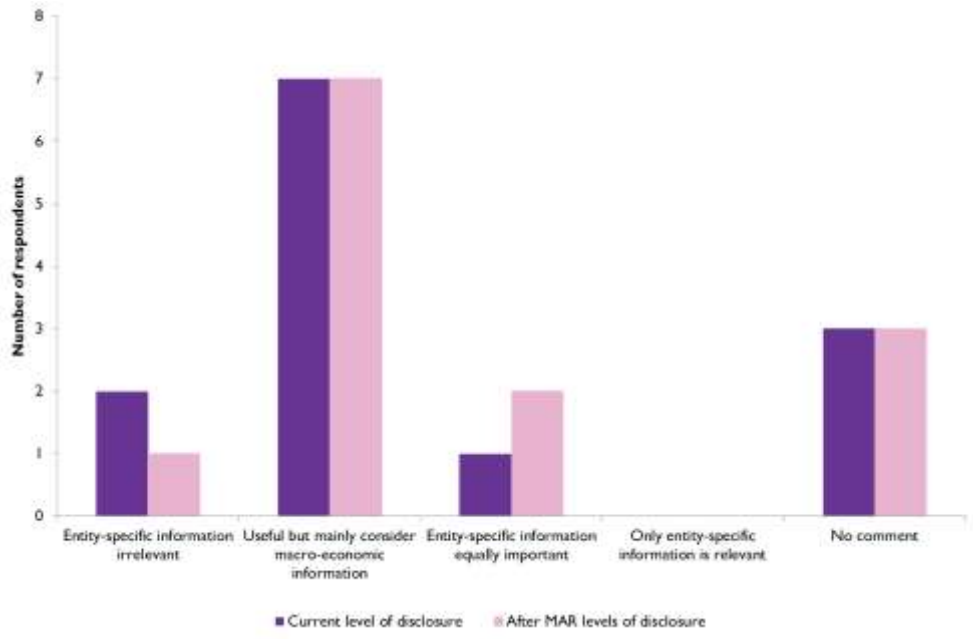
[196] At least two responses represented the views of a number of emissions traders and energy market participants.

their impact on the short-term carbon price — and this would include micro-economic variables such as production outages.

This is relevant to the setting of the threshold. MAR acknowledges that emission allowance market participants can hold information that may be considered as inside information. Most respondents to our fieldwork agreed with this (see Appendix for further details on the fieldwork conducted). However if such information plays only a secondary role in price formation it can be argued that the threshold set should pay heed to this.

When asked about the relevance of this information in a scenario where EU ETS operators *were* obliged to disclose all relevant non-public information (i.e. under the MAR regulations), the majority said that the importance of this information to their investment decisions would not increase (Section 15 has further details on the survey).

Figure 19.2: The importance of entity-specific information under current and proposed levels of information disclosure



However, as noted, this does not mean that the information that companies hold does not have a role in price formation, simply that it is secondary to other factors. There will be non-public and entity-specific information held by individual market participants which are entities with EU ETS compliance duties, which, once disclosed, could have an impact on investors' decisions. Typically, this information could be linked to productivity, production levels and production methods which affect the demand for allowances and investors would be likely to use such information in their investment decisions because of the relative weight that such ETS operators have in contributing to the compliance-based global demand for emission allowances.

Existing disclosure requirements

Power generators are already required to disclose information on outages and power reductions as part of the REMIT regulations.[197] The Third Edition of ACER's (non-binding) guidance on the application of REMIT was published in October 2013. This document discusses the setting of an indicative threshold for the purpose of defining inside information, and concludes that inside information should be primarily understood to include — inter alia — disclosure requirements under Commission Regulation (EU) 543/2013. The latter requires that information relating to planned unavailability of 100 MW or more of, inter alia, a consumption or generation unit — i.e. broadly equivalent to the matters of interest — shall be made available to the public through the ENTSO-E transparency platform.[198]

Power market information is published on certain centralised systems. Examples include EEX's transparency platform (which publishes information from German, Austrian and Czech power generators), and the Balancing Mechanism Reporting System (which provides real-time data on how power flows on and off the UK Electricity Transmission System are balanced). Firms in the power and heat sector as defined by Carbon Market Data (CMD) accounted for 61 per cent of all verified emissions in 2011; the top six power and heat companies accounted for 25 per cent.[199] The iron and steel, cement and lime and the oil and gas sectors were the most significant in the remaining 39 per cent. The figure below shows companies in the CMD sample and their verified emissions as a percentage of total emissions in 2011. Considering those 16 companies whose emissions were more than one per cent of total emissions, only four were not energy companies.

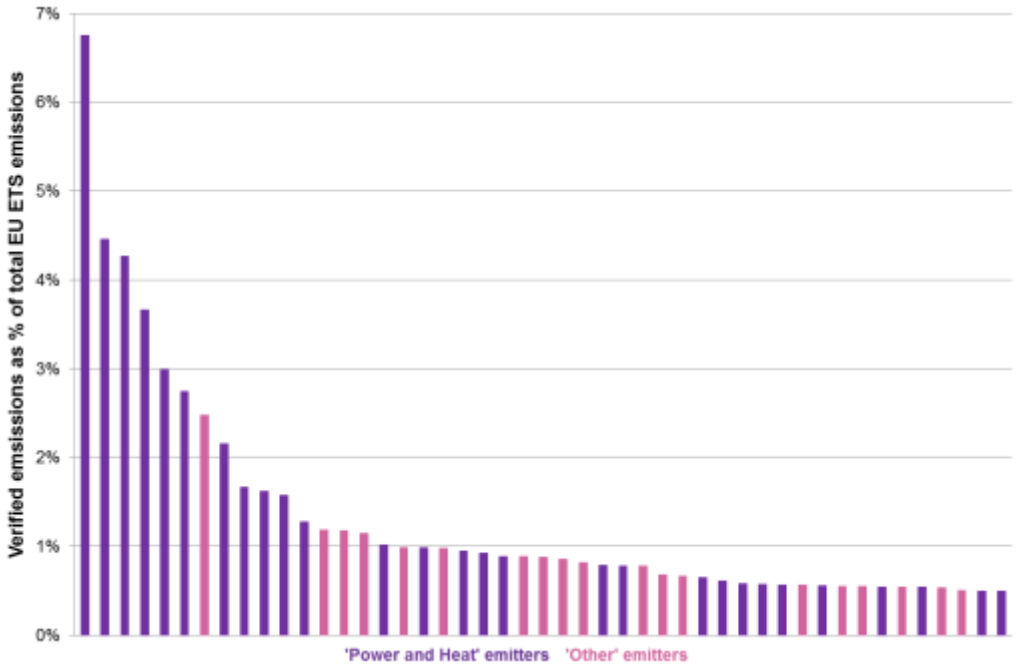
Therefore a very large proportion of the most important carbon market participants, being energy and power firms, are already under an obligation to disclose information relevant to emissions, in that changes in energy generation are directly linkable to the production of CO_{2eq}.

[197] Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on Wholesale Energy Market Integrity and Transparency. Article 4(1) states that: "Market participants shall publicly disclose in an effective and timely manner inside information which they possess in respect of business or facilities which the market participant concerned, or its parent undertaking or related undertaking, owns or controls or for whose operational matters that market participant or undertaking is responsible, either in whole or in part. Such disclosure shall include information relevant to the capacity and use of facilities for production, storage, consumption or transmission of electricity or natural gas or related to the capacity and use of LNG facilities, including planned or unplanned unavailability of these facilities."

[198] ACER 'Guidance on the application of the definitions set out in Article 2 of Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency'. We note that the 1st Edition (20 December 2011) was more explicit: "The classes of information to be published on a regular basis (annual, monthly, week-ahead forecasts, daily day-ahead and intra-day information) include data related to available transmission capacity, capacity used, aggregated realised commercial and physical flows and information on planned outages and unplanned outages of generation units larger than 100 MW."

[199] CMD's EU ETS Companies Database currently provides detailed on emissions for more than 900 companies in the EU ETS.

Figure 19.3: EU ETS participants with emissions greater than 0.5% of total emissions, 2011



Source: Carbon Market Data and Europe Economics analysis.

Effect of non-public information on price formation

The available literature, for example the Prada report, suggests that there is a limited amount of information that is endogenous to the activity of operators in the carbon market and liable to cause a major asymmetry of information. This is due to the fragmentation of CO_2 emitters and the fact the market functions on an annual rhythm. The CMD data show that the total emissions of the largest emitting company accounted for under seven per cent of annual emissions in 2011, as seen in Figure 19.3 above. Investors appear to rely mainly on publically available information related to public policy and macroeconomic factors when making decisions about buying and selling allowances. As mentioned, however, most market participants who contributed to our stakeholder engagement thought that entity-specific information nevertheless is useful. We note that it is the *change* in expected emissions that would be of most interest to investors.

As noted, the majority of important emitters are already required to disclose firm-specific information as part of REMIT requirements. Not all non-public information held by EU ETS market participants, if disclosed, would be of interest to reasonable investors, a consideration that should influence the development of a materiality threshold for information disclosure under MAR.

19.5 Developing policy options for a threshold for disclosure of information

Articles 7(4) and 17(2) MAR effectively stipulate that the non-public information on own physical operations held by market participants with emissions (or rated thermal input) below a certain threshold does not qualify as inside information and thus does not need to be disclosed to the public.

The aforementioned threshold is in effect a materiality threshold:

> "In the case of participants in the emission allowance market with aggregate emissions or rated thermal input at or below the threshold set, since the information about their physical operations is deemed to be non-material for disclosure it should also be deemed not to have a significant effect on the price of emission allowances, of auctioned products based thereon or of the derivative financial instruments related thereto." (MAR Recital 51)

This materiality threshold is to be used to simplify the application of MAR's inside information definition and the disclosure duty in a specific context where non-public information comes not from a single issuer but from a large number of entities on the compliance demand side. In this context MAR further notes that:

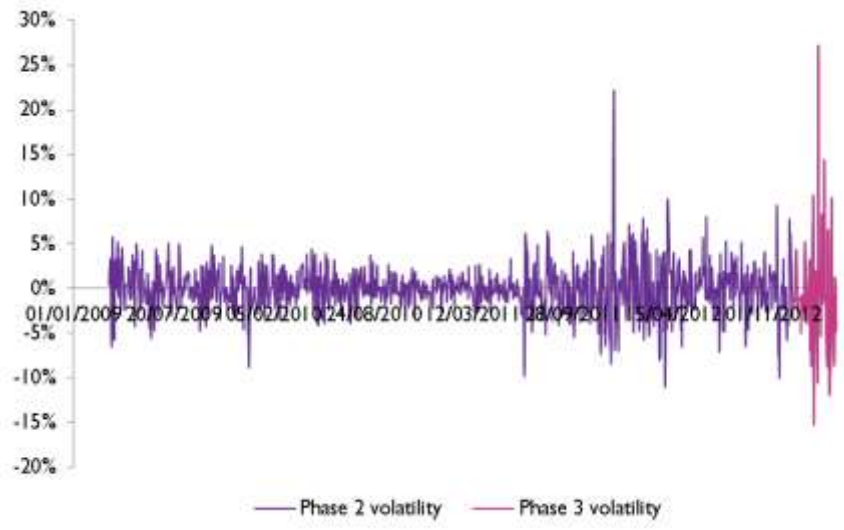
> "In order to avoid exposing the market to reporting that is not useful and to maintain cost-efficiency of the measure foreseen, it appears necessary to limit the regulatory impact of that requirement to only those EU ETS operators, which, by virtue of their size and activity, can reasonably be expected to be able to have a significant effect on the price of emission allowances, of auctioned products based thereon, or of derivative financial instruments relating thereto and for bidding in the auctions pursuant to Regulation (EU) No 1031/2010." (MAR Recital 51)

This context therefore warrants the consideration of a number of approaches to establish the appropriate level of the threshold referred to in Articles 7(4) and 17(2) MAR.

19.5.1 Price formation in the EU ETS

In practical terms, it would be hard to exploit low-value inside information, i.e. which had a resultant price effect within intra-day volatility or less than the bid-ask spread. Information is of interest to investors if it has an effect on the price formation of a market, and in this case the price effects of the information would be 'swallowed' by the everyday movements in the carbon price. It is not unusual for the carbon price to vary between five and ten per cent day-to-day, as illustrated by the figure below. Relative bid-ask spreads are currently between three and four per cent.

Figure 19.4: Percentage change in inter-day daily futures price



Source: Europe Economics analysis of Bloomberg statistics, market included: ICE.

19.5.2 Approaches to setting the threshold

We have explored the following approaches:

- Event analysis. Under this approach, we identify a number of "events" (such as the announcements of plant closures or the mothballing of a facility by EU ETS participants) which could have had an effect on aggregate emissions. We then reviewed price and price volatility at the time of the event to assess whether any change in these variables was detectable. The aim is to differentiate between volume changes which do not appear to be associated with a price effect from those that do.
- Applying a similar proportion of firms captured under ACER guidance for REMIT disclosures. Under this approach, the disclosure threshold would be set such that a similar proportion of companies in the EU ETS are captured as that captured by the ACER guidelines for the REMIT information disclosure requirements (i.e. the proportion of power firms with power generation units exceeding 100MW) which is around 30 per cent of firms.
- Directly linking the EU ETS threshold to the recommended REMIT threshold of 100 MW generation capacity.
- Analytical referencing, by identifying, from past papers by carbon market analysts concerning the drivers of carbon market prices, companies or installations judged important enough to have an impact on the carbon price.

We discuss each of these approaches in turn.

19.5.3 Event analysis

We make use of event analysis to estimate the change in CO_2 emissions that would result in a detectable change in the price level or price volatility of emissions. A suitable event would be a shock that measurably affects the EUA market. The aim is to differentiate between volume changes which do not appear to have a price effect from those that do. To illustrate this approach we examine one particular case in detail before turning to the statistical analysis of a set of relevant events.

Shutdown in German nuclear stations

The German policy reaction to the 2011 Japanese earthquake represents a very significant event. A shock such as the German announcement to close nuclear power plants is ideal as it enables us to isolate the effects of the volume and price change to the single event.[200]

On Friday 11th March 2011 a huge earthquake off the coast of Japan and the ensuing tsunami caused severe damage to many of the country's nuclear facilities. In response Germany announced the shutdown of seven of its nuclear power stations (which took effect between 15th and 18th March) with the remainder to be retired by 2022.

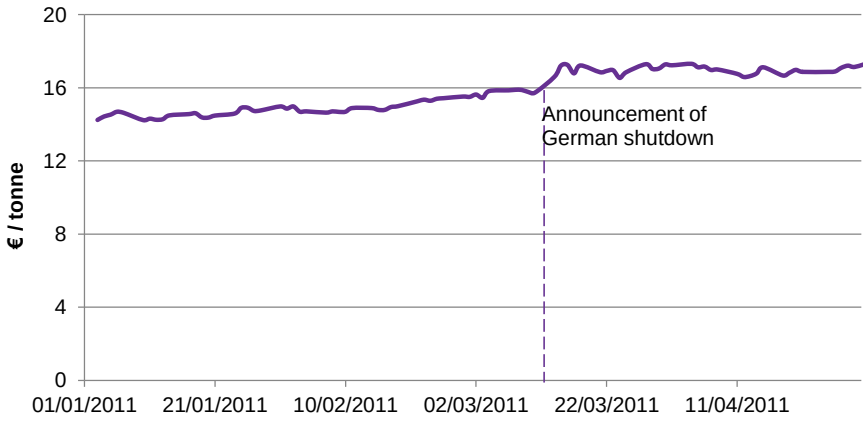
The plants that were shut down immediately had an aggregate capacity of about nine Giga watts (GW), with about six GW typically utilised (i.e. a total capacity of around nine GW and an average utilisation rate of around 70 per cent across the different plants).[201] In the short-run, it is likely that nearly all of the energy shortfall would have been sourced from fossil fuel (coal and lignite) power stations in Germany and from a mix (likely including nuclear) imported from across the border. Longer-term another 11GW of utilised capacity should be retired, with the intention that much of this should be from renewables.

The graphs below illustrate the impact on price of the announcement of shutdown of German nuclear power stations. We can see that the immediate effect is an increase in price of EUAs, which reflects the market reaction to the expected rise in future emissions. The impact on price level persisted until early May 2011, albeit weakened by other price drivers over that time.

[200] Looking at other changes which may affect emission volumes, such as legislative change, is less ideal because there will be expectations in the market before the passing of the legislation that may affect volumes and price, thus blurring the relationship between the legislative change (measured from the passing of a directive or the official announcement of the change) and the price and volume change (i.e. the price may start changing before the announcement is actually made, making it hard to estimate the true impacts of the legislation).

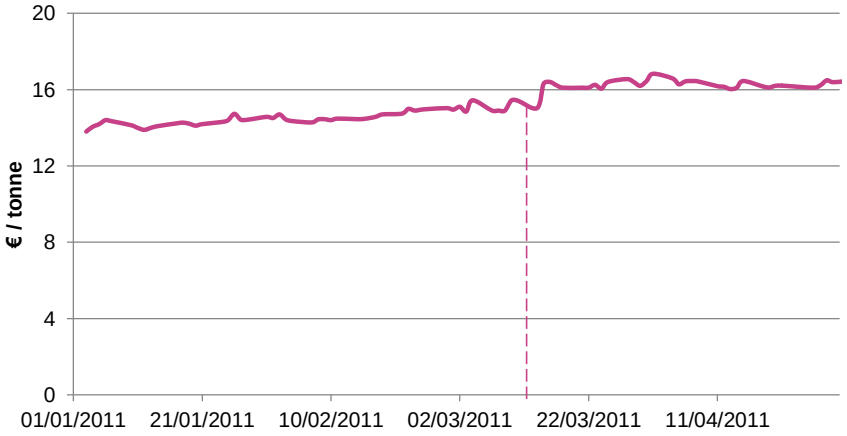
[201] Fabien Roques and Federico Ferrario, IHS CERA, "Implications of the Fukushima accident on the European Power sector", June 2011.

Figure 19.5: Daily settlement price of EUA futures - Dec 2011



Source: Europe Economics analysis of ICE data, market included: ICE.

Figure 19.6: Daily end-of-day price of EUA spot



Source: Europe Economics analysis of Bloomberg data, market included: EEX.

Roques and Ferrario (IHS CERA, 2011) estimated that substitution in Germany of nuclear energy with fossil fuels could add two to five per cent to the 2010 level of EU power sector emissions. The authors associated this with a 10 per cent increase in the expected value of CO_2 allowances, calculated through to 2020. This is consistent with the order of magnitude of the observed immediate effect of the announcement on the carbon price.

The EU power sector accounted for about 60 per cent of verified emissions in 2010 (the benchmark year referenced by the authors).[202] This means that 2–5 per cent of power industry emissions are

[202] Analysis of CMD

equivalent to about 1.2–3 per cent of emissions across all sectors, or 23–58 million tonnes in one year (based on 2010 data).

To test the reasonableness of this estimate, we can use MIT estimates from 2007 that assign a rate of emissions of CO_2 between 0.65 kg/kWh and 1 kg/kWh for conventional coal-fired power stations.[203] (The average carbon footprint of oil-fired electricity generation plants is 0.65 kg/kWh, and thus the use of oil-fired electricity generation in the place of nuclear would have a similar effect on emissions.[204]) This implies that replacing the 8.6 GW (equivalent to 6GW at 70 per cent utilisation) of nuclear capacity in Germany with coal (adopting a direct translation from nuclear to fossil fuel by 18th March) would generate an additional 34–55 million tonnes of CO_2.[205] This is fairly well aligned with the IHS CERA volume estimates.

This indicates that an increase in emissions, and therefore demand for EUAs, or a decrease in supply of at least 23 million tonnes (being the lowest estimate of the volume change identified above) is associated with an evident price effect.[206] This suggests that a threshold for the disclosure of non-public information should be set somewhere below this range. However to examine this further we first need to identify events with lower volume effects.

Other events

As the purpose of the threshold is to set a company size (in terms of emissions) *below which* the companies' activities would have no impact on the carbon price or a reasonable investors' decisions, it is necessary to consider CO_2 volume shocks which have *no* significant impact on the carbon price. We have therefore searched Bloomberg News for the opening, closure, mothballing, downsizing and temporary stoppage in plants/ mills in sectors with significant emissions footprints: power and heat, iron and steel and cement.

This identified many events, of which we were able to estimate the emissions impact for over twenty (the news stories did not identify the emissions impact directly and did not always provide sufficient detail to estimate it).

We looked for impacts on price in the emissions market on the day of the announcement or in its immediate aftermath (i.e. the day of the announcement and up to two days subsequently).

Using data on the variation of the EUA spot price over time, we tested whether the various events described above had a statistically significant impact on EUA prices. We looked at these questions in two main ways. The first statistical test which we considered was a Chow break test which is a well-established way of assessing a change in the evolution of a time series. This compared the

[203] MIT (2007) 'The future of coal – options for a carbon-constrained world'.

[204] Parliamentary Office of Science and Technology (2006) 'Carbon footprint of electricity generation' UK.

[205] Our method of estimating this is as follows: 8.6 GW of nuclear capacity at an average utilisation capacity of around 70 per cent, as detailed in the Roques and Ferrario article, translates to around 52,560 GWh (multiplying 8.6GW x 365 x 24 x 70 per cent). With a range of 0.65kg and 1 kg/kWh of CO_2/kWh emitted by the average coal-fired station, this equates to between 34 and 55 million tonnes of carbon a year.

[206] In passing we note that the Prada report, a discussion of market abuse broadly indicates that the net position required to squeeze the market could be as much as several dozen million tonnes, approximately 60 million tonnes.

price movement at the time of the event with the scale of daily price movements in the previous three months before the event.

The second test (strictly a set of tests) compared price movements on the day of the event (or on the day of the event and one or two days subsequently). Again we looked for deviation from the price movements in the six weeks both before and after the event (but excluding the period around the event itself).

The table below shows the results.

Table 19.2: Statistical significance of the impact of different events on EUA prices

	Estimated volume effect (m tonnes)	Date	Test 1	Test 2
German nuclear shutdown	Between 23 and 58	Mar-11	**Yes**	**Yes**
Closure of three power plants	23.1	Nov-12	No	No
Closure of power plant	13.0	Aug-12	No	No
Closure of steel mill	7.0	May-09	No	No
Shutdown of coal-fired plant	6.9	May-09	No	No
Mothballing of steel mill	6.2	Dec-09	No	No
Closure of steel mill	5.9	May-11	No	No
Re-opening of power plant	5.8	Dec-11	**Yes***	**Yes***
Closure of coal-fired plants	5.0	Aug-09	No	No
Closure of coal-fired plant	4.8	Dec-12	No	No
Closure of power plant	4.0	Mar-09	No	**Yes**
Closure of oil refinery	4.0	Oct-13	**Yes***	No
Closure of power plant	3.4	Mar-12	**Yes***	No
Reduction in plant capacity by one third	2.3	Sep-12	No	No
Reduction in plant capacity by one half	2.0	Sep-11	No	No
Temporary halt at coal-fired power plants	1.9	Nov-12	No	No
Closure of steel mill	1.4	Jul-12	No	No
Plant halt	0.6	Nov-12	No	No
Closure of cement mill for one year	0.2	Apr-09	No	No
Closure of cement mill	0.1	Jan-12	No	No

Yes means the impact of the event is statistically significant at least 5 per cent level.
Yes* means that the impact of the event is statistically significant at 10 per cent level.
No indicates that the impact of the event is not found to be statistically significant in our analysis.

As can be seen the events do not cover all possibilities in terms of emissions volume. Equally there is not a sharp divide between events associated with price effects which are detectable in statistically significant terms, and those which are not — e.g. an event estimated to have a volume effect of 5.8 million tonnes has a detectable effect, but several larger ones do not. It follows that one interpretation — based on the stricter interpretation of statistical significance (i.e. at least a five

per cent confidence level) — would be that the transition to information disclosure having a statistically significant price effect could be as high 23 million tonnes (or more). This is about 1.2 per cent of the total volume of the emissions market.

The smallest volume impact to register as being associated with a statistically significant price effect in the above analysis is 3.4 million tonnes. We have adopted 3 million tonnes as a policy option. Alternatively the smallest volume impact to register as being associated with a statistically significant price effect on *both* measures is 5.8 million tonnes. We have adopted 6 million tonnes as a further policy option on this basis.

19.5.4 Weighting of emitters using REMIT threshold

Under REMIT, firms are prohibited from trading on "inside information" which is defined as information that is likely to have a significant price effect on the market if made publicly available. It covers information which a reasonable market participant would be likely to use as part of the basis of his investment decisions to enter a transaction and hence impact on the market price.[207]

Under this approach, the disclosure threshold would be set such that a similar proportion of companies in the EU ETS are captured as those captured by the ACER guidelines for the REMIT information disclosure requirements. The ACER guidelines recommend that information relating to generation units equal to or exceeding 100 MW should be publicly disclosed.

Estimating a CO_2 threshold based on this threshold of generation capacity is not straightforward as this depends on the fuel that is used to generate the power and the capacity utilisation (i.e. number of operating hours). A coal-fired power station is a reasonable benchmark against which to estimate emissions, although carbon dioxide emissions for conventional coal-fired power plants will also vary significantly because those emissions are a function of the coal's carbon content and the plant's thermal efficiency.

Using the average emission metrics reported in the MIT study of between 0.65kg and 1kg CO_2/kWh, and assuming an average load factor of 80 per cent for coal-fired stations, a 100 MW coal station would produce between 0.45 and 0.7 million tonnes of CO_2 a year. As a cross-check, the MIT study found that, on average, a 500 MW coal-fired power plant produces three million tonnes of carbon dioxide per year. An equally efficient 100 MW power station would produce 0.6 million tonnes, which is within the range estimated above.[208] For the purpose of our analysis we assume that a 100 MW coal-fired power station would have emissions of 0.5 million tonnes a year.

There are two available datasets on emissions that are relevant to this analysis. The first is the CMD company-based dataset, which records aggregate emissions per company and classifies companies according to their sector (e.g. 'power and heat'; 'iron and steel'). The second is the CMD installations-based dataset, which records emissions per installation and classifies installations by the nature of their activities (e.g. 'combustion of fuel').

[207] SGH monthly Bulletin, "REMIT: A new market abuse regime for energy companies", http://www.sghmartineau.com/publication_event/updates/remit-a-new-market-abuse-regime-for-energy-companies-February-2012.pdf.

[208] MIT (2007) 'The future of coal – options for a carbon-constrained world'.

We first estimate the proportion of energy-market companies captured under the ACER recommended threshold for disclosure under REMIT, and then apply this proportion to all EU ETS emitters:

- We use information on emissions by installation in the EU ETS to determine the number of installations that are engaged in energy-producing activity, and the proportion of this likely to be captured under the REMIT threshold (i.e. all those with a capacity of 100 MW or above). As noted above we approximate for this by using 0.5 million tonnes of verified emissions a year.209 We then relate these installations to unique companies. We estimate that the recommended REMIT 'threshold' captures between 30-50 per cent of energy companies in the EU ETS.
- As energy companies have higher emissions than the average company in the EU ETS and therefore a larger proportion are likely to be important for price formation (see Figure 19.7 below, 'Utilities'), we consider it appropriate for the emissions-related threshold to capture the lower-bound proportion of all companies in the EU ETS, namely 30 per cent. Using the CMD-derived company data this would equate to around 280 companies.

This analysis indicates that the equivalent threshold would be around 0.96 million tonnes of emissions a year.

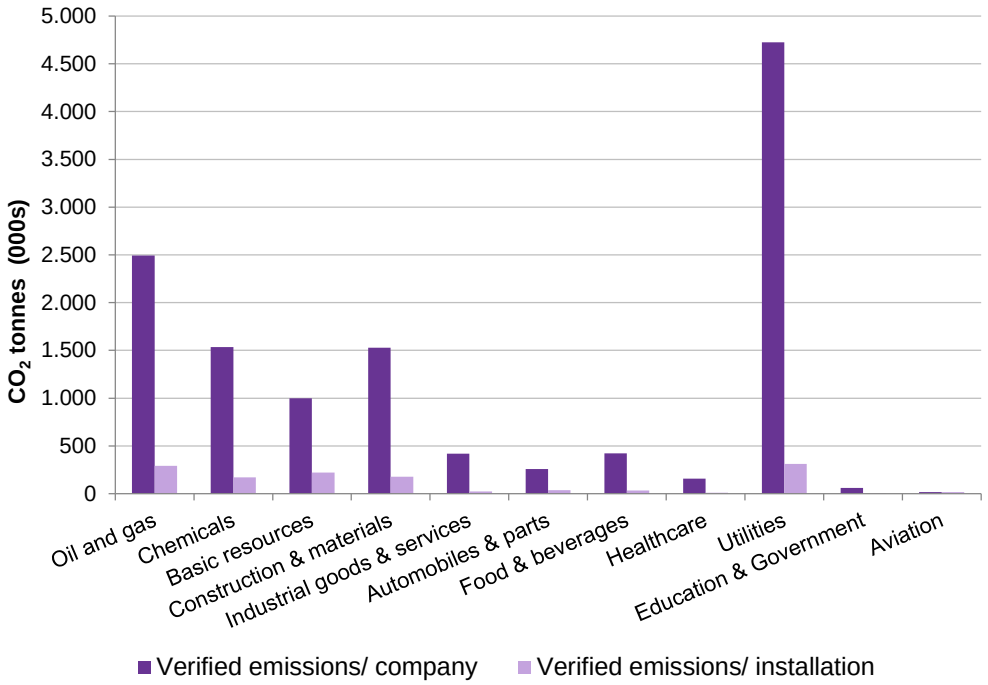
19.5.5 Direct REMIT benchmarking

This approach aligns directly the carbon threshold with the recommended threshold used in the REMIT disclosures. As described above, we estimated that a capacity of 100 MW per installation is equivalent to approximately 0.5 million tonnes of carbon a year. Under this approach we therefore set the threshold for aggregate emissions at 0.5 million tonnes per company. This creates a potential discrepancy between the scope of the REMIT threshold (which applies to installations) and the scope of the emissions threshold (which applies to companies). This is because there may be companies with aggregate emissions over 0.5 million tonnes a year but with many installations such that each one has emissions well below the level considered relevant under REMIT. Thus, direct application of the REMIT threshold leads to a significantly more rigorous outcome for emission allowance market participants in comparison to REMIT-covered entities.

The figure below illustrates this. In the utilities sector (i.e. energy-generating companies) the average emissions per installation are relatively small compared to the average emissions per company, as each company has a large number of installations and therefore large aggregate emissions.

[209] This is an approximation as the installation-level dataset classifies companies by the nature of their activities rather than their sector, and therefore it is not possible to accurately identify 'energy' installations, which are those affected by REMIT. We assume that all installations listed as 'combustion' or 'combustion of fuels' in the installation-based dataset are analogous to companies in the 'power and heat' sector in the company-based dataset and therefore are within the scope of REMIT.

Figure 19.7: Verified emissions by company and installation, 2011



Source: Carbon Market Data (2011) and Europe Economics analysis.

Setting the threshold at 0.5 million tonnes of carbon a year would capture around 380 companies, accounting for approximately 97 per cent of all emissions in 2011. This is around 40 per cent of all EU ETS participants (roughly in the middle of the 30–50 per cent of energy sector players we estimated above).

Despite this discrepancy, an argument for setting the threshold at the most restrictive level would be to avoid a discrepancy whereby a company with high aggregate emissions but low average emissions per installation was not subject to the disclosure requirements.

19.5.6 Analytical referencing

For this approach we reviewed a range of carbon market analyst reports, such as Point Carbon, Tschach Solutions, Barclays Carbon Reports, World Bank and Bloomberg. The aim was to assess the extent to which individual ETS operators have been judged to influence the market, and then set a threshold that captured these operators and others of similar sizes. However, besides reference to general sectors of emitters (e.g. the heat and power sector is held to be the most influential in the carbon market), no mention is made of the impact of actions taken by individual emitters.

We therefore conclude that there is not sufficient information available to make this a viable approach to setting a threshold.

19.5.7 Options for the threshold

We have used different approaches to determine a range of thresholds. Our analysis indicates that the threshold could be set at the following levels of emissions:

- At 20+ million tonnes of CO2 a year (based on event analysis, see discussion at 19.5.3).
- At either 3 or 6 million tonnes (again, based on the event analysis at 19.5.3).210
- 1 million tonnes CO2 a year using a weighting of operators implied by REMIT.
- 0.5 million tonnes CO2 a year using direct REMIT benchmarking.

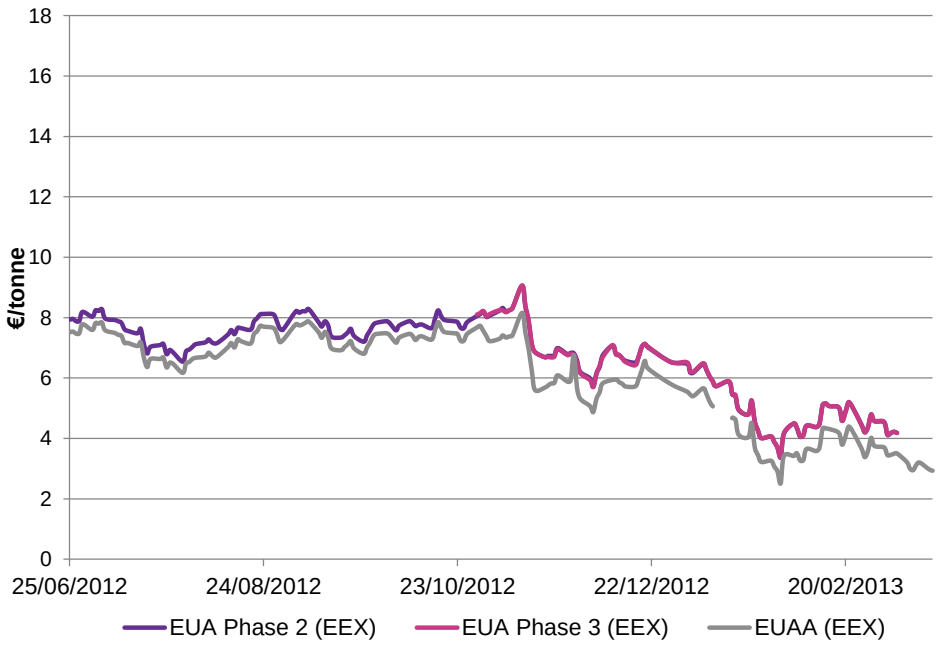
At the lower end, thresholds of 0.5 and 1 million tonnes of carbon would require information disclosure on the part of nearly all EU ETS market participants. The direct link to REMIT may not be suitable for a threshold applicable to the carbon market. Our fieldwork highlighted a valuable comparison between the sensitivity of carbon prices to outages, compared with energy prices. As allowances are a storable asset, their price should be less sensitive to production changes. Energy, on the other hand, is not a storable asset and thus a production outage immediately affects the supply of energy and thus the price. Smaller volume changes in power are therefore likely to have a far more significant impact on energy prices than equivalent changes in CO2 emissions will have on the carbon price.

Threshold for EUAAs

Data on verified emissions for aviation participants is relatively scarce given the recent inclusion of EUAAs in the Single Registry. The CMD dataset contains just two aviation participants with combined emissions of around 31,000 tonnes in 2011. Given the smaller market for EUAAs than EUAs there could be an argument for setting a different disclosure threshold for EU ETS participants with aviation activities. Although the relation between these two types of allowances may alter once there are regular auctions of EUAAs, as Figure 19.8 below shows, the price movements of EUAs and EUAAs are closely aligned, albeit at slightly different levels. The aviation participants can use the general EUAs. It is therefore likely that price formation in both markets is closely related. We therefore do not consider there to be a good reason for having a separate disclosure threshold for each market. On the basis of the CMD data this implies that no airline would be above the indicative threshold described above.

[210] The event analysis is of course based on *current* levels of price volatility in the EUA market. Prices *may* become more stable over the years as the EU ETS matures.

Figure 19.8: Price of EUAs and EUAAs



Source: Carbon Market Data (2011) and Europe Economics analysis.

Rated thermal input

We have set the threshold for rated thermal input based on the threshold for emissions as it is important for the two to be equivalent, so as not to result in uncertainty among market participants as to whether they are required to disclose non-public information.

Using the same metrics as in the 'weighting of emitters using REMIT' approach in 19.5.4, we estimate that the equivalent rated thermal input for the possible thresholds is as follows:

- 20+ million tonnes of CO2 a year is equivalent to around 3,500 MW rated thermal input.
- 6 million tonnes is equivalent to 1,050 MW rated thermal input.
- 3 million tonnes is equivalent to 530 MW rated thermal input.
- 1 million tonnes CO2 a year is equivalent to 175 MW rated thermal input.
- 0.5 million tonnes CO2 a year is equivalent to 88 MW rated thermal input.211

19.6 Non-exhaustive list of disclosures

As indicated above, the non-exempt emission allowances market participants would need to disclose those business decisions that affect their expected demand for emissions allowances in a

[211] We note that the exact wording is different to the ACER guidance of 100MW as that refers to 100MW *capacity* which is de facto similar as *rated thermal input* (rated thermal input means the maximum, not yet taking into account the actual utilisation and efficiency).

way that could give rise to a significant price effect or otherwise be of interest to a reasonable investor. This simply means that a non-exempt market participant would not be required to make a disclosure with respect to all business decisions made — it would still need to assess the materiality of the decision in the context of the emissions market and to a reasonable investor. Clearly there is a need for judgment by a firm's management here — information of interest to an investor or that could induce a significant price change will vary over time. However since failure to disclose a relevant event would open up a firm to possible sanction, non-exempt firms may well err on the side of caution.

Greater control over the timing and flow of information (both internally and externally) would be necessary. A firm would need to maintain an insider's list for who has access to inside information. The relevant changes in the demand for emission allowances could either stem from individual events, or from ongoing changes.

A non-exhaustive list of the types of events and business decision that could cause a company to disclose would include:

- Outages or temporary plant closure due to unforeseen reasons. In the power and heat sector this would overlap with disclosure under REMIT, where the availability and output of power stations reporting under that initiative would already be known. (Whilst at present a calculation of emissions would be required there are, as we note above, approximate metrics for doing this.)

  In other sectors (i.e. industrial emitters) such unplanned plant closures could be already disclosed by a company with equity and/or bonds publicly listed — if the consequences were judged to be price-sensitive information in the context of at least one of these instruments. We do not have data on the overlap between publicly listed firms and EU ETS market participants, although as firm-size increases so does the likelihood of having publicly listed financial instruments. However the materiality of any given temporary halt in the context of a firm's financial instruments need not match that relevant to the emissions market.
- Planned mothballing or extension of plants. It would be the net effect on emissions that would be the crucial factor for a non-exempt firm to consider. For example, if one plant was mothballed whereas an additional shift was implemented at another the net effect on the group's overall demand for emissions allowances could be low. This means that some coordination would be necessary in groups with several emitting installations. This may be a significant undertaking in some groups. Plant mothballing would be a relevant event for both power generating companies and industrial emitters.
- Closure or development of a new plant. Again it is what the net effect on the plant-owning firm's emission of CO2 (probably) will be that would be material to the disclosure decision. For example a group might intend to close a steel mill and open a new — but otherwise identical — one elsewhere (e.g. to match more closely the location of its customers). If this all occurred within the EU (e.g. closing a plant in Germany, opening one in Poland) the impact upon the EU ETS would be minimal (assuming that there is no significant time lag between the two events). On the other hand, if either the opening or closure was outside of the EU there would be an impact on aggregate emissions demand (and hence this could require disclosure to the emissions market).

By contrast, selling the steel mill might not need disclosure (at least in the context of the emissions market): although the allocation of emissions between firms would change, the overall level need not.

- Efficiency or operational changes at plants. This might apply for individual plants or more generally within a company. This could relate to fuel-switching at plants, in that different fuels are associated with different emissions rates, or technology change. For example, a group in the cement industry might introduce new technology reducing CO2 emissions per tonne of cement produced at its various cement mills. If it was considered by the group that the overall impact would be material in terms of price discovery in the EU ETS, or otherwise of interest to a reasonable investor in that market, then it would have a duty to disclose. The timing of the announcement would need to be as close as possible to the decision to implement the technology being considered. Efficiency or operational changes to power generating companies would be relevant in the same way.

Article 17(2) of the MAR states that an emission allowance market participant should publicly, effectively and in a timely manner disclose inside information concerning emissions allowances which it holds in respect of its business, including aviation activities or installations. With regard to installations, such disclosure shall include relevant information about the capacity and utilisation of installations, including planned or unplanned unavailability of such installations. One would expect the non-exempt market participant would also disclose enough information to identify the impact on the volume of emissions and the time period over which this effect is expected, as well as identifiers of the firm's installation and the cause of the change (so that an investor can ascertain whether the information is indeed new or not).

19.7 Impact assessment

This section presents the impact assessment of the options for the minimum threshold. We have followed the European Commission's impact assessment guidelines, as instructed by the client DG Climate Action.

19.7.1 Defining the problem

The first step is to define the problem that requires intervention by the European Commission. As we have described in the above analysis, Article 17(2) of MAR states that an emission allowance market participant should disclose inside information concerning emissions allowances which it holds in respect of its business, including aviation activities or installations. The purpose of this information disclosure requirement is to promote the efficiency of the carbon market by aiding price discovery, and to prevent the possibility of insider trading.

However, in order to avoid exposing the market to reporting that is not useful (e.g. placing an unnecessary burden on market participants of processing information that is not material to price formation), the information disclosure requirements are to be limited to those EU ETS market participants that can reasonably be expected to have a material impact on the carbon market or on the price formation of emission allowances or would be of interest to a reasonable investor. As

discussed in the background sections to this report, not all EU ETS market participants would hold non-public information that can be considered as inside information.

The problem therefore is establishing the threshold (in terms of emissions and rated thermal input at the company level) below which market participants should be exempt from the information disclosure requirement.

This problem is driven by the fact that the EU ETS is fragmented across a many companies, many of which would not have an impact on price discovery or investors' decisions through changes in their emissions. By way of contrast, in financial markets the actions and outcomes specific to the issuers of financial instruments are expected to have a direct impact on the value of those instruments. Hence, they are responsible for assessing what non-public information (i.e. price-sensitive information) could significantly affect the prices of those instruments — this makes the assessment of materiality more straight-forward as it is more closely linked to the relevant firm's own position.

19.7.2 Verifying the EU's right to act

The principle of conferral states that the problem should be linked to at least one of the Treaties and the objectives they contain.

Recital 4 of the MAR notes that MAR

> "aims at contributing in a determining manner to the proper functioning of the internal market and should therefore be based on Article 114 of the Treaty on the Functioning of the European Union (TFEU)"

Recital 81 of the MAR states that

> "In order to specify the requirements set out in this Regulation, the power to adopt acts in accordance with Article 290 TFEU should be delegated to the Commission in respect of ... [inter alia] ... the thresholds for determining the application of the public disclosure obligation to emission allowance market participants"[212]

19.7.3 Policy objective

The policy objective is to establish a threshold for the purpose of the exemption of some EU ETS operators from the requirement to disclose inside information. The threshold is effectively a materiality concept which recognises that not all non-public information is relevant to effective price formation.

19.7.4 Developing a baseline scenario

When assessing the solutions to a problem it is necessary to develop a baseline scenario — a view on how the problem would evolve in the absence of any solution — such that any impacts measured can be correctly attributed to the solutions.

[212] See also MAR Article 17(2).

The subject of this assessment are the delegated acts, which in accordance with Article 17(2) of MAR, the Commission shall be empowered to adopt, establishing a minimum threshold of CO_{2eq} and a rated thermal input for the purposes of the exemption. This means that the baseline scenario refers to how the problem would evolve if there is legal requirement for the disclosure of inside information but no such threshold concerning an exemption.

If there were no exemption from the disclosure requirement contained within MAR then all market participants operating in the EU ETS would incur the administrative burden of disclosing information. (The details of the baseline scenario are discussed further at 19.7.5 and 19.7.6 below). Further, the volume of information being reported might even impede, rather than improve, price discovery — by generating excessive noise — and, at the least, some market participants could incur costs interpreting and using the information.

An important element of the baseline scenario is current information disclosure requirements, namely REMIT. Power generating companies with installations with capacity over 100MW already are required to disclose information on production under REMIT. This information could contribute to price discovery to some extent in the carbon market, although production schedules would need to be converted from MW to carbon emissions, in itself not a straightforward exercise. The direct disclosure of information relating to emissions allowances by power generating companies may add benefits over and above the current REMIT requirements.

19.7.5 Policy options

If the threshold is set too high, then important information that might be of interest to investors and affect the carbon price would not be exposed, thus limiting the value of the disclosure requirement in terms of improved price discovery.

If the threshold is set too low, then market participants whose emissions activities would not in fact have any impact on the market price or be of interest to investors may consider themselves required to disclose information and would — at the least — need to consider the applicability of the disclosure obligation to their operations. In addition, market participants may be faced with significantly increased information flow.

Section 19.5.7 above presents our analysis of possible thresholds. These are directly translated into our options below, with the addition of a baseline scenario (being MAR without a threshold). We do not include the threshold of 1 million tonnes as an option given its closeness to the REMIT-based threshold and due to the fact that our event analysis revealed no significant impacts of volumes changes around this level.

- Option 1 — Baseline scenario. As the disclosure of information is mandated under MAR, we have interpreted the 'do nothing' option as being equivalent to having no exemption, with all EU ETS operators required to disclose inside information, i.e. the threshold would be set below the size of the level of the smallest emitter. Under this option, all operators would incur information disclosure costs, but price discovery would improve compared to a situation without any disclosure as investors and market participants would be able to consider relevant

non-public information when operating in the carbon market. However, not all of the disclosed information would be useful.

- Option 2 — REMIT-based Threshold set at 0.5 million tonnes (i.e. broad equivalence to REMIT). This is about 0.03 per cent of total emissions.
- Option 3 — "Low" Threshold set at 3 million tonnes (about 0.15 per cent of total emissions).
- Option 4 — "Medium" Threshold set at 6 million tonnes (about 0.3 per cent of annual emissions within the EU ETS).
- Option 5 — "High" Threshold. Under this option the threshold would be 20 million tonnes of CO_2 emissions (i.e. about 1.2 per cent of aggregate annual emissions). Companies emitting more than this in a year would be required to fulfil the inside information disclosure requirements.

19.7.6 Impacts of the policy options

The impact of the various thresholds will be determined by the number of companies exempt from the disclosure obligation, the costs these will save from not having to meet these requirements, the impacts on price discovery and market efficiency, and the wider impacts such as changes to trading processes.

Information that would be of interest to investors is the *deviation* in emissions from expectations. The maximum downward deviation from expectations would occur if an emitter ceased operations completely. The analytical assumption for the maximum upward deviation used in this assessment is that an emitter doubled its emissions by increasing its operations and/or switching fuels etc. These are extreme cases and therefore thresholds set on the absolute emissions of companies can be considered conservative for determining the level of emissions of companies considered relevant to price formation and investment decisions.

Individual companies not exempt from the disclosure obligation would need to decide what changes in emissions counted as relevant inside information. These would be deviations that affect their expected demand for emissions allowances in a way that could give rise to a significant price effect or otherwise be of interest to a reasonable investor. These changes could either stem from individual events, or from ongoing changes.

Examples of the types of event that could cause companies to disclose are:

- Outages.
- Planned mothballing or extension of plants.
- Closure or development of new plant.
- Efficiency change of individual plants.
- Fuel-switching of plants.

It will be important for a company to consider the potential substitution effects between various business decisions, e.g. the closure of one plant may be associated with an increase in production capacity of another (with no consequent effect on emissions).

We assume that the actual disclosure would relate the change in emissions requirement and some identification of the reason for the change. Since the latter could be of interest in other markets

(e.g. markets in that firm's equities and bonds) such a rationale would no doubt be carefully crafted.

For the set of policy options, we assess:

- The number of market participants exempt from the disclosure obligation.
- The direct costs savings of not having to meet this obligation.
- The impact on price discovery and on the market in emission allowances more broadly.
- The wider impacts, in terms of economic, social and environmental impacts.

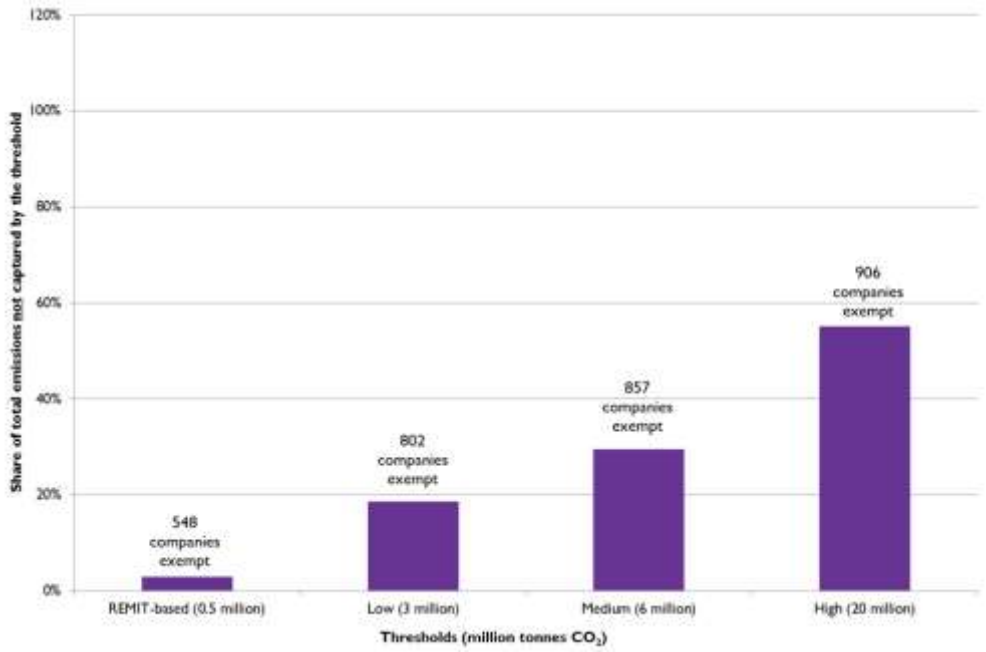
The number of market participants exempt

Using Carbon Market Data (2011, which aggregates information at a company rather than installation level) we estimate that the number of market participants captured and exempted by the various options is as follows:

- Option1 (no threshold, i.e. de facto the baseline or counterfactual) — no EU ETS companies would be exempt and all (around 930) would be subject to the disclosure obligation.
- Option 2 (0.5 million tonnes) — around 548 companies would be exempt (i.e. around 379 companies would be captured by the threshold).
- Option 3 (3 million tonnes) — around 802 companies would be exempt (around 125 companies captured by the threshold).
- Option 4 (6 million tonnes) — around 857 companies would be exempt (around 70 companies captured).
- Option 5 (20 million tonnes) — around 906 EU ETS would be exempt from the disclosure obligation (i.e. around 21 would be captured by this threshold).

The figure below illustrates the proportion of emissions and the number of companies exempted by the thresholds. Without a threshold 100 per cent of emissions would, of course, be captured by the disclosure threshold. As can be seen, the higher the threshold the greater the number of firms exempted from the disclosure requirement and the greater the share of emissions these exempt firms represent.

Figure 19.9: Share of total emissions of companies exempted by different thresholds



Source: Carbon Market Data (2011) and Europe Economics analysis.

The direct costs of complying with the disclosure requirements

In order to understand the impact of the threshold we need first to understand the impact of the disclosure obligation. Non-exempt market participants required to disclose information would need to develop appropriate systems to link business decisions with the impact on the volume of emissions. This would be somewhat analogous to understanding the earnings impact of business decisions. (A point to note is that the expected earnings impact is the *driver* of much business decision-making (e.g. the closure of an inefficient plant to boost earnings). Whilst expected emissions and the associated carbon cost are intended to drive certain decisions (e.g. fuel-switching) at current carbon prices this effect is likely to be considerably weaker relative to earnings as a driver. Corporates may embody these internal control processes in documented management guidelines.

They would also incur compliance costs associated with gathering and publishing information. This would entail information on the implications of emissions changes being sent from installations to a central part of the business, or else calculated centrally, such that the emissions impact of business decisions could be understood and monitored and important changes (actual or forecast) identified. Where material the business decision (e.g. to mothball a plant) would then give rise to an appropriate disclosure. We assume that in order for disclosures to be timely, the ongoing assessment of business decisions which would have large expected emission changes would be necessary. In addition, non-exempt firms would be required to review at regular intervals what a

material volume impact would be — since this can vary dependent upon the prevailing conditions in the emissions market.

Our fieldwork revealed that there are differing opinions as to what the disclosure requirement would entail. For example, at one extreme, some respondents to our fieldwork thought they would require an individual at each site to monitor decisions and data and make choices about what information should be published, rather than have this as a centralised function. However, the latter might build upon existing EU ETS compliance obligations (e.g. understanding the emissions associated with a particular installation). A decentralised approach would typically imply a higher cost. On the other hand, other respondents to the fieldwork thought that the current REMIT requirements would fully map onto the emissions disclosure requirements and thus there would be little additional burden. We describe below *our* analysis of the expected one-off and ongoing costs.

Disclosure is intended to be public, effective and timely. The technical means of public disclosure of inside information under MAR is to be determined by implementing technical standards to be developed by the European Securities and Markets Authority (ESMA), although the ultimate decision-making powers on such standards are with the European Commission (MAR, Article 17(10)(a)). —This work is ongoing and as at the date of this report the technical means of disclosure therefore remains undefined. Therefore we have made our best estimates here.

We have assumed that publishing this information exclusively on company websites would be insufficient, and that firms would need to notify trading venues (which have regulatory newsfeeds) and/or recognised news outlets (e.g. Bloomberg, Reuters).

These processes would entail both one-off and ongoing costs.[213] We distinguish costs across companies on the basis of the number of installations held: up to five installations in the EU); between 6 and 10 EU installations; and over 10 installations in the EU. We also distinguish between energy-producing companies assumed to already be reporting under REMIT, and industrial emitters.

One-off cost impacts of the baseline:

- Understanding the rules. With the introduction of the new policy, companies would need to allocate resources to understand the rules and compliance requirements and train the relevant individuals. It might also include the training of senior decision-makers so that the compliance is suitably internalised. We envisage the process would take around 2–10 full time equivalent (FTE) days depending on the number of installations in the company.
- Designing a compliance strategy. A compliance strategy would define the parameters for identifying what information should be considered inside information and thus relevant for reporting. This might include a range of deviations from expectations of required emission

[213] We reference the recent impact assessment conducted by DECC for the UK's Carbon Reduction Commitment regulations, which estimated the one-off and ongoing costs for the reporting of emissions. The primary activities include understanding the scheme rules, developing a compliance strategy and collection and submission of data.

allowances, and the process for information disclosure. The resources required to design a compliance strategy are estimated between two FTE and five FTE days.

- Developing processes for data collection and reporting. A degree of automation may be necessary. The collection of data on emissions from all installations should overlap substantially with existing compliance responsibilities under the EU ETS. Reporting systems would be required to communicate the information to the regulatory news feeds of trading venues or to financial news vendors (e.g. Bloomberg, Reuters). This should be suitable for some automation. We envisage the resources required would be around five to 20 FTE days depending on the complexity of the business (which we associate here with the number of installations in the company).

Ongoing cost impacts of the baseline:

- Monitoring of business decisions by an emissions coordinator. Each firm would require a responsible person to ensure that compliance with MAR was achieved, i.e. ensuring that the emissions impact of material business decisions was understood. We assume this process would be partly automated, but still require between 2.5 and 15 FTE days per year, depending on the frequency of data collection and the number of installations in the company.
- Monitoring of the emissions market. Again a non-exempt firm would need to consider at regular intervals what constituted material in the context of the emissions market and so make well-informed decisions as to whether changes in the data, or future events, warrant disclosure. This decision making process would be guided by the compliance strategy. We assume that this activity will entail between 2.5 and five FTE days per year.
- Reporting to the public. The costs of reporting would relate to notification of identified news outlets and trading platforms (i.e. publication on a firm's website only would not be adequate disclosure). We estimate that between one and two FTE days per year would be required depending on the number of installations in the company.

As discussed, companies required to disclose information under REMIT are likely to already have many of the above systems in place. Power generating companies with capacity over 100 MW already are required to disclose information on production under REMIT, and therefore similar requirements for carbon emissions should not involve a significant additional burden. This is of course true under all options considered, because such disclosure under REMIT is part of the baseline/ counterfactual, i.e. as such it does not differentiate the various options for the threshold. Converting planned energy production schedules from MW to carbon emissions should be a straightforward conversion exercise. Information about events (e.g. the closure of plants) would be published in the same format. There is likely to be an element of adjustment required to tailor current systems to the disclosure requirements, so we therefore reduce by 75 per cent the following cost elements:

- Developing process for data collection and reporting.
- Monitoring of business decisions by an emission coordinator.
- Reporting to public.

Companies involved with trading in the carbon market will also need to ensure that information publication is timely and does not interfere with their ability to trade. It is likely that the trading

divisions will be sufficiently separate from the divisions responsible for publishing information, and that trading will take place on the assumption that all relevant information is being properly disclosed. The disclosure requirement is therefore unlikely to have much impact on trading processes.

Using the CMD data we summarise the number and type of firms affected under each option.

Table 19.3: Number of non-exempt firms affected by different threshold options

	Total firms	Energy producer	Industrial emitter
REMIT-based			
< 5 installations	170	83	87
6 to 10 installations	78	35	43
> 10 installations	131	43	88
Total	**379**	**161**	**218**
3 million tonnes			
< 5 installations	29	19	10
6 to 10 installations	16	8	8
> 10 installations	80	36	44
Total	**125**	**63**	**62**
6 million tonnes			
< 5 installations	7	6	1
6 to 10 installations	6	5	1
> 10 installations	57	28	29
Total	**70**	**39**	**31**
20 million tonnes			
< 5 installations	1	1	0
6 to 10 installations	1	1	0
> 10 installations	19	13	6
Total	**21**	**15**	**6**

The table below summarises the FTE days required for each cost element across different firm sizes. We note that these estimates apply to those companies not already required to disclose information under REMIT.

Table 19.4: Estimated FTE days to comply with disclosure requirements

	< 5 installations	*6 to 10 installations*	*> 10 installations*
One-off costs			
Understanding the rules, including training	2	5	10
Designing a compliance strategy	2	3	5
Developing processes	5	10	20
Ongoing costs (annual)			
Monitoring business decisions	2.5	5	15
Monitoring the emissions market	2.5	3.75	5
Reporting to public	1	1.5	2

We use an indicative cost of €500 per day to estimate the costs to companies of the information disclosure requirements. (This is based upon one Full Time Equivalent, FTE, carrying out this activity). The cost of Option 1 (i.e. no threshold) is presented in the table below.

Table 19.5: Option 1, i.e. baseline – no threshold

	< 5	**6 to 10**	**> 10**	**Total**
One-off costs (€000s)				
Understanding the rules, including training	583	420	880	1,883
Designing a compliance strategy	583	252	440	1,275
Developing processes*	1,165	596.25	1,348	3,109
Total	***2,331***	***1,268***	***2,668***	***6,267***
Average cost per company (€000)	***3***	***8***	***15***	***7***
Annual ongoing costs (€000s)				
Monitoring business decisions*	583	298.125	1,011	1,891
Monitoring the emissions market	729	315	440	1,484
Reporting to public*	233	89.4375	134.75	457.1875
Total	***1,544***	***703***	***1,585***	***3,832***
Average cost per company (€000)	***3***	***4***	***9***	***4***

* For the energy producers required to disclose information under REMIT, these cost elements are reduced by 75 per cent. This is why the average cost may differ across options.

The other policy options represent a saving in direct costs relative to this (i.e. this represents the benefit of setting a non-negligible threshold).

Table 19.6: REMIT-based option, i.e. 0.5 million tonnes

	< 5	6 to 10	> 10	Total
One-off cost savings (€000s)				
Understanding the rules, including training	413	225	225	863
Designing a compliance strategy	413	135	112.5	661
Developing processes*	896	337.5	360	1,593
Total	***1,722***	***698***	***698***	***3,117***
Average cost per exempt company (€000)	***4***	***10***	***2***	***6***
Annual ongoing cost savings (€000s)				
Monitoring business decisions*	448	169	270	887
Monitoring the emissions market	516	168.75	112.5	798
Reporting to public*	179.125	50.625	36	265.75
Total	***1,143***	***388***	***419***	***1,950***
Average cost per exempt company (€000)	***3***	***5***	***1***	***4***

* For the energy producers required to disclose information under REMIT, these cost elements are reduced by 75 per cent. This is why the average cost may differ across options.

Table 19.7: Threshold set at 3 million tonnes

	< 5	6 to 10	> 10	Total
One-off cost savings (€000s)				
Understanding the rules, including training	554	380	480	1,414
Designing a compliance strategy	554	228	240	1,022
Developing processes*	1,128	546.25	818	2,492
Total	***2,236***	***1,154***	***1,538***	***4,928***
Average cost per exempt company (€000)	***4***	***8***	***16***	***6***
Annual ongoing cost savings (€000s)				
Monitoring business decisions*	564	273	613	1,450
Monitoring the emissions market	693	285	240	1,218
Reporting to public*	225.625	81.9375	81.75	389.3125
Total	***1,482***	***640***	***935***	***3,057***
Average cost per exempt company (€000)	***3***	***4***	***10***	***4***

* For the energy producers required to disclose information under REMIT, these cost elements are reduced by 75 per cent. This is why the average cost may differ across options.

Table 19.8: Threshold set at 6 million tonnes

	< 5	6 to 10	> 10	Total
One-off cost savings (€000s)				
Understanding the rules, including training	576	405	595	1,576
Designing a compliance strategy	576	243	297.5	1,117
Developing processes*	1,159	585	988	2,731
Total	***2,311***	***1,233***	***1,880***	***5,424***
Average cost per exempt company (€000)	***4***	***8***	***16***	***6***
Annual ongoing cost savings (€000s)				
Monitoring business decisions*	579	293	741	1,613
Monitoring the emissions market	720	303.75	297.5	1,321
Reporting to public*	231.75	87.75	98.75	418.25
Total	***1,531***	***684***	***1,137***	***3,352***
Average cost per exempt company (€000)	***3***	***4***	***10***	***4***

* For the energy producers required to disclose information under REMIT, these cost elements are reduced by 75 per cent. This is why the average cost may differ across options.

Table 19.9: Threshold set at 20 million tonnes

	< 5	6 to 10	> 10	Total
One-off cost savings (€000s)				
Understanding the rules, including training	582	417.5	785	1,785
Designing a compliance strategy	582	250.5	392.5	1,225
Developing processes*	1,164	595	1,255	3,014
Total	***2,328***	***1,263***	***2,433***	***6,024***
Average cost per exempt company (€000)	***4***	***8***	***15***	***7***
Annual ongoing cost savings (€000s)				
Monitoring business decisions*	582	298	941	1,821
Monitoring the emissions market	728	313.125	392.5	1,433
Reporting to public*	232.875	89.25	125.5	447.625
Total	***1,543***	***700***	***1,459***	***3,702***
Average cost per exempt company (€000)	***3***	***4***	***9***	***4***

* For the energy producers required to disclose information under REMIT, these cost elements are reduced by 75 per cent. This is why the average cost may differ across options.

Table 19.10: Summary of Cost Savings for Exempt Market Participants

	Threshold set at:			
	0.5m	**3m**	**6m**	**20m**
One-off cost savings (€000s)	3,117	4,928	5,424	6,024
Ongoing cost savings (€000s)	1,950	3,057	3,352	3,702

Competent Authorities

A further category of stakeholder affected by the threshold would be the relevant Competent Authorities supervising compliance with MAR and the costs that these would incur. The imposition of a threshold means that — relative to a counterfactual of *all* firms have the disclosure obligation — the population of firms to be supervised would reduce.

The 2011 impact assessment of the MAR assessed the impact on competent authorities due to increased market surveillance at three FTEs for larger markets and one FTE for smaller markets, as well as €20k per annum in data costs. These are based on the then preferred options across all of MAR.

MAR (Article 16) defines the competent authority as being determined by the location of the trading venue. The main (albeit not exclusive) trading venues are in Germany and the UK. However the disclosure duty falls on emission allowances market participants (rather than to issuers) — this could be seen to mean that the relevant competent authority is determined as the one where the emission allowance market participant/company is registered. With this as context we assess both of these scenarios:

- In the former case, our view is that a conservative estimate of the introduction of the disclosure obligation without a threshold would not require more than one FTE in each of the UK and Germany, where the main trading venues are located. At €500 per day this would equate to €225k per annum. We do not foresee substantive additional data requirements. The introduction of a threshold would reduce the number of firms and — to some extent — could reduce the time spent on monitoring. Against this, it is not clear that the presence of the threshold would materially alter the number of events or price movements worthy of supervisory consideration. We estimate the maximum saving would be approximately one FTE (achieved at a threshold of 20 million tonnes). There would be little or no saving with the REMIT-based option. The other two options lie between these two estimates.
- In the second case (where the competent authority is determined by the country of registration) is more complex. With a low threshold it would be likely that all (or nearly all) Member States would be affected. Even at the higher thresholds analysed here many or all Member States could be affected. For example, considering the firms above 6 million tonnes, these are registered in at least 15 different Member States). The wider distribution of tasks could result in a less efficient outcome, although it would also ensure enforcement of the disclosure requirement in the case of entities that do not use trading venues. In this case, the resource impact would be more widely distributed. This is notwithstanding that again, it is not clear that the presence of the threshold would materially alter the number of events or price movements worthy of supervisory consideration. In this case we would expect incremental resources ranging from 3–4 FTEs across the EU28 without a threshold. The maximum saving would be 1–2 FTEs for the 20m tonne threshold. Again there would be little or no saving with the REMIT-based option, and the other two options lie between these two estimates

This means that there is no *qualitative* difference between these two scenarios in terms of the final result – they both result in lower cost at higher thresholds, and they both lead to disclosure by the participants in the emission allowance market.

Trading venues

The trading venues are unlikely to incur significant extra costs as a result of the policy options. News feeds are typically in place already, and the marginal cost difference between the various options should be slight. To the extent that any differences exist, these would again be associated with the population of the firms above whatever threshold is set.

Impact on price discovery

Given that the counterfactual (the baseline scenario) is the implementation of MAR with no threshold (or equivalently a threshold set below the size of the smallest emissions market participant) the main benefits are the cost savings compared to this baseline, as set out above, and avoiding exposing the market to reporting that is not useful.

The primary benefit of increased information disclosure is better price discovery due to greater information transparency, which leads to improved market efficiency and integrity. Currently emissions data are already published annually and therefore any additional disclosures should at most only affect prices between year ends. This would contribute to quicker price discovery but the scale of any improvement here is difficult to estimate. Our interest is the impact of different thresholds exempting different numbers of firms from this: up to the point at which companies exempted from disclosure do not hold *any* information relevant to price formation or investors' decision-making, the threshold should have no impact on price discovery.

Our analysis of the events described above indicates that firms emitting less than three million tonnes should not hold any information relevant to price discovery,. Therefore the impact on price discovery of the first option (no threshold) would be more or less equal to the impact on price discovery of setting the threshold at three million tonnes. The position with respect to firms with emissions below six million tonnes is less clear, since the analysis has some indications of price effects below this level, but also of no price effect immediately above this level.

Our analysis indicates that it is likely there are firms with emissions below 20 million tonnes that could hold information relevant to price discovery. This means that having the threshold at 20 million tonnes would likely result in worse price discovery than having the threshold at lower levels, as this option would most likely exclude some significant firms from the disclosure requirement.

The above discussion focuses on the relative impact on price discovery between the various threshold options. As discussed in detail in section 19.3, those market participants who contributed to our survey held the view that the role of entity-specific information is of limited interest , and even more so for information that is not publicly available (i.e. much important entity-specific information such as production levels is correlated with publicly available variables such as GDP).

Number of disclosures

In the absence of such disclosure at present, the scale of this is difficult to assess quantitatively. As a reference point, we note that EEX discloses occasions when power stations (above 100MW) were not in operation or capable of operation. These disclosures started in late 2009 with respect to Germany and Austria — since that date around 10,000 announcements have been listed, at the rate

of about 25 per day. Extrapolating to the EU28 energy sector this implies perhaps as many as 100 announcements per day. Even with the threshold set at the lowest level, emissions allowance market participants might not disclose at this rate (i.e. there may be fewer such events and in turn disclosures), but they would however still need to monitor information flows (or pre-define what type of information could be of interest) and decide whether events need to be disclosed or not — they would need to decide *what* to disclose. As described above, such decision-making can be costly for participants. It may be that participants, when in doubt, tend towards disclosing rather than not.

Similarly, whatever information is published needs to be absorbed by the market. The lower the threshold for exemption is set, the greater the number of disclosing firms will be and, in all likelihood, the greater the amount of information in the market. Again, an analogy is helpful. An analyst tracking all of the constituents of the FTSE100 (a widely tracked equity index), for example, would need to consider on average five unanticipated announcements per trading day.[214] The tracking of macroeconomic variables in the EU ETS (i.e. current practice, at least as described by those trading firms participating in our fieldwork) would imply, at most, tracking the out-turn in four–five variables on an average trading day (and since Eurozone data are released at both national and at the Eurozone level, the number of the variables necessary to track would likely be less than this). In this context, the additional analytical effort associated with, in the extreme case, dozens of extra news items per day could be very considerable. This could raise the cost of following the emissions market, potentially lowering participation amongst financial actors.

Even if firms under the reporting disclosure requirement (based on any threshold) only occasionally disclose information, having a large number of small firms (i.e. a very low threshold) would still require costly processing by market participants whilst essentially only contributing to market noise.

Other market efficiency impacts

There are other aspects of market efficiency beyond price discovery. There was significant uncertainty among respondents to the survey as to the impact of increased disclosure requirements on other aspects of market efficiency. Around a quarter had the following views on the impacts of increased information disclosure:

- Price volatility — possibly a small positive impact. If the information that is disclosed would reach the market anyway, then earlier disclosure may have a small reduction in volatility as participants would have more time to absorb the information in advance. Long-run price should not be affected.
- Volumes traded — a more transparent market might attract more participants and thus increase volumes traded. However, transparency requires information on other variables such as volumes traded and pre- and post-trade prices; the incremental impact of entity-specific information is unlikely to be large.

[214] This is based on the following: between 1st October 2013 and 31st December 2013 there were 257 announcements on Bloomberg relating to FTSE100 constituents. This excludes scheduled financial reporting announcements — rather the focus is on unexpected good and bad news which the relevant issuers considered salient to trading in their financial instruments.

- Transactions costs — any increase in volumes may lead to a reduction in transactions costs. This is likely to be small: one respondent stated that bid-offer spreads are already tight.
- Number of market participants — small, positive increase in the number of market participants. The carbon market is largely a compliance market and an increase in entity-specific information is unlikely to attract additional investors.

Table 19.12 summarises the likely scale of the benefits and costs of the five threshold options.

The wider impacts

We consider the wider social and environmental impacts of the five threshold options. Short-term environmental impacts would arise if the disclosure of information led to a change in the carbon price. A sustained increase in the price of carbon beyond what is consistent with the actual demand for emission allowances may expedite the goal of emissions reductions that the EU ETS was set up to achieve. A sustained fall in the carbon price below what is consistent with the actual demand for emission allowances would do the opposite. However, as it is unlikely that the disclosure requirement would have a significant sustained impact on the price level we consider the environmental impacts to be limited.

Social impacts in terms of public health and safety would arise under the longer-term impacts of changes in the carbon price on general emissions and the presence of greenhouse gas in the environment. These are likely to be limited.

Employment impacts may arise if the costs of complying with the disclosure requirements form a significant proportion of companies' revenues or if new people need to be employed in order to comply with the information disclosure requirement. Given the scale of our estimates, significant impacts look highly unlikely.

19.7.7 Comparisons of the options

In this section we compare the effectiveness of the threshold options in meeting the objectives of the policy, and their efficiency in doing so. As set out in section 19.7.3 the policy objective is to establish a threshold for the purpose of exempting EU ETS operators who are not deemed to hold inside information from the obligation to disclose inside information. The threshold represents the size (in terms of CO_{2eq} emissions) below which companies are not deemed to hold inside information. The threshold is therefore effectively a materiality concept which recognises that not all non-public information is relevant to effective price formation.

As the objective of the threshold is to exempt those firms that are not considered to hold information relevant to price formation, in assessing the effectiveness of the options in meeting this objective we consider whether the exemptions implied by the options would have an effect on price formation and carbon market functioning compared to a scenario of no exemption (i.e. no threshold).

This assessment is based on the assumption (implicit in the adoption of the information disclosure requirement under MAR) that the disclosure of inside information will improve price formation and

market functioning.[215] Option 1 reflects the baseline scenario of no exemption where all carbon market participants are required to disclose inside information. We therefore assess Options 2-5 (which each represent increasingly higher CO_{2eq} thresholds and greater numbers of exempt market participants) in terms of whether these imply any changes in price discovery and formation in relation to the baseline scenario of no threshold.

Options that do not negatively affect price formation or market functioning compared to the baseline but rather avoid exposing the market to the reporting that is not useful are considered in effect to meet the objective, as exempting the associated number of firms from the information disclosure obligation would not be detrimental to price discovery (which in turn implies that these firms do not hold relevant non-public information).

To compare the effectiveness of the options we apply a multi-criteria analysis of the options across a set of criteria that embodies the relevant aspects of price formation and market functioning:

- Price discovery.
- Market liquidity.
- Price volatility.

Although the options specify different numbers of firms to be exempt from the disclosure requirement, their performance against most of the above criteria does not reflect a 'spectrum' (i.e. each option is not necessarily progressively better (or worse) than the next). This is because the key factor influencing the effectiveness of the options in meeting the objective is whether the exempted firms are deemed to hold inside information or not. Therefore, if firms below the 0.5 million tonne threshold, the 3 million tonne threshold and the 6 million tonne threshold are all considered not to hold inside information then these three options would be equally effective in meeting the policy objective in relation to the criteria for price formation.

However, their performance against the criterion of market liquidity is somewhat ambiguous, because it reflects conflicting underlying effects. As discussed in section 19.7.6, a greater number of market participants disclosing information could raise the cost of following the carbon market, potentially lowering participation in particular of financial actors, which are important providers of market liquidity. On the other hand, increased disclosure of relevant information should promote market confidence, which should in turn promote market participation. The latter effect should generally be at least as strong as the other — indeed, the fieldwork indicated that market participant numbers and volumes traded were expected to increase and transaction costs to decrease. These are all consistent with increased market liquidity. We then assess the efficiency of the options by considering the resource implications in meeting the objective and any wider consequences that might be associated with the options. Again we analyse the options compared with the baseline scenario across a set of relevant criteria:

- Direct cost savings.
- Market noise.
- Wider impacts.

[215] An analysis of the impacts of the information disclosure under MAR is not included in the scope of this report; our remit is to assess the implications of an exemption from this obligation.

- Completeness of the exemption of non-relevant firms.

We now compare the options against each criterion in turn. The results of this comparison are summarised in Table 19.12 below.

Price discovery

The increased information disclosure due to MAR would lead to better price discovery by increasing the flow of relevant information to market participants. Our interest is the impact of different thresholds exempting different numbers of firms from this: up to the point at which companies exempted from disclosure do not hold *any* information relevant to price formation or investors' decision-making, the threshold should have no impact on price discovery.

Our analysis of the impacts of the options shows that firms emitting less than three million tonnes (Option 3) are very unlikely to contribute significantly to price discovery due to factors mentioned above such as the existing levels of information disclosure (annually by all EU ETS participants, and more regulatory by energy producers), and the limited importance of currently unpublished entity-specific information in price discovery. This is underpinned by our statistical event analysis which shows no price effects of disclosures relating to emissions of three million tonnes or less. The impact of Option 4 on price discovery is less clear. Our event analysis reflects some ambivalence here as there are events between three and six million tonnes that are linked to price effects, but also cases of no price effects above six million tonnes.

Given this uncertainty and the factors referred to above limiting the relevance of additional information that would be disclosed compared to the baseline, we judge that exempting the firms specified under Option 4 would result in either no noticeable impact or a small noticeable impact on price discovery compared to the baseline scenario. Options 2 and 3 are therefore considered to effectively meet the objective of the policy as they specify a size threshold below which firms are not deemed to hold inside information as information disclosed by these firms would not affect price discovery. By definition, Option 1 which exempts no firms would also not negatively affect the price discovery facilitated by the information disclosure. These options score a "+" in Table 19.12 below to indicate that they effectively meet the objective of the policy by exempting firms from the disclosure obligation who would not be deemed to hold inside information. Given the small uncertainty about whether that Option 4 may exempt some firms that are deemed to hold inside information, this option is given a score of "o/+" to reflect that it is largely effective in meeting the policy objective.

Option 5 entails the exemption of firms emitting up to 20 million tonnes CO_{2eq}. Given our event analysis it is clear that volume changes at this level do have a price effect. Firms emitting 20 million tonnes therefore cannot be considered not to hold inside information. Exempting these firms from the information disclosure obligation would clearly have a negative impact on price discovery compared to the baseline scenario as important firm information would not be made publicly available. Option 5 is therefore deemed to be very ineffective in meeting the objective of the policy, and scores a "– –" in Table 19.12 below.

Market liquidity

One way of considering the liquidity of a market is the number of market participants willing to enter into trades, and by the transaction costs of making such trades. Transactions costs might fall if the volume of trades increases (spurred in turn by an increase in market confidence resulting from improved information disclosure), and more participants may be attracted to the market if they perceive lower costs and greater ease of trading. More participants may also enter the market if they perceived it to function well and have efficient price discovery. Against this a greater number of market participants disclosing information could raise the cost of following the carbon market, potentially lowering participation in particular of financial actors, which are important providers of market liquidity. It must be noted that market liquidity is influenced by many variables, including trading transparency (i.e. information about order flow, volumes traded and pre- and post-trade prices): we do not expect very significant effects here.

In considering the market confidence driver, where exempted firms are not deemed likely to hold material inside information, the exemption is likely to have no impact on market confidence. Options 1 to 4 therefore effectively meet the objective of the policy by exempting firms that would not have an impact on price formation or market functioning (i.e. they would all exhibit a weakly positive effect on market confidence, and hence market liquidity). However, the other influencing factor — due to the increased costs of following the market — is also relevant. This is a negative factor, indeed more negative for Options 1 and 2, less negative for Option 3 and 4. It is likely to be at best equal and likely weaker in effect than the market confidence effect. Overall, then, Options 1 and 2 are ambiguous in their overall effect on market liquidity (i.e. "+/-"). Options 3 and 4 are weakly positive overall.

As Option 5 includes the exemption of firms that our analysis indicates could hold material inside information, this option does not effectively meet the policy objective and would not promote market confidence. It would, of course, result in the least change in the cost of following the emissions market. This option scores a single "–" in Table 19.12 below to reflect that it is ineffective in meeting the objective in relation to the criterion of improved market liquidity (as the effect on market confidence is more important than that of increasing the costs of following the market).

Price volatility

Information disclosure can affect price volatility in two different ways. On the one hand, if the non-public information that is disclosed would reach the market anyway some time later, then earlier disclosure may reduce the 'lumpiness' around the time at which information reaches the market compared to a flow of information from many participants coincident with the end of the year. If firms with relevant inside information are exempt from disclosing this information in a timely way, then this would reduce the improvements intended by the disclosure obligation under MAR.

On the other hand, price volatility in part reflects the market processing information (company-specific information and information around trading activity) as part of the price discovery process. If the market is required to process a large amount of non-relevant information then short-term (i.e. intraday) volatility might increase as the market takes longer to settle on the "correct" price path. Therefore the more firms that do not hold material inside information but are nevertheless required to consider disclosing information to the market, the greater this driver of price volatility is likely to be.

In terms of intraday volatility relating to non-relevant information, then, Options 1 and 2 score the lowest, as these do not exempt firms with no relevant inside information from the disclosure requirement and therefore do not meet the policy objective of exempting firms that would not have an impact on price formation (as some of the firms included in these options would have a negative impact on price formation). Option 3 scores less poorly as it exempts a greater number of non-relevant firms.

Options 4 and 5 score well against this criterion of intraday volatility as these exempt a greater number of firms not holding relevant information. However, in relation to the impact of disclosures on the 'lumpiness' of information flows, Option 5 is likely to exempt some firms from the disclosure obligation that *do* hold relevant information and therefore this could increase volatility compared to a situation of no exemption.

Given the ambiguity in the mechanisms of effect of information disclosure on price volatility, Options 5 receives a -/o score. Option 4, because it scores well on the first criterion but is also subject to some ambiguity, scores a +/o score in the table below. The above assessment considers the effectiveness of the options in meeting the policy objective of exempting firms deemed not to hold inside information from the information disclosure obligation. We now turn to our assessment of the efficiency of the options in meeting the objective.

Direct cost savings

The direct cost savings are the main quantifiable benefit deriving from the threshold. With the exception on Option 1 all options are associated with a cost saving, as exempt firms would not incur the costs of disclosing information. As no firms are exempt under Option 1 there is no associated saving. The table below summarises the cost savings for each option. The baseline scenario of no threshold for exemption would result in all EU ETS market participants being obliged to undertake information disclosures, at an estimated impact of around €6.3 million one-off costs and €3.8 million annual ongoing costs. As can be seen in the table below (repeated from Table 19.10), Options 2 to 5 result in progressively larger cost savings, as fewer and fewer firms would be included in the information disclosure obligation and incur the related compliance costs. Fewer emission allowances market participants to supervise should also reduce the costs to supervisors.

Table 19.11: Summary of Cost Savings for Exempt Market Participants

	Option 2 Threshold of 0.5 million tonnes	Option 3 Threshold of 3 million tonnes	Option 4 Threshold of 6 million tonnes	Option 5 Threshold of 20 million tonnes
One-off cost savings (€000s)	3,117	4,928	5,424	6,024
Ongoing annual cost savings (€000s)	1,950	3,057	3,352	3,702

Although Option 5 results in the greatest cost saving (around 96 per cent of the original costs in the baseline scenario) our analysis above shows that it does not in fact effectively meet the objective of the policy as it results in some firms being exempt which cannot be deemed not to hold inside information.

Of the options that effectively meet the objective of the policy, Option 4 does so most efficiently, i.e. with the greatest cost saving (i.e. lowest associated cost).

Market noise

All firms incur a cost in processing information, for example reviewing all available information, deciding whether it is relevant to investment or trading decisions, and deciding how to use the information that is relevant. The more information available in the market, the more costly this exercise would be. Non-relevant information would be considered 'noise' and would have an associated processing cost with no related benefits.

The more firms that do not hold inside information but are nevertheless required to disclose information to the market, the greater the market noise. Market noise will reduce the efficiency with which the policy objective is met. Option 1 scores lowest in these terms, as the greatest amount of market noise would be associated with this option as it does not exempt any firms that are not deemed to hold inside information from the disclosure obligation. Market noise is also associated with Options 2 and 3 and therefore these options also do not score highly in terms of efficiency. Option 4 scores the best on efficiency in relation to market noise, as it exempts a greater number of firms not deemed to hold inside information from the disclosure requirement. However, given the uncertainty in the event data analysed it is possible that some firms above this threshold would not hold inside information and thus could contribute to market noise if they are required to disclose information to the market. For this reason Option 4 scores a "+/–" for efficiency in meeting the objective in relation to market noise.

As Option 5 is not considered to effectively meet the policy objective at all, we do not include it in the assessment of efficiency.

Wider impacts

We consider that wider (socio-economic and environmental) impacts of the thresholds are likely to be very limited, with no discernible differences between the various options. We do not envisage that wider impacts would affect the efficiency with which any of the options would meet the objective, and therefore all options score an "o" against this criterion.

Completeness of exemption of non-relevant firms

The policy objective is to define a threshold such that firms that are not deemed to hold inside information are exempt from the disclosure obligation under MAR. The full objective of the policy would be to exempt *all* firms deemed not to hold inside information (or near enough to this level). An option would not be fully effective in meeting the objective if it only exempted a sub-set of firms that do not hold inside information.

Against this criterion Option 1 scores very poorly as it does not, in fact, exempt any firms from the disclosure requirement. Options 2 and 3 exempt progressively more firms which our analysis shows would not hold inside information (see Figure 19.9 above). Option 4 most effectively meets the objective of the policy as it exempts the greatest number of firms deemed not to hold inside information. Any threshold above 6 million tonnes would not be certain to only exclude firms not deemed to hold inside information — e.g. the threshold of 20 million tonnes (Option 5) would

almost certainly exempt firms holding inside information from the information disclosure obligation. Option 4 therefore scores most highly against this criterion, with a "+" in the table below. The table below summarises the results of the multi-criteria analysis of the effectiveness and efficiency with of the options in meeting the policy objective.

Table 19.12: Effectiveness and efficiency of the options in meeting the policy objective

	Option 1: no threshold	Option 2: 0.5 million tonnes	Option 3: 3 million tonnes	Option 4: 6 million tonnes	Option 5: 20 million tonnes
Effectiveness of the options					
Price discovery	+	+	+	o/+	– –
Market liquidity	+/–	+/–	+	+	–
Price volatility	– –	– –	–	o/+	o/–
Efficiency of the options					
Direct cost savings	– –	– –	–	+	N/A
Market noise	– –	– –	–	+/–	N/A
Wider impacts	o	o	o	o	o
Completeness of exemption	– –	–	–/+	+	– –

Key: + = effective/efficient; ++ = very effective/efficient; – = ineffective/inefficient; – – = very ineffective/inefficient; neither (in)effective or (in)efficient.

On the basis of our multi-criteria analysis of the options in terms of how effective and efficient they are in meeting the policy objective, Option 4 scores the best overall, both in terms of effectiveness and efficiency. Our preferred option is therefore a threshold of 6 million tonnes, which offers the best trade-off between costs and benefits.

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