European Systemic Risk Board

Frankfurt, 31 July 2012

Accompanying document to ESRB/2012/2

MACRO-PRUDENTIAL STANCE ON THE USE OF OTC DERIVATIVES BY NON-FINANCIAL CORPORATIONS

in response to a consultation by ESMA - based on Article 10 of the EMIR Regulation

31 July 2012

ESRB
European Systemic Risk Board
European System of Financial Supervision

MACRO-PRUDENTIAL STANCE ON THE USE OF OTC DERIVATIVES BY NON-FINANCIAL CORPORATIONS

in response to a consultation by ESMA based on Article 10 of the EMIR Regulation

EXECUTIVE SUMMARY

In accordance with Article 10 of the European Market Infrastructure Regulation (EMIR)[1], the ESMA consults the ESRB (i) on criteria for establishing which OTC derivative contracts are objectively measurable as reducing risks directly relating to the commercial activity or treasury financing activity; and (ii) on values of the clearing thresholds, which are determined taking into account the systemic relevance of the sum of net positions and exposures by counterparty and per class of derivatives. The ESRB is responding to the consultation by means of Advice ESRB/2012/2, which is supported by this report.

Before addressing the policy response to the consultation by ESMA, in the report the ESRB discusses two important issues: the risks posed to the financial system by derivatives used in hedging operations, and the preference given to the use of margins rather than banking fees. In the first topic, the ESRB concludes that classifying the derivatives linked to commercial and treasury financing activities as risk free (as implicitly suggested by the exemption of these derivatives from the computation of the clearing threshold for non-financial corporations) is conceptually flawed and may lead to an inefficiently large level of hedging affecting entire segments of the markets, which may have systemic consequences in the future. With regard to the observed preference of non-financial corporations for the use of banking fees rather than margins, the ESRB notes that banking fees imply the alienation of resources to third parties and would thus fail to act as buffers in case of losses arising from derivative positions, as is the case with margins. The use of banking fees also raises issues relating to the appropriate price-in of the risks derived from the derivative transactions of non-financial corporations.

Definition of commercial and treasury financing activities

The ESRB broadly agrees with the definition of commercial and treasury financing activities in ESMA's Consultation Paper 2012/379. Having said that, the ESRB wishes to make two comments on these definitions: (i) the definition of commercial and treasury financing activities seems to focus entirely on commercial activities, not discussing in detail the activities which should be classified as treasury financing; and (ii) the reference to the concept of "hedging" as defined in the International Financial Reporting Standards (IFRS) may not be fully consistent with the objectives of this task.

In response to these comments, the ESRB proposes that ESMA (i) links the definition of commercial activities to the concepts of "capital expenditure" and "operational expenditure", which are widely used in accounting and finance, together with the inclusion of payables and receivables connected with the core activities of the non-financial corporation within the scope of commercial activities; and (ii) use the cash flow statement of the non-financial

[1] OJ L 201, 27.7.2012.

corporations in the definition of the treasury financing activities[2]. Furthermore, the ESRB considers that there would be advantages in defining a maximum level of commercial and treasury financing activities, based on the relevant items in the balance sheet of non-financial corporations, in order to prevent possible abuses of the definitions.

Values of clearing thresholds for non-financial corporations

The ESRB fully agrees with the objective, stated by ESMA, of not increasing significantly the complexity of the application of the clearing threshold for non-financial corporations. However, the ESRB is concerned that excessive reliance on a simple and easily enforceable clearing threshold could play down other factors that are relevant from a macro-prudential perspective. It is necessary to find a balance between the complexity of the clearing threshold and mitigation of the risks derived from the holdings of derivatives by non-financial corporations.

On a more technical level, the ESRB concurs with ESMA in the definition of five classes of OTC derivatives, to which different clearing thresholds would be applied. Similarly, the ESRB also considers that the costs of defining different clearing thresholds per counterpart are not balanced by the benefits of that approach. The ESRB notes that the use of notional values in defining the clearing thresholds, the option taken by ESMA, may not reflect the market values of the derivatives held, with notional values being less representative of the real value of the derivatives in question. The ESRB proposes the use of gross market values instead, the clearing threshold being calculated with a fixed frequency. Finally, the ESRB notes that competent authorities should have adequate resources as well as access to all relevant information needed to monitor the correct implementation of the regime for the clearing of derivatives by non-financial corporations.

ESRB proposal for a definition of a clearing threshold for non-financial corporations

In view of the above, the ESRB proposes that ESMA define the clearing threshold, for each class of OTC derivatives, through a two-step approach, as follows:

Step 1. Division of the total population of non-financial corporations into two groups, depending on whether or not they fulfil the following condition:

$$\frac{TD\,(x)}{CR\,(x)} > \delta$$

where TD (x) is the gross market value of all derivatives held by non-financial corporation x and CR (x) is the carrying amount (from accounting) of the capital and reserves of non-financial corporation x.

Step 2. Depending on the level of the previous ratio, each non-financial corporation would apply a different value for the clearing threshold, which is defined as:

[2] Especially in the largest non-financial corporations, treasury activities also include fixed income and securities lending activities. ESMA may wish to reflect on whether these activities should be included in the definition of the treasury financing activities.

$$\frac{NCNTFD\ (x)}{GMVCD} > \varepsilon$$

for those non-financial corporations which exceed the value δ in Step 1 and

$$\frac{NCNTFD\ (x)}{GMVCD} > \gamma$$

for those non-financial corporations which do not exceed the value δ in Step 1,

where NCNTFD (x) is the gross market value of the non-commercial or non-treasury financing derivatives held by non-financial corporation x, and GMVCD is the gross market value, for each class of OTC derivatives, for all counterparts reported on a global basis in the BIS database on OTC Derivative Markets Statistics.

The global gross market value of each class of derivatives (GMVCD) may be integrated into the above formulae so that the clearing threshold is expressed in absolute terms:

$$NCNTFD\ (x) > \varepsilon \times GMVCD$$

$$NCNTFD\ (x) > \varepsilon'$$

and similarly,

$$NCNTDF\ (x) > \gamma'$$

For the calibration of the levels of the clearing thresholds, the ESRB has used all information available. In this process, the ESRB has found substantial gaps in the disclosure of information on the holdings of derivatives by non-financial corporations. This area of reporting will undoubtedly benefit from the provisions in Article 9 of EMIR on reporting obligations to trade repositories.

The values of the different parameters in the two-step approach proposed by the ESRB are shown in the table below:

Table A. Summary of the levels of the clearing thresholds proposed by the ESRB

	Credit derivative contracts	Equity derivative contracts	Interest rate derivative contracts	Foreign exchange derivative contracts	Commodities and other derivative contracts
Two-step approach					
δ	0.03	0.03	0.03	0.03	0.03
ε	8.4	9.4	12.4	13.4	9.4
γ	25.2	28.2	37.2	40.2	28.2
ε'	€13 million	€7 million	€151 million	€31 million	€16 million
γ'	€39 million	€20 million	€453 million	€92 million	€48 million

Source: ESRB

INTRODUCTION

The European Market Infrastructure Regulation (EMIR) requires the ESRB to be formally consulted on a number of issues. In accordance with Article 10 of EMIR,[3] the ESRB responds herewith to the consultation:

1. on criteria for establishing which OTC derivative contracts are objectively measurable as reducing risks directly relating to the commercial activity or treasury financing activity; and
2. on values of the clearing thresholds, which are determined taking into account the systemic relevance of the sum of net positions and exposures by counterparty and per class of OTC derivatives.

Section A of this note sets the overall framework for the discussion in Section B of the proposed clearing threshold in Consultation Paper 2012/379 and an alternative policy proposal. Section C discusses how the clearing threshold proposed by the ESRB has been calibrated. Several annexes accompany the report, providing further information on some of the issues raised.

Box 1. Description of the regulatory regime for the clearing obligation for non-financial corporations as defined in Article 10 of EMIR

The regime describing the operational functioning of the clearing threshold for non-financial corporation is defined in Article 10 of EMIR.

As a first step, the non-financial corporation taking OTC derivative contract positions that exceed the clearing threshold shall notify ESMA and the competent authority concerned. Hence the initiative lies with the non-financial corporation itself and not with the national competent authority.

Following this notification, the non-financial corporation becomes subject to the clearing obligation for future contracts if those contracts fulfil the following two conditions (excluding intragroup transactions):

1. The contracts have been concluded in one of the following ways: (i) between a financial counterparty and a non-financial counterparty; (ii) between two non-financial counterparties; (iii) between a financial counterparty or a non-financial counterparty and an entity established in a third country that would be subject to the clearing obligation if it were established in the European Union; or (iv) between two entities established in one or more third countries that would be subject to the clearing obligation if they were established in the European Union, provided that the contract has a direct, substantial and foreseeable effect within the European Union or where

[3] As per the Council version of EMIR, dated 11 April (see http://register.consilium.europa.eu/pdf/en/12/st06/st06399.en12.pdf).

such an obligation is necessary or appropriate to prevent the evasion of any provisions of this Regulation.

2. The contracts are entered into or novated either (i) on or after the date from which the clearing obligation takes effect; or (ii) on or after notification where a competent authority authorises a CCP to clear a class of OTC derivatives (it shall immediately notify ESMA of that authorisation), but before the date from which the clearing obligation takes effect if the contracts have a remaining maturity higher than the minimum remaining maturity determined by the Commission.

Additionally, the rolling average position over 30 working days must exceed the threshold.

Provided that these conditions are met, the non-financial corporation must then clear all relevant future contracts within four months of becoming subject to the clearing obligation.

A non-financial counterparty which has become subject to the clearing obligation and which subsequently demonstrates to the responsible authority, designated by each Member State, that its rolling average position over 30 working days does not exceed the clearing threshold shall no longer be subject to the clearing obligation.

The ESRB has carried out this work with the active involvement of the Advisory Scientific Committee.[4]

While responding to the consultation by ESMA, the ESRB has borne in mind the ultimate objective of EMIR, as stated in Recital 8: "[…]to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse […]";special consideration is given, on the basis of the ESRB mandate, to the mitigation of systemic risk. In this respect, paragraph 4 of Article 5 of EMIR defines three criteria to be considering when reducing systemic risk: "[…] (a) the degree of standardisation of the contractual terms and operational processes of the relevant class of OTC derivatives; (b) the volume and the liquidity of the relevant class of OTC derivatives; and (c) the availability of fair, reliable and generally accepted pricing information in the relevant class of OTC derivatives […]".[5]

[4] See http://www.esrb.europa.eu/about/orga/asc/html/index.en.html,

[5] Additionally, recital 99 states that EMIR objectives are "[…] to lay down uniform requirements for OTC derivative contracts and for the performance of activities of CCPs and trade repositories […]".

A. SETTING THE OVERALL FRAMEWORK FOR A POLICY RESPONSE

At the peak of the systemic financial events in 2008 and 2009, the G20 committed to bringing the majority of OTC contracts into a more regulated domain by obliging OTC derivatives to be compulsorily cleared through CCPs.[6] This decision follows the assumption that the benefits derived from central clearing balances the costs incurred.

In macro-prudential terms and given the mandate of the ESRB, it is of the essence to ensure that systemic risks stemming from the central clearing of OTC derivative transactions are appropriately managed and that further transparency in these transactions helps regulators and supervisors in their tasks of monitoring and assessing the vulnerabilities and risks arising in this segment of the financial markets.

In the case of derivative transactions entered into by non-financial corporations, it can be argued that:

- transactions carried out by non-financial corporations for the hedging of their core activities do not generate any systemic risk for the financial system as their aim is to cover risks arising from the core business activities of non-financial corporations;
- non-financial corporations are not as well prepared as financial institutions to cope with the margining and liquidity requirements resulting from central clearing and should therefore not use margins.

Before addressing the specific consultation by ESMA on Article 10 of EMIR, the following two sections discuss the reasons why the two aforementioned premises do not necessarily hold true and give the economic rationale for that view. The conclusions reached in this section determine the policy response to the consultation by ESMA, as developed in Section B of this report.

A.1. Hedging operations are not zero-risk operations for the economy as a whole

Notwithstanding prominent cases, non-financial corporations use derivatives predominantly to hedge their normal business activities, in order to reduce risks. The most straightforward example is foreign exchange risk. Non-financial corporations usually hedge the risk arising in a business-related operation conducted in a foreign currency through a derivative, the main objective being to have an instrument which compensates for the movements in the assets/liabilities of the non-financial corporation so that the final impact is zero or close to zero. Non-financial corporations are also usually expected not to enter into derivative

[6] The September 2009 communiqué by the G20 states: "All standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse.' See http://g20.org/images/stories/docs/eng/pittsburgh.pdf.

activities which are beyond the hedging of their operations. Inappropriate investments in derivatives may have dramatic consequences for the existence of the non-financial corporation.

Moreover, as non-financial corporations do normally not act as dealers and their interconnections as market markers are limited, they would in most cases not be seen as systemically relevant for the derivatives markets.

Nevertheless, the assumption that hedging operations are risk free does not hold, since hedging activities, while reducing some risks, also create others.

First, businesses normally base their operations on projections of future business activities and turnover. Unforeseeable events could lead, however, to a situation in which the projections are not met and no hedging via derivatives would have been necessary. Besides, if provided with wrong incentives, non-financial corporations could decide on production levels without giving full consideration to expected demand, focusing merely on the objective of making speculative gains from derivative operations. In other words, the production decisions of non-financial corporations are not to be taken as exogenous to derivative contracts. This can create a situation in which excessively favourable conditions for hedging risks cause non-financial corporations to enter into risky operations that are not commercially justified. In that case, non-financial corporations will find hedging cheaper than is economically efficient and will engage in production above the level defined as optimal for the maximisation of efficiency.

The case of Metallgesellschaft[7] (see Annex 3 for further details), and of many others, reveals that the assumption that every derivative carried by a non-financial corporation is backed by a real unit of production does not mean that there is no net speculation, and hence risk, in the system – even in cases where derivatives have a clear hedging purpose. If hedging becomes disproportionally favourable for the non-financial corporation, the risk would be that this could lead to an economically unjustified level of production, which is not only too large and inefficient but which might expose the corporation to severe difficulties. Although there is a hedge for every real unit of production, the overall scale of the hedging operations will be inefficiently large. If this behaviour is restricted to individual firms, as was the case for Metallgesellschaft at the moment of its failure, the implied risks would not have a systemic dimension. However, when, due to inappropriate incentives, this phenomenon occurs in entire market segments (rather than in specific corporations only) risks may become more systemic in nature, especially when the market value of derivatives evolves unfavourably for the non-financial corporations. Extrapolating this abstract idea to the financial sector and discarding other factors which are of relevance, it can be stated that, in the years before 2008, banks clearly held more Mortgage-Backed Securities (MBS) and Collateralized Loan

[7] Metallgesellschaft was one of the largest German conglomerate before its sudden collapse in 1993. In the wrong expectation of being able to hedge risk, Metallgesellschaft clearly sold more long-term contracts than it should have done. For a while, this strategy looked convenient, permitting Metallgesellschaft to make money on the transactions. However, when market conditions became unfavourable, Metallgesellschaft was exposed to sudden losses which forced the company into liquidation.

Obligations (CLOs) than was efficient because the hedges they were obtaining from AIG cost them little.

The case of Metallgesellschaft also points to an issue associated with the hedging of production by non-financial corporations: the diffused separation between hedging and speculation. What was initially defined as a hedging strategy ended up being closer to the speculative realm, since the derivatives transactions expanded beyond the amounts that would have been adequate if only the productive activities had been considered, mainly driven by significant gains made through the derivative transactions. Caution should be exercised when defining a separation between hedging and speculative activities involving derivatives as it cannot be taken for granted that hedging transactions contain no speculative component.

Second, transactions with an OTC derivative, including those qualified as linked to commercial and treasury financing activities, often entail a speculative component, emanating from the counterpart. What may be no more than a hedging transaction for one counterpart may be a speculative operation for the other. In the case of a derivative transaction between a non-financial corporation and a financial institution, the fact that the non-financial corporation considers that transaction as a hedge does not remove the risk from the counterpart side (banks in most cases). The recent process of financialisation observed in the commodities markets provides a good example of how a market, which traditionally dealt only with non-financial corporations, has become, at least, more volatile following the entry of a significant number of financial institutions, which usually act as counterparts of non-financial corporations. Annex 4 discusses this issue further.

In conclusion, classifying derivatives related to commercial and treasury financing activities as risk free (exempting them from the need to calculate the clearing threshold for central clearing) is conceptually flawed and may lead to an inefficiently large level of hedging affecting entire segments of the markets, which may have systemic consequences in the future. This finding may be considered in the next review of the Level 1 Regulation (EMIR).

A.2. Why are margins preferable to banking fees in macro-prudential terms?

The current practice seems to be that non-financial corporations have recourse to banks offering clearing services for their transactions with derivatives. This practice would change if non-financial corporations were forced to turn directly to CCPs. Therefore, the appropriate policy response largely depends on an assessment as to whether – from a systemic point of view – it would be more appropriate for non-financial corporations to act bilaterally with banks or multilaterally through CCPs. As further discussed in Annex 2, central clearing is preferable to decentralised clearing because of neutral risk management, mutualisation, netting and information benefits.

Why do non-financial corporations currently turn to banks, rather than CCPs?

The first reason for this behaviour is the need for tailored products which are not available as standardised exchange products. Non-financial corporations often have a very specific type of cash-flow or assets price fluctuations, which they need to hedge. To qualify as hedge accounting under the IFRS or US Generally Accepted Accounting Principles (GAAP), the

hedge has to effectively fulfil requirements which often imply tailor-made products. Another reason for non-financial corporations mainly using banks instead of CCPs is the fact that most of them are not accepted as members of CCPs[8] and, in cases where they could directly operate in a CCP, they would need to make costly IT investments and pay connection fees to the CCP. This could be overcome by having indirect access to the CCPs, as happens at present.[9] In this sense, the use of banks for the clearing of their OTC derivatives may appear optimal, as banks can operate as a single entry point to several CCPs, extending the hedging possibilities available to non-financial corporations. Currently, banks incorporate the costs of not receiving margins from non-financial corporations in the spread that they offer them. It is important to note that banks are obliged to provide margins if they pass on the open position in the market. In other words, non-financial corporations receive a poorer price for the same derivative than a market participant providing collateral and margins (for example, banks). This difference in price would be transferred to the non-financial corporation from the bank as a fee.[10]

In addition, non-financial corporations do not want to be forced to clear through CCPs because they do not want to be forced to pay margins. More than counterparty risks, non-financial corporations seem to fear the liquidity risk which might be caused by – in their view – unpredictable margin calls from a CCP.

There will, however, be significant consequences in macro-prudential terms if this procedure (that is to say, non-financial corporations clearing their derivatives through banks and not via CCPs) is maintained.

The fact that non-financial corporations prefer to pay fees to banks rather than margins to CCPs for the same transactions implies, systemically, the following: for the provision of similar services, the non-financial corporations prefer to alienate some resources to third parties, over which they then cease to have control (fees are gone as soon as they are paid), rather than sharing funds which would permit them to make use of buffers in case of losses arising from the derivative positions (margins).

It is important to highlight that, once fees have been paid from non-financial corporations to banks, they cannot be returned and the possibility of additional resources being required is not ruled out. Additionally, it must be noted that competition among banks to gain non-financial corporations as customers may well lead to a "race to the bottom" in fees, which

---

[8] Nevertheless, companies like Lufthansa or Vattenfall are used to margin calls (as indirect clearers) when they trade on exchanges such as the European Energy Exchange (http://www.ecc.de/en/about-ecc/partners-products/non-clearing-members).

[9] From 400 trading participants in Eurex, only 100 are direct clearing members in the CCP; the remainder uses indirect access.

[10] The main purpose of this paragraph is to illustrate how fees may allocate an inadequate price to the risk arising from OTC derivatives held by non-financial corporations and not to advocate direct access to CCPs for non-financial corporations. The latter would be a significant structural change in the market, which it is not the ESRB's intention to request in this report. Furthermore, CGFS Paper No. 46 states that: "In practice, the G20 commitment will likely be met through a combination of direct and indirect access to global CCPs" (see http://www.bis.org/publ/cgfs46.pdf).

may then cease to reflect the real risk taken by the bank. That would not be desirable in macro-prudential terms either. In that case, the banking fees do not adequately price the risk.

Moreover, in such a scenario, banks would internalise a risk which, in principle, would be that of non-financial corporations if fees paid were not accurate to compensate for these risks. Sufficient profits which can be accumulated into capital would prevent them from not fully internalising risks. If banks start operating as "quasi-CCPs" for non-financial corporations, they should be subject to similar rules as CCPs. At this point, it is of the essence to ensure that the provisions of Basel III (rules applying to banks) do not establish weaker treatment than the provisions of EMIR (rules applying to CCPs), not only in the matter of solvency but also in the area of liquidity, which is the most important area for clearing activities.[11]

Box 2. Scarcity of collateral for non-financial corporations

One of most frequent arguments against the use of central clearing by non-financial corporations refers to the difficulties that, due to the lack of collateral, they may face when posting the required collateral for their OTC transactions.[12] To deal with this difficulty, one solution would be to allow the use of bank guarantees as collateral.

At this point it is important not to forget that, unlike collateral, where an asset is exchanged to cover a risk, bank guarantees do not involve an exchange of assets but a double name risk. It is therefore important to ensure that the second name risk is of good quality and is not exposed to similar risks as the first name in order to prevent a "concentration" of the risk. The use of bank guarantees may be an alternative but, if not appropriately defined, this could be less safe than collateral.

In a concentrated financial sector characterised by a small number of large banks, non-financial corporations may be forced to rely on small or foreign banks for the provision of such bank guarantees. Alternatively, risks stemming from bank guarantees could be handled through appropriate haircuts. As a result, it becomes difficult to predict and measure the potential impact of the use of central clearing by non-financial corporations on the provision of collateral in the financial system.

---

[11] If such differences in the legal frameworks evolve to the extent that EMIR establishes weaker rules than Basel III, it would create strong incentives for the derivatives activities of non-financial corporations to explode as non-financial corporations would face lower costs (also in regulatory terms) than banks.

[12] When assessing the collateral available at each non-financial corporation, it is possible to define a ratio, which would be parallel to the usual interest coverage ratio (the interest coverage ratio measures how easily an institution can pay the interest on its debt and is defined as the ratio between the earnings before interest and taxes (EBIT) generated in a given period and the interest expense for that period), as in the following:

$$\frac{\text{Available assets as collateral + Cash and marketable securities}}{\text{Margin call in case of multiple notch downgrade}}$$

This ratio can be enriched by including the expected debt payments in the short term, so that it is defined as:

$$\frac{\text{Available assets as collateral + Cash and marketable securities}}{\text{Debt payments due in the next quarter + Margin call in case of multiple notch downgrade}}$$

Current market practices approach the issue of the scarcity of collateral by non-financial corporations using a chain of contracts with banks, which entail cross-product and bundled margining.

For example, when bank X enters into a derivative transaction with a non-financial corporation A, instead of asking for collateral separately for the derivative, it also extends a loan to A (for its commercial activities), which has fixed assets (property, plant and equipment) as collateral. Bank X then can either over-collateralise the loan to obtain guarantees on the derivative or to adjust the terms of the loan.

These practices may also raise macro-prudential concerns as the collateral pledged on loans is different to that pledged on derivative transactions, since the former usually includes more illiquid assets such as property, plant and equipment, which are not eligible for collateral on derivative transactions cleared through CCPs.

B. POLICY RESPONSE TO THE ESMA CONSULTATION

The ESMA consults the ESRB on the following issues:

- on criteria for establishing which OTC derivative contracts are objectively measurable as reducing risks directly relating to the commercial activity or treasury financing activity; and
- on values of the clearing thresholds, which are determined taking into account the systemic relevance of the sum of net positions and exposures by counterparty and per class of derivatives.

B.1. Definition of commercial and treasury financing activities

The EMIR legislation excludes from the computation of the clearing threshold those derivatives held in the course of the commercial and treasury financing activities of the non-financial corporation. At the same time, the EMIR legislation requires that – once thresholds are exceeded – all standardised future derivative transactions be cleared through central clearing counterparties, regardless of whether they are classified as linked to commercial or treasury financing activities or not.

One preliminary issue on which the ESRB responds to the ESMA is how to define and earmark "commercial and treasury financing activities". This is crucial both to make sure that the right transactions are included and excluded from the definition, as well as to check whether provisions are circumvented.

In principle, regulators might follow two approaches:

1. They might adopt a very broad definition of "commercial and treasury financing activities" and apply a low threshold to the excluded activities. This would aim at ensuring that only speculative activities (excluded from a very broad definition) would be captured but that the obligation to clear them through CCPs would apply whenever their size exceeded limited levels.
2. They might adopt a fairly narrow definition and apply a fairly high threshold to the excluded activities. This would capture a broader set of transactions but, at the same time, probably limit the overall impact of the legislation, forcing non-financial corporations to make use of CCPs in limited cases only.

To avoid easy circumvention of the definition of commercial and treasury financing activities, it is important to provide clear and widely used definitions, with accurate references, leaving no leeway for different interpretations and arbitrage, since the consequences of complying with or failing to comply with the definition could be significant.

The ESRB welcomes the approach of ESMA to defining commercial and treasury financing activities, as expressed in paragraphs 56 to 62 of Consultation Paper 2012/379. The ESRB broadly agrees with the approach taken by the ESMA. Nonetheless, the ESRB is concerned about the following features of the ESMA proposal:

- The definition of the commercial and treasury financing activities of a non-financial corporation seems to relate mostly to its commercial activities and does not discuss in depth those activities which could be classified as treasury financing. In this respect, a more specific reference to those activities that are considered part of treasury financing would be welcome, as the risks inherent in the commercial activities may differ in nature from the risks incurred when financing those commercial activities.
- The reference to the concept of "hedging" as set up in the International Financial Reporting Standards (IFRS) can of itself cover the "ring-fencing" of financial and non-financial uses of derivatives. The ESRB welcomes the reference to the version of the IFRS approved by the European Commission as this adds clarity for non-financial corporations. However, the use of a reference to the IFRS may place at a disadvantage those non-financial corporations which do not use the IFRS (mostly non-listed non-financial corporations). Furthermore, the definition of hedging in the IFRS may not be fully consistent with the objectives of ESMA as the IFRS were prepared for quite different purposes.

Against this background, the ESRB would like to make the following proposals to improve the definition of commercial and treasury financing activities currently put forward in Consultation Paper 2012/379:

- The definition of commercial activities could be complemented by a link to the concepts of capital expenditure and operating expenditure, which are widely used in accounting and finance. The use of capital expenditure would be too narrow in some cases, as it excludes, *inter alia*, supplies (for example, energy for the factories) for the production of stocks. Therefore, it is necessary to go beyond the scope of capital expenditure and also consider operating expenditure in the definition of derivatives held for commercial purposes. Furthermore, the scope of commercial activities should include payables and receivables connected with the core activities of non-financial corporations. The rationale behind this is that these derivatives should be linked to the hedging of specific items on the balance sheet and more specifically to the core business of the non-financial corporation (namely, stocks, payables, receivables and property, plant and equipment).[13]

  To prevent a non-financial corporation from abusing this definition, a maximum level of hedging for commercial purposes could be established. This maximum level could be the carrying amount of the stocks, payables, receivables and property, plant and equipment on the balance sheet; it would not make sense to cover more commercial activity with the derivatives than that actually carried out by the non-financial corporation.

[13] An alternative which could be used for the definition of commercial activities is the turnover of the non-financial corporation, i.e. to consider as commercial only those activities accounted for as turnover. That would, however, not cover the heterogeneity in the definition of turnover across European countries. Moreover, there is significant heterogeneity in the business cycle across industrial sectors since, in some cases, turnover is only calculated on a multi-annual basis. For these reasons, this alternative has been discarded.

- The definition of treasury financing activities naturally refers to the cash flow of the non-financial corporation. A straightforward way of defining the cash flow is to use the cash flow statement of the non-financial corporation, establishing that the cash flow should be limited to that of the financing activities of the non-financial corporation generated during the year.[14] In addition, especially in the largest non-financial corporations, treasury activities also include fixed income and securities lending activities. ESMA may wish to reflect on whether these activities should be included in the definition of the treasury financing activities.

B.2. Discussion on the ESMA proposal of clearing thresholds for non-financial corporations

In Consultation Paper 2012/379, ESMA proposes a clearing threshold for non-financial corporations, defined in terms of notional values, of €1 billion for credit derivative contracts and for equity derivative contracts, whereas this threshold rises to €3 billion for interest rate derivative contracts, for foreign exchange derivative contracts and for commodities and other derivative contracts. The ESRB appreciates the extensive work carried out by ESMA in this domain and discusses several aspects of this proposal in the following paragraphs.

From the impact assessment in Consultation Paper 2012/379, the ESRB understands that ESMA has given special importance to the definition of a simple and easily enforceable clearing threshold. The ESRB fully agrees with the objective of not increasing significantly the complexity of the application of the clearing threshold for non-financial corporations. However, it is concerned that excessive reliance on a simple and easily enforceable clearing threshold would play down other relevant factors. It is necessary to find a balance between the complexity of the clearing threshold and the mitigation of risks derived from the holdings of OTC derivatives by non-financial corporations. Otherwise, it may not be possible to prevent situations in which an excessive and unjustified amount of derivatives is held by a non-financial corporation, a fact which may ultimately entail its default.[15]

The process for the calibration by ESMA of the different clearing thresholds is not described in detail in Consultation Paper 2012/379 and the ESRB therefore prefers not to make any judgement on that matter. The ESRB shares the view of ESMA that insufficient information is currently available for regulators for an adequate assessment of the holdings of derivatives

---

[14] IAS 7 defines the cash flows relating to the financing activities as those related to the "[…] activities that result in changes in the size and composition of the contributed equity and borrowings of the entity".

[15] The case of Metallgesellschaft is referred to throughout this report as an example of this kind of situation but it is not the only such case; many other non-financial corporations have suffered severe losses derived from the holdings of derivatives, with extreme consequences in most cases. Moreover, as discussed in section A.1., the concern of the ESRB is not related to the collapse of one non-financial corporation, as was the case for Metallgesellschaft, but to the risks derived from excessive holdings of derivatives by non-financial corporations and the consequences in case of unfavourable developments in the financial markets. Metallgesellschaft, which was headquartered in Frankfurt am Main, is taken as an example, particularly owing to the extensive literature available about it.

by non-financial corporations to be made. This area of reporting will undoubtedly benefit from the provisions in Article 9 of EMIR on reporting obligations to trade repositories.

B.2.1. Clearing thresholds per class of derivative and per counterparty

Article 10 of EMIR suggests that the EU legislator does not intend to define just one threshold but several thresholds, which would be tailored to the counterparty and to the class of derivative involved. While ESMA has defined five classes of OTC derivative contracts, its proposal does not envisage the definition of different thresholds per counterparty.

With regard to the classes of OTC derivatives, it is important to consider the implications of having a single threshold for all classes of OTC derivatives contracts or, conversely, class-specific thresholds:

- *A single threshold.* Such a solution would imply that riskier classes of derivatives would be somehow encouraged as their "cost" for the non-financial corporations would be the same in terms of computation of the clearing threshold as for other classes of derivatives.
- *Specific thresholds*. Defining different clearing thresholds per classes of OTC derivatives, if taken to the extreme where a very large number of classes are defined, would be rather complex for both the regulators and the non-financial corporations themselves. Furthermore, this could also give rise to a soft form of regulatory arbitrage, where those classes of OTC derivatives with a higher threshold would be used increasingly, irrespective of whether they meet the business requirements of the non-financial corporations or not. In turn, those classes of OTC derivatives with a higher threshold would become riskier, leading to a review and subsequent decrease of the clearing threshold, followed by the movement of transactions to other classes with a higher threshold.

Consequently, the optimal solution, in the view of the ESRB, would seem to be the use of different thresholds per class of OTC derivatives, while retaining a limited number of classes. In this respect, the ESRB agrees with the classes of derivatives defined by ESMA in Consultation Paper 2012/379, which are also in line with the classification used by the BIS in its database of OTC Derivatives Markets (see Table 1 below).

Table 1. Classes of OTC derivatives defined in the BIS database of OTC Derivatives Markets and in ESMA Consultation Paper 2012/379	
BIS	**ESMA**
Foreign exchange contracts	Foreign exchange derivative
Interest rate contracts	Interest rate derivative contracts
Equity-linked contracts	Equity derivative contracts
CDS	Credit derivative contracts
Total commodities	Commodities and other OTC derivative contracts
Other	
Sources: BIS and ESMA	

With regard to the definition of different thresholds depending on the counterparty of the OTC derivative transaction, it is the view of the ESRB that such a distinction would increase the complexity of whatever solution chosen, while providing few benefits for the mitigation of systemic risk. Therefore, the ESRB agrees with the approach taken by ESMA in Consultation Paper 2012/379.

B.2.2. Clearing thresholds in notional values

In Consultation Paper 2012/379, ESMA defines the clearing thresholds in terms of notional values. While acknowledging the merits of using notional values, the ESRB would prefer to opt for the use of gross market values, despite their limitations as described below. In the light of the experience of the use of gross market values, this decision may be reconsidered in subsequent reviews of the clearing threshold, already envisaged in Article 10 of EMIR.

Notional values are usually set by market practices and therefore do not provide an optimal indication of the real market value of the underlying derivative: notional values remain unchanged irrespective of the changing market conditions in the derivative. For some derivatives notional values simply serve as a reference and have little relevance for (future) settlement values. The use of notional values would imply that the evolution of the risks over the term of the derivative contract is not considered, since notional values are set at the inception of the OTC derivative contract and are part of this contract. A clearing threshold defined in notional values would not capture situations such as that of Metallgesellschaft (and many others, which are not so widely discussed in the literature), where the adverse evolution of the market imposed severe losses from the holdings of derivatives. Accordingly, a clearing threshold defined in terms of notional values would not reflect the declining market value of the derivatives held and would not take account of the ability of the non-financial corporation to resist those adverse market conditions.

In addition, information on notional values is not used by non-financial corporations in their financial reporting, with the result that the calibration of a clearing threshold defined in terms of notional values would be more difficult to carry out with information from the financial statements of non-financial corporations.

The ESRB would consider it more appropriate to express all the amounts as gross market values, which might better reflect the market conditions through the life of the OTC derivative, although they may be subject to frequent and significant variations, especially in times of turmoil in the financial markets (e.g. jump to default risk in credit default swaps). This fact implies that the clearing threshold (and with it the obligation to clear) would potentially shift in response to positive or negative movements in the market value of the derivative, not only as a consequence of new OTC derivatives transactions entered into by non-financial corporations. However, there are two important nuances to consider here: (i) in the case of the ESRB proposal for the calculation of the clearing threshold for non-financial corporations, gross market values are used both in the numerator and in the denominator in the formulae, so that it is likely that they will move similarly, and (ii) from a prudential perspective, in times of financial turmoil where global market values are moving upwards and downwards, it may be wiser to "extend" the clearing obligation in order to ensure a sounder financial system.

In advocating the use of gross market values for the calculation of the clearing threshold, the ESRB does not wish non-financial corporations to calculate the clearing threshold every time that the gross market value of their derivatives changes, as these changes usually occur on an intraday basis. In an extreme case, this approach could imply that an entity would be above or below the clearing threshold in a matter of days. Consequently, to overcome these unintended consequences of the use of gross market values, the ESRB proposes that the calculation of the clearing threshold be carried out at a fixed frequency (monthly, for example), with the possibility for competent authorities to increase it (to weekly, for example) in times of financial turmoil.

B.2.3. Other technical comments on the definition of the clearing threshold

In Article 10 of EMIR, the use of net, and not gross, positions in the calculation of the clearing threshold for non-financial corporations is proposed. By taking the net position, the focus is on the imbalanced positions with a given counterpart as two very large positions may be netted against each other if they are concluded with the same counterparty and there is legally enforceable bilateral netting agreement between them. In case of those derivatives related to the commercial and treasury financing activities of the non-financial corporation, this is also reflected in the net effect of the hedging transaction with the hedged item. From a financial stability perspective, risk is generated by the relative size of the derivatives position, regardless of the purpose of the derivatives and the imbalance towards just one counterpart. Therefore, the policy proposal of the ESRB looks at the overall derivatives position as a source of systemic risk stemming from non-financial corporations.

To avoid circumvention and to cover the whole activities of the non-financial corporation, it would be desirable for the threshold to be applied to the group as a whole (accounting concept, including SPEs), including financial and non-EU subsidiaries. Otherwise, if applied only at the level of the individual non-financial corporations, large groups may opportunistically multiply legal entities, each of them carrying out a low number of transactions. Additionally, regarding the exclusion of financial subsidiaries from the computation of the clearing threshold, the ESRB would like to point out that where a bank is a subsidiary of a non-financial corporation (very common, for example, in the car

manufacturing industry), that bank is ultimately not a bank but part of a non-financial corporation, the parent entity of the group, which determines its existence.

Having said that, paragraph 3 of Article 10 of EMIR clearly excludes financial subsidiaries from the scope of the application of the clearing threshold. Therefore, the clearing threshold should be applied only to the non-financial subsidiaries of the consolidated group. In future revisions of the EMIR regulation, the EU regulator may wish to consider the possibility of including financial subsidiaries.

The application of this regime to the subsidiaries of non-financial corporations situated outside the EU may require further work to ensure reciprocity from other jurisdictions. This reciprocity is also of the essence for ensuring that similar provisions are applied at a global level and that non-financial corporations in the EU are not placed at a disadvantage with other global competitors.

In this process, the ESRB considers that the use of the Legal Entity Identifier (LEI) will help in the identification of the parent entity and the subsidiaries in the group.

Finally, for the measures to be effective, it is essential for there to be a strong monitoring system to ensure that non-financial corporations comply with the various legal requirements on the issue. Competent authorities must have adequate resources as well as access to all the relevant information to enable them to monitor the correct implementation of the regime for the clearing of derivatives by non-financial corporations. It is important to note that the target population is much higher than the financial institutions in Europe (estimated at around 9,200), with all that this implies in terms of resources devoted to this task.

B.3. Theoretical approach to the definition of clearing thresholds for non-financial corporations

The EMIR legislation requires the definition of a threshold above which non-financial corporations shall clear (all) their future derivative contracts through central counterparties (CCPs). In view of the proposed clearing thresholds discussed in the forthcoming paragraphs, it is the opinion of the ESRB that they do not necessarily need to be defined as absolute amounts, since the concept of threshold refers to “a level, point, or value above which something is true or will take place and below which it is not or will not”[16].

The clearing thresholds are defined in Consultation Paper 2012/379 in terms of an amount in billion euro per class of derivatives. In response to this approach, the ESRB would like to propose an alternative model, which is presented in Section B.4 below.[17]

From a theoretical angle, any proposal for the definition of a clearing threshold should ensure that the following policy goals are achieved:

---

[16] See http://mwdev3.m-w.com/dictionary/threshold.

[17] Once more information is available on the use of derivatives by non-financial corporations, this proposal may be further developed by others, considering, for example, the size of the derivative portfolio of the non-financial corporation.

- First, from a macro-prudential point of view, the rationale of policy responses would be to defend the integrity of the market and to ensure its transparency as such, not to protect the interests of the single market participants. In that vein, regulators might start from the assumption that they would need to ensure – from a macro-prudential angle – that a maximum given percentage of overall non-financial derivative transactions needs to be centrally cleared in order to reduce counterparty risk in the market. The question here refers to the level of derivatives not linked to the commercial or treasury financing activities of non-financial corporations, which are not cleared in CCP and with which regulators feel comfortable. What is more, regulators might wish to assume that all corporations which found themselves exposed to derivative activities for a given ratio of their overall balance sheet would be treated equally, whatever their absolute size.

- Second, ways need to be found to make sure that the total amount of derivatives held by the non-financial corporation, irrespective of their intended use, is appropriately reflected. From a financial stability perspective, the risk is generated from the (relative) size of the derivative positions, regardless of the purpose of those derivatives.

Box 3. Theoretical approach to the clearing threshold for non-financial corporations: definition of the clearing threshold as a weighted ratio

The following formula could be theoretically considered for the calculation of the clearing threshold for non-financial corporations[18]:

$$\frac{NCNTFD\ (x)}{GMVCD} \times \left(2 - \frac{NCNTFD\ (x)}{TD\ (x)}\right) > \beta$$

where:

- NCNTFD (x) is the gross market value of the non-commercial or non-treasury financing derivatives held by the non-financial corporation x.
- TD (x) is the gross market value of all the derivatives held by the non-financial corporation x.
- GMVCD is the gross market value, per class of OTC derivatives, for all counterparts, on a global basis, as reported by the BIS database on OTC Derivative Markets Statistics.

When the result of the formula exceeds the clearing threshold (β), the non-financial corporation shall clear all its future derivatives via CCPs provided that the contracts are CCP eligible and fall under the clearing obligation. When that result is below or equal to β, there will be no requirement to clear.

The proposed formula is composed of a ratio and a weight. The weight is included in the formula to indirectly capture the risk inherent in the OTC derivatives transactions linked to the commercial and treasury financing activities, whereas the ratio relates the derivatives held by the non-financial corporation with the market, as the primary objective of the clearing

[18] Annex 5 provides further information on how this formula has been derived.

threshold should be to ensure the correct functioning of the market as such. The concern is not the potential failure of a non-financial corporation (caused by an imbalanced position in derivatives) but the amount of risk introduced into the financial system by non-financial corporations.

Paragraph 3 of Article 10 of EMIR explicitly mentions that those derivatives which are not held for commercial or for treasury financing activities shall be included in the calculation of the clearing threshold. Therefore, this proposal for the definition of a clearing threshold is not enforceable in the current legal framework in Europe and will not be included in the advice of the ESRB to ESMA. It must be merely considered as a first theoretical attempt.

B.4. ESRB proposal for the definition of the clearing threshold: two-step approach[19]

As an alternative to the proposed clearing thresholds in ESMA Consultation Paper 2012/379, the ESRB also finds merits in defining the clearing threshold for non-financial corporations, per class of OTC derivatives, in a two-step approach, which would work as follows:

1. In Step 1, the non-financial corporations which will be subject to the clearing threshold are assigned to the two subsets, as those where:

$$\frac{TD\ (x)}{CR\ (x)} > \delta \quad \text{and} \quad \frac{TD(x)}{CR\ (x)} \leq \delta$$

   where:

   - TD (x) is the gross market value of all the derivatives held by non-financial corporation x.
   - CR (x) is the carrying amount (from accounting) of the capital and reserves of non-financial corporation x.

2. For those non-financial corporations which exceed the value δ, the following ratio, which sets the clearing threshold, would be applied:

$$\frac{NCNTFD\ (x)}{GMVCD} > \varepsilon$$

   where:

   - NCNTFD (x) is the gross market value of the non-commercial or non-treasury financing derivatives held by non-financial corporation x.
   - GMVCD is the gross market value, per class of OTC derivatives, for all counterparts, on a global basis, as reported by the BIS database on OTC Derivative Markets Statistics.

3. For those non-financial corporations which do not exceed the value δ in the first step of the process, a second level of the clearing threshold will be defined. This second

[19] The ESRB has maintained ongoing contact with staff of ESMA, at a technical level, while defining this two-step approach.

threshold (γ) would be higher than the threshold set for those non-financial corporations which exceed δ ($\gamma > \varepsilon$).

$$\frac{\text{NCNTFD (x)}}{\text{GMVCD}} > \gamma$$

From the four variables used in this proposal, three of them (total derivatives held by non-financial corporation, derivatives not related to commercial or treasury financing activities, and the carrying amount of capital and reserves) are inherent to each non-financial corporation and should vary over time, as long as the non-financial corporation develops its activities. The use of gross market values for the derivatives held by the non-financial corporation implies that these variables would also change following changes in the market value of the derivatives. The forth component (global amount of derivatives) is extrinsic and must be made available to non-financial corporations, most probably taking it from existing international datasets, such as the BIS OTC Derivatives Market Statistics, with regular reviews, every half-year or every year.[20]

On the geographical scope of the forth component (global amount of derivatives), the best solution would be, in theoretical terms, to use the European and not the global amount of derivatives held by all counterparties. However, in the present circumstances, it is not possible to use these amounts as they are not disclosed in a breakdown by instruments in the BIS OTC Derivative Market Statistics. Furthermore, the use of global amounts rather than European may be justified by the fact that the financial system is currently largely globalised, making it difficult to draw clear borderlines between what is European and what is not.[21]

In order to define a clearing threshold which is easily understood and given the fact that the global amount of derivatives may be in the order of trillions (10^{12}), both sides of the formula in Step 2 would be multiplied by a constant factor k.

The merits of this option are:

- This approach pre-emptively defines those non-financial corporations whose derivatives can certainly create risk for the system and for themselves as their total exposure to derivatives exceeds a certain ratio. Depending on the ability of the non-financial corporation to withstand negative shocks, a different clearing threshold will be applied.[22]

[20] If this is found too burdensome, the proposal developed in section B.4.1 incorporates this variable into the value of the clearing threshold.

[21] At a later stage, once the availability of information on the use of derivatives has been enhanced, the definition of the clearing threshold may be fine-tuned by considering only the transactions which involve end-users, thus excluding those which are only conducted by dealers (intra-dealer transactions). The latter type of transactions may be excluded from the calculation of the clearing threshold for non-financial corporations as a consequence of the bias that they introduce into the measurement of the global amount of derivatives.

[22] That would imply that a decrease in the capital and reserves *per se* may create a clearing obligation for a non-financial corporation as a consequence of its reduced ability to withstand negative developments arising from its derivative contracts.

- For those non-financial corporations that do not have a large amount of derivatives but where a significant proportion of those derivatives are used for purposes other than commercial and treasury financing activities, a second threshold for the clearing of OTC derivatives is defined.

The main drawbacks of this option are:

- Small-sized corporations may also become subject to central clearing since this approach does not exclude any non-financial corporation from the clearing application on the basis of size.
- This method entails the calculation of three parameters (δ, ε and γ), which makes its application relatively complex when compared with the proposal from ESMA.[23]

Regarding how this threshold meets the requirements in paragraph 3 of Article 10 of EMIR, it is important to highlight that Step 1 of the process, in which all derivatives held by the non-financial corporation are computed, is not part of the calculation of the clearing threshold, it is merely a pre-selection of those non-financial corporations that will be subject to a lower clearing threshold. This method can thus be understood to apply a single threshold (γ), which is then reduced to ε for a specific group of non-financial corporations, namely those expected to be more vulnerable to adverse shocks arising from their holdings of derivatives.

B.4.1. Definition of the clearing threshold in the two-step approach in absolute amounts

The two-step approach for the calculation of the clearing threshold presented above may also admit a definition of the clearing thresholds in absolute amounts:

$$\frac{\text{NCNTFD (x)}}{\text{GMVCD}} > \varepsilon$$

$$\text{NCNTFD (x)} > \varepsilon \text{ x GMVCD}$$

$$\text{NCNTFD (x)} > \varepsilon'$$

The same would apply in case of the clearing threshold γ to be applied by those non-financial corporations that do not exceed the value δ in the first step of the process:

$$\text{NCNTDF (x)} > \gamma'$$

[23] On the other hand, the complexity of this two-step approach may not be much greater than the complexity of derivative contracts. In the end, non-financial corporations are simply required to know the market value of the derivatives that they own while the competent authorities (or ESMA) are required to facilitate the global amount of derivatives, as reported to the BIS.

C. CALIBRATION OF THE CLEARING THRESHOLD

C.1. Preliminary remarks

In the following sections and with the clear objective of being as transparent as possible, the ESRB explains in detail how it has derived the values of the clearing thresholds in the two-step approach proposed in the previous section, even if the low availability of the information implies that some of the assumptions may not have a strong economic background.

For the calibration of the parameters in Section B of this report (namely δ, ε and γ), the ESRB has looked at all available information on the current use of derivatives by European non-financial corporations. To that end, a request for aggregated information was submitted to the European Committee of Central Balance Sheet Data Offices (ECCBSO),[24] in accordance with Annex III of the ESRB Decision 2011/6[25]. Information from other existing public databases has also been used in this process.

The initial assumptions of the ESRB in this work were as follows:

- A low threshold, based on a clear macro-prudential rationale, must be defined from the beginning, with the possibility to increase it in subsequent reviews of the threshold if it is deemed necessary. This approach is adopted in line with the phase-in approach proposed by ESMA in Consultation Paper 2012/379.
- Looking at the classes of OTC derivatives, those which are more in line with the hedging operations of the non-financial corporations will have a higher threshold than those which are hardly connected with these activities of non-financial corporations. Additionally, the use by non-financial corporations of each class of derivatives will also be considered.

First, the ESRB looks at the global and European trends in the use of derivative by non-financial corporations in order to gain information which will subsequently be used in the calibration process.

C.2. Assessment of the global amount of derivatives: evidence from the BIS database on OTC derivatives markets

In the proposal for a clearing threshold presented in this report (two-step approach), the global amount of derivatives is included in the calculation. As a first step, it is important to look at the global activity of OTC derivatives markets so that some facts can be inferred for further use in the calibration process. The BIS database on OTC Derivatives Markets (see Annex 1 for further details) provides a valid proxy of the amount of OTC derivatives on a global scale.

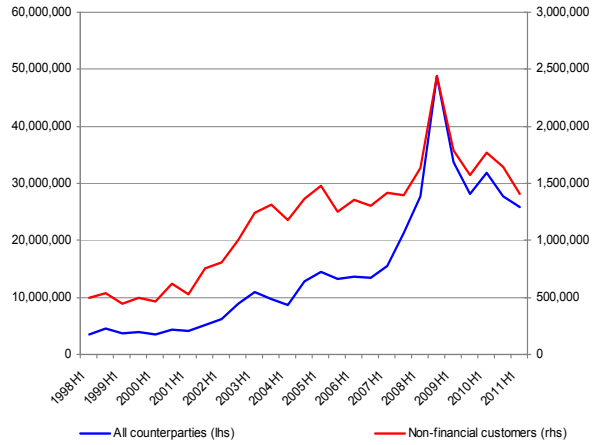
[24] See http://www.eccbso.org/.

[25] See http://www.esrb.europa.eu/pub/pdf/CoIfMO_EN.pdf?af1659b1becc52c22981aca2d9878aed.

In terms of gross market values, the evolution of the OTC derivatives held by non-financial customers[26] has followed a similar path to the overall market, as shown by Chart 1. Accordingly, in both cases, there has been a strong increase in the use of OTC derivatives starting in 2002 and peaking in 2008. Following that peak, both series have decreased slightly since the start of the crisis. It must be noted that non-financial corporations also took part in the exuberant growth of these markets, in a scenario where such growth rates may not be fully explained by the conduct of their core operations.

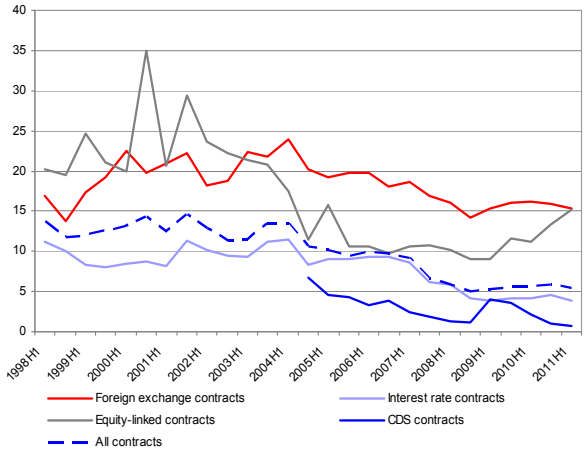
Looking at the different classes of OTC derivatives, their use by non-financial corporations is not homogeneous.[27] As evidenced by Chart 2, in CDS and interest rate contracts, non-financial corporations have a limited role when compared to the overall picture, whereas in the area of foreign exchange and equity-linked contracts the share of non-financial corporations over the total market is higher, around 15% of the gross market value in both cases. In all cases, the share of non-financial corporations in each class of OTC derivatives has diminished since the first observations, although rather than pointing to a reduction in the use of OTC derivatives by non-financial corporations, this may suggest a significant increase in the OTC transactions by other market participants.

Chart 1. Gross market values, total contracts, USD millions



Sources: BIS and own calculations

Chart 2. Share of non-financial customers over all counterparties by class of OTC derivatives, gross market values



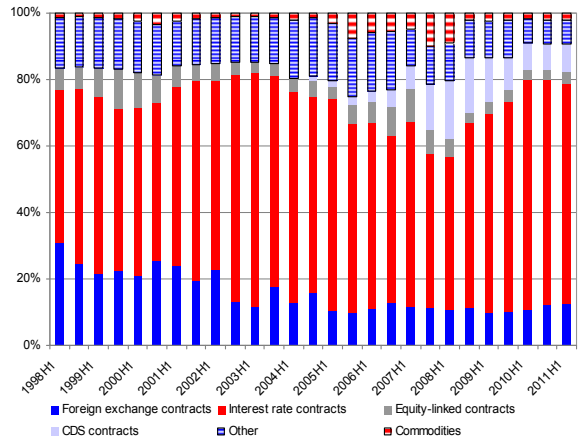
Sources: BIS and own calculations

[26] It is important to note that, according to the BIS methodology, the category "non-financial customers" comprises not only non-financial corporations but also governments. Given the lack of alternative databases and assuming that the activity of governments in the OTC derivatives markets is rather limited, the ESRB has used the sector of "non-financial customers" as a proxy for non-financial corporations.

[27] In addition to the four classes of OTC derivatives in Chart 2, the OTC Derivative Markets Statistics also report commodity derivatives for all counterparts but not for non-financial customers. Thus, this category has not been considered here.

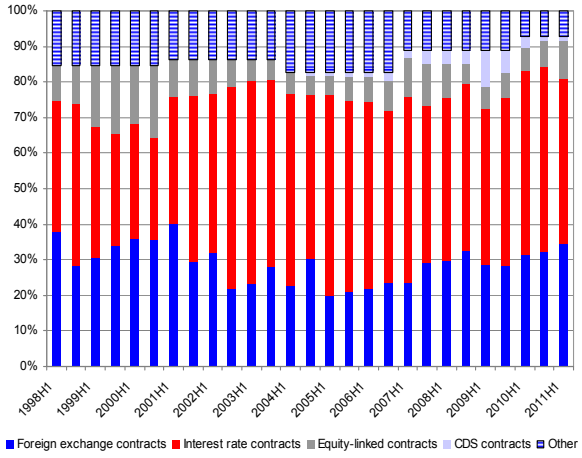
Taking the analysis of the use of the different classes of OTC derivatives slightly further, it can be observed (Charts 3 and 4) that interest rate contracts are more widely used by non-financial corporations, albeit not so extensively as for the total of the institutions. They are followed by foreign exchange contracts, which are, by comparison, more intensively used by non-financial corporations. These two types of contracts alone represent 80% of the total activity of non-financial corporations in the OTC derivatives markets. Looking closer at Chart 4, it is interesting to notice, on the one hand, the increasing role of interest rate contracts, which in principle may be linked to financing treasury activities but which may also be linked to other non-core activities of non-financial corporations. A further interesting point is how the weight of foreign exchange contracts, those which would be the most straightforward example of hedging, has diminished since the first observations in the data series, in a period during which global trade has exploded.

Chart 3. Proportion of OTC derivatives held per type of contract, gross market value, all counterparties



Sources: BIS and own calculations

Chart 4. Proportion of OTC derivatives held per type of contract, gross market value, non-financial customers



Sources: BIS and own calculations

From the previous analysis, the following relevant conclusions for the calibration of the clearing thresholds can be reached:

1. The trend followed by non-financial corporations in recent years is similar to that of the overall OTC derivatives markets. It can hence be deducted that non-financial corporations also contributed to the exuberant growth of OTC markets between 2002 and 2008.
2. Non-financial corporations represent roughly 5% of the total OTC derivatives markets, although in some segments, namely foreign-exchange and equity-linked contracts, their weight increases to 15%. When defining the clearing threshold, it is important to consider the consequences of mandatory central clearing for each class of OTC derivatives, especially in terms of the amount of transactions becoming subject to the obligation.

3. Non-financial corporations enter mainly into interest rate contracts (around 45% of the total amount of OTC derivatives used by them) and foreign exchange contracts (around 35% of the total). These two classes of OTC derivatives seem to be, a priori, the most related to the commercial and treasury financing activities of non-financial corporations. Therefore, special attention should be devoted to these two types of contracts when defining the clearing threshold.

C.3. Assessment of the use of OTC derivatives by European non-financial corporations: evidence from the available information

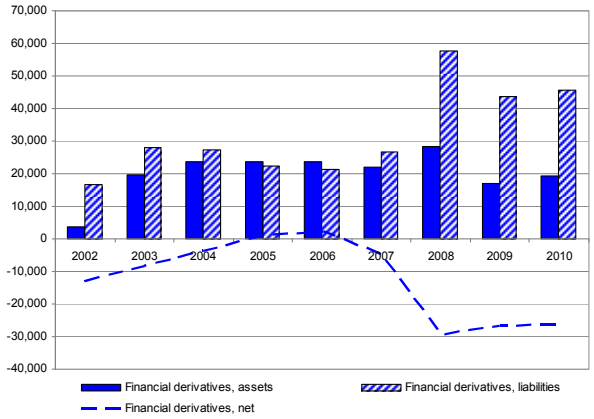
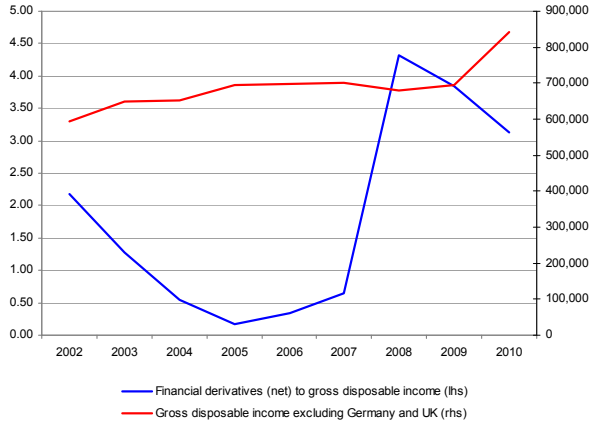
For the calibration of the parameters in Section B of this report, it is necessary to understand and measure the use of OTC derivatives by European non-financial corporations. However, in spite of the wealth of information collected from the ECCBSO, available information does not provide the appropriate level of detail. Among other limitations, it is not possible to identify those operations carried out for commercial or treasury financing purposes. Nevertheless, some indirect sources may provide relevant information on this subject.

The European Sector Accounts,[28] produced by Eurostat, may provide a first overview of the use of derivatives by non-financial corporations. However, in the data series of financial derivatives held by non-financial corporations, data from Germany and the United Kingdom are missing, a fact which clearly underestimates the amounts provided by this dataset.

Bearing in mind this important caveat, at the end of 2010 (the latest point in time at which all information is available), the consolidated amount of financial derivatives held by non-financial corporations of the "EU27 minus Germany and United Kingdom" was €19.36 billion on the assets side and to €45.62 billion on the liabilities side.[29] It is possible to compare these amounts with the gross disposable income of non-financial corporations (see Charts 5 and 6), which can provide a first rough estimate of the aggregate importance of derivatives in the context of the whole sector of EU non-financial corporations.

[28] See http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/introduction.

[29] At the date of the inception of the OTC derivative transaction, the present value of the cash flows in the two legs of the transaction must be zero (or close to zero) because the parties would otherwise not enter into the transaction on such terms. As time goes by, the present value of these cash flows varies, giving rise to an asset or a liability for each part of the OTC derivatives transaction.

Chart 5. Financial derivatives of EU non-financial corporations, EUR millions	Chart 6. Financial derivatives to gross disposable income, non-financial corporations, EUR millions and percentages
	
Sources: Eurostat and own calculations	Sources: Eurostat and own calculations

From these charts, it is possible to observe how the amounts recognised as liabilities from financial derivatives have increased significantly since 2006. These significant amounts on the liabilities side imply that the present values of the cash flows of the OTC derivatives have evolved in "unfavourably" for non-financial corporations, giving rise to a liability which now represents more than 5% of the gross disposable income of the total EU non-financial corporations (including those which do not enter into any kind of OTC derivatives transactions).[30]

From the ECCBSO information,[31] it is possible to look at the impact of derivatives on non-financial corporations by observing the gains and losses entailed. Chart 7 shows how the losses recognised in the last three years have amounted to more than 10% of the total derivatives held on either the assets or the liabilities side of the balance sheet. In terms of the total equity of non-financial corporations, these amounts are below 1%. Beyond the amounts

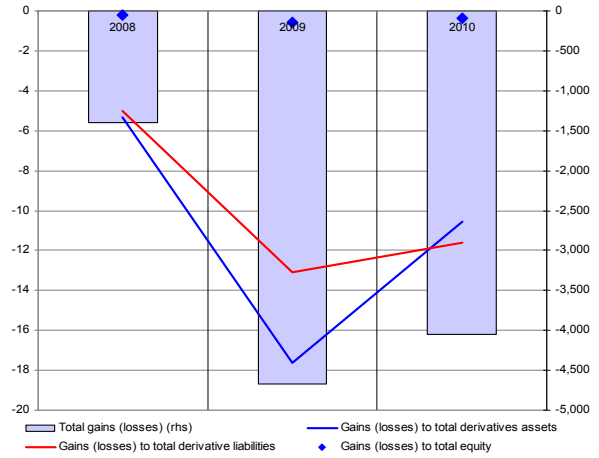
[30] In this case, the number of non-financial corporations behind the numerator and the denominator of the ratio displayed in Chart 6 are different as all the non-financial corporations create net disposable income (denominator) but not all of them enter into derivatives transactions (numerator). However, it is not possible to obtain the net disposable income of those non-financial corporations included in the numerator. Therefore, for those non-financial corporations with derivative contracts, the real weight of the derivatives over their gross disposable income is certainly higher than the values displayed in Chart 6.

[31] The information transmitted by the ECCBSO refers to the ERICA 1 database project, which contains detailed information of around 150 non-financial corporations from Belgium, France, Germany, Greece, Italy, Portugal and Spain. This is complemented by information from the ERICA 2 database project, where a larger number of non-financial corporations are included, albeit with a lower level of detail. For the purposes of these charts, only ERICA 1 information is displayed. It is important to note that the consolidated financial statements of listed European groups included in the datasets have been treated manually from the original consolidated accounts in order to fit them to a standard questionnaire developed by the ECCBSO.

recognised, from a macro-prudential perspective, it is significant to observe how derivatives have been a source of losses in the last three years for non-financial corporations. Dispersion measures reveal that only non-financial corporations in the third quartile (that is to say, approximately 25%) obtained gains from their transactions with derivatives.

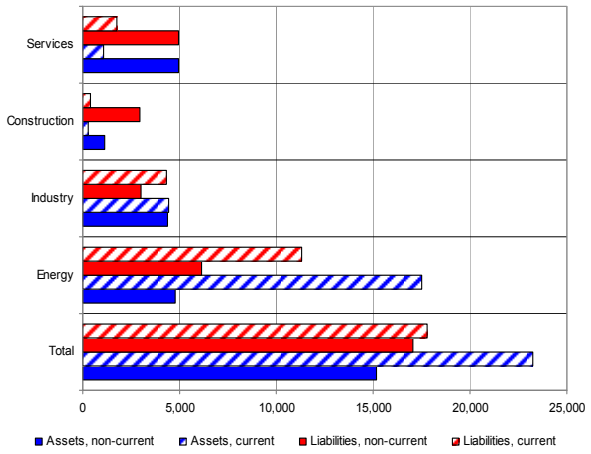
Furthermore, the information gathered from the ECCBSO provides a richer overview of the use of derivatives, since it is possible to obtain a breakdown by sector of activity (Chart 8). It is then possible to observe how the non-financial corporations in the energy sector (only 14 in number) are those which make a more intensive use of the derivatives. Looking at the time horizon of the derivatives, Chart 8 also shows how most of these derivatives are held with a short-term horizon ("current", in accounting terminology) in the energy sector, whereas other areas of activity show a more extensive use of long-term derivatives ("non-current", in accounting terminology).

Chart 7. Gains and losses from financial derivatives held by non-financial corporations, total non-financial corporations, percentages and EUR millions



Sources: ECCBSO (ERICA database project) and own calculations

Chart 8. Derivatives recognised in the balance sheet of a sample of large EU non-financial corporations, end 2010, EUR millions



Sources: ECCBSO (ERICA database project) and own calculations

C.4. Calibration of the clearing threshold in the two-step approach

C.4.1. Calibration of δ as the proportion of total derivatives to capital and reserves of the non-financial corporation

In the first step in the proposed two-step approach, it is necessary to define the level of δ above which non-financial corporations must apply the clearing threshold ε, and not the more generic γ. In this case, it is important to note that exceeding the level of δ does not automatically imply that the non-financial corporation becomes subject to the clearing obligation as that would depend on the result of the second step in the process.

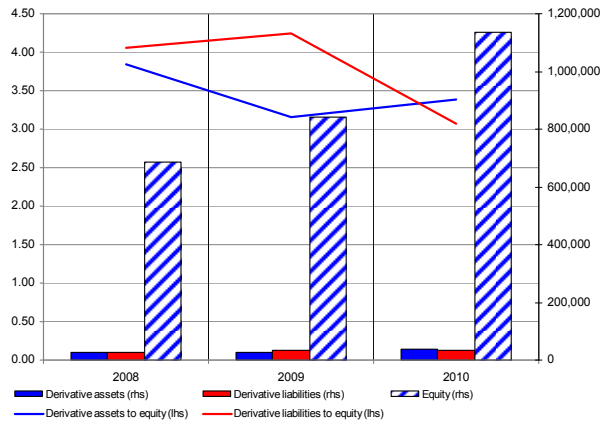
The two variables used to define the level of derivatives in each non-financial corporation are the total derivatives and the total capital and reserves. The denominator of the ratio (total capital and reserves) is taken as a proxy of the feasibility of the non-financial corporation

being able to resist a negative shock from its derivative positions. Albeit with significant and structural differences, the capital and reserves can be understood to play an equivalent role in the case of banks and other financial institutions, as, they represent the resources which are fully available to the non-financial corporation to withstand unexpected losses.

The information obtained from the Central Balance Sheet Data Offices provides a rough overview of the level of derivatives held by non-financial corporations as compared with their capital and reserves (equity, in accounting terms). Nevertheless, this information is displayed in aggregate terms, which does not reveal the full range of individual cases occurring. As observed in Chart 9 below, derivatives (either in assets or in liabilities) have represented more than 3% of equity over the past three years.

At this stage, with the caveats of the lack of appropriate disclosures at a more disaggregated level, we propose that a level of δ of 0.03 be defined, i.e. when derivatives held by a non-financial corporation are larger than 3% of its equity. This level of δ has been obtained from observations in average terms (Chart 9), which may not be the best decision in theory. However, this decision may be reviewed in the short-term, once the constraints in the availability of further information have been overcome. This conservative approach takes the stance that an amount of derivatives which represent 3% of the capital and reserves of the non-financial corporation may give rise to a significant risk for the non-financial corporation, which must be appropriately priced before it is transmitted to the overall financial market.

Chart 9. Weight of derivatives held by non-financial corporations with reference to equity, EUR millions and percentages



Sources: ECCBSO (ERICA database project) and own calculations

C.4.2. Calibration of the clearing thresholds ε and γ for non-financial corporations

In the case of the clearing threshold proposed in Section B.4, there is a need to calibrate the appropriate level of the clearing thresholds ε and γ for each class of derivatives.

The calibration starts with the clearing threshold ε, which should be applied by those non-financial corporations which have a level of δ over 0.03 (see previous section). To define the level at which the clearing obligation arises, the starting point may be the global amount of derivatives, taken from the BIS database of OTC Derivatives Markets. Ideally, only the European dimension should be considered but the BIS does not provide a breakdown by instrument for European counterparts. In order to avoid the inclusion of short-term factors in the calculation, the average of the last five observations is used.

Currently, only eight EU countries (Belgium, France, Germany, Italy, The Netherlands, Spain, Sweden and the United Kingdom) report to the BIS. In 2010 the non-financial corporations of these eight EU countries represented 82.66% of the gross value added at basic prices of the EU, as shown by the Annual Sector Accounts of Eurostat.[32] Making an easy extrapolation to the amounts reported by the eight European countries to the BIS, the theoretical total amount of derivatives held by European non-financial corporations, in average terms over the last five observations, would be €53,647 million.

Given the fact, as stated in previous sections of this document, that the objective of the proposed method of calculation of the clearing threshold is to ensure that no further risks are introduced into the market, and not to consider individual non-financial institutions, it seems appropriate to define the preliminary value of the clearing threshold (ε_0) as a proportion of the estimated total amount of derivatives held by European non-financial corporations (€53,647 million). Looking first at the implications derived from the two extreme possibilities, setting a preliminary value of the clearing threshold that is very low in terms of the amount of derivatives held by European non-financial corporations would imply that transactions which do not add a great deal of risk, in absolute terms, to the system are covered. On the other hand, setting the preliminary value of the threshold at a high level would not capture many operations, making the legal obligation for mandatory clearing practically irrelevant. Chart 10 shows the dispersion of the information reported by the ECCBSO on the holdings of derivatives by non-financial corporations. It is found that there are a small number of non-financial corporations making intensive use of derivatives, as implied by the large difference between the values of the third quartile and the maximum.[33] Thus, it can be deduced that a reduced number of European non-financial corporations are entering into significant OTC derivative transactions and that this very group would be the main target population of the mandatory clearance of OTC derivatives.

In order to better understand what each level of the preliminary value of the clearing threshold would mean, the ESRB has considered four other relevant variables for non-financial corporations: gross disposable income, total equity as reported by the ECCBSO, total assets as reported by the ECCBSO and the global amount of derivatives held by non-financial corporations (see Chart 11).

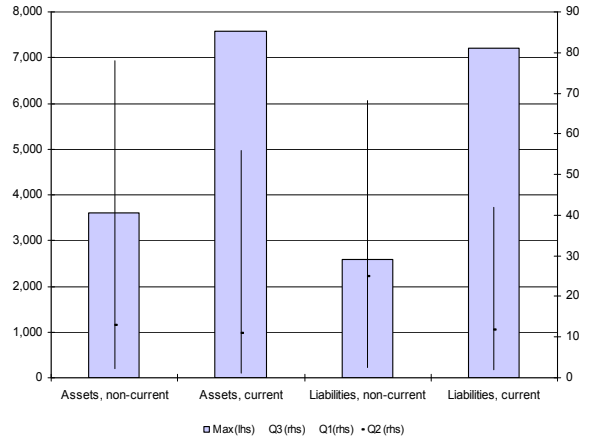
---

[32] Data from Luxembourg refer to 2009.

[33] The difference is so large that the maximum refers to the left-hand axis whereas the other dispersion measures refer to the right-hand axis in Chart 10.

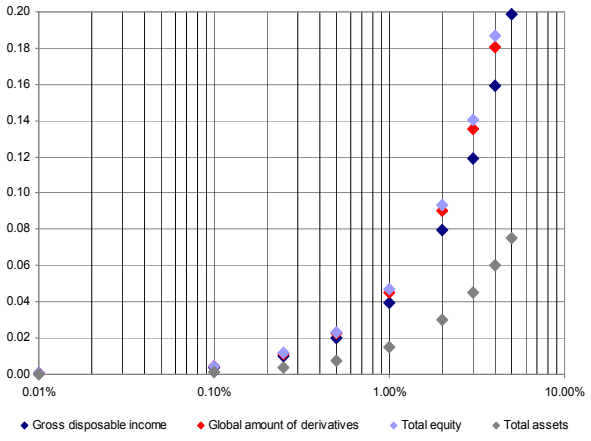
Following this two-side analysis, as summarised by Charts 10 and 11, one can argue that a good preliminary value for the clearing threshold (ε_0) would be 0.50% of the estimated total amount of derivatives held by European non-financial corporations (i.e. €268 million). That would mean that, before further stages in the calibration are considered, only those derivative positions which represent 1/200 of the total European market for OTC derivatives would be, in principle, subject to mandatory clearing.[34] Taking the global amount of derivatives as reported to the BIS as a reference, €268 million is to 0.00124%. This is the amount which will be used in the forthcoming calibration process.

Chart 10. Dispersion of the amount of derivatives held on the balance sheet by non-financial corporations, total non-financial corporations, EUR millions



Sources: ECCBSO (ERICA database project) and own calculations

Chart 11. Weight of several preliminary thresholds β_0 in terms of significant variables of non-financial corporations, logarithmic scale, percentages



Sources: ECCBSO (ERICA database project) and own calculations

The clearing threshold must be applied to the different classes of OTC derivatives in the market. As discussed in Section B.2.1, the ESRB fully agrees with the classes used by ESMA in Consultation Paper 2012/379 and will thus use them in this calibration exercise.

The conclusions reached in Section C.2 of this report will be considered and will lead to a higher or lower threshold than ε_0 (in multiples of 0.00010%[35]). As a rule, the following general assumptions are made:

[34] Alternatively, this can be interpreted as implying that, before the proper calibration process, at most only 200 European non-financial corporations would be subject to the clearing obligation.

[35] There is no strong economic argumentation to support the use of these multiples, but rather the assumption that the calibration process should not imply a change of more than 30% over the preliminary value. To that aim, the multiples are defined as approximately 10% of the preliminary value.

- Classes of OTC derivatives hardly used by non-financial corporations should have a lower threshold as they provide real evidence that they are not at the core of the activities of non-financial corporations. This factor must be adequately weighted by the small marginal risk which these derivatives pose to the financial system as a whole, although it is the ESRB view that the first effect must prevail over the second.
- Classes of OTC derivatives widely used by non-financial corporations should have a higher threshold as mandatory clearing of them may involve significant costs for the non-financial corporations.
- Classes of OTC derivatives with no clear link to the commercial and treasury financing activities of the non-financial corporation should have a lower threshold owing to the risk that they entail for the non-financial corporation itself and for the financial system as a whole by not being part of a hedging transaction.
- Classes of OTC derivatives with a clear link to the commercial and treasury financing activities of the non-financial corporation should have a higher threshold since the risk that they entail for the non-financial corporation itself and for the financial system as a whole is slightly, not fully, offset with the hedged item.

Table 2 below explains how the above criteria have been applied to the classes of OTC derivatives in Table 1, in order to obtain a final value of the clearing threshold for non-financial corporations:

Table 2. Calibration of the clearing threshold per classes of OTC derivatives

A. Credit derivative contracts		
Starting threshold		0.00124%
Use by non-financial corporations	There is no available information but it can be roughly estimated by using the CDS category in the BIS database. From there, it is observed that these derivatives are not widely used by non-financial corporations.	-0.00010%
Link to commercial and treasury financing activities	If credit derivatives are said to reduce the counterparty risk of the commercial activities of the non-financial corporation, they must achieve this, in most cases, indirectly, with reference to another counterpart as it is difficult to assume that all counterparts of the commercial activities of non-financial corporations have their own credit derivatives.	-0.00030%
Final threshold		0.00084%
B. Equity derivative contracts		
Starting threshold		0.00124%

Use by non-financial corporations	According to the BIS database, they represent, in average terms over the last five observations, 7.54% of the total OTC derivatives held by non-financial corporations, although non-financial corporations represent 15% of the total amount of these derivatives in the market.	-0.00010%
Link to commercial and treasury financing activities	It seems difficult to establish a direct link between equity derivative contracts and the commercial and treasury financing activities of non-financial corporations.	-0.00020%
Final threshold		0.00094%
C. Interest rate derivative contracts		
Starting threshold		0.00124%
Use by non-financial corporations	According to the BIS database, they represent, in average terms over the last five observations, 48.19% of the total OTC derivatives held by non-financial corporations.	+0.00010%
Link to commercial and treasury financing activities	This class of OTC derivatives seem to be more clearly linked to the treasury financing activities of the non-financial corporation. However, they may also be easily used for other purposes (in the end, interest rate hedging is not at the core of the activities of non-financial corporations), increasing the amount of risk faced by the non-financial corporation. Taking a prudential stance, the second factor seems to outweigh the first.	-0.00010%
Final threshold		0.00124%
D. Foreign exchange derivative contracts		
Starting threshold		0.00124%
Use by non-financial corporations	According to the BIS database, they represent, in average terms over the last five observations, 31.13% of the total OTC derivatives held by non-financial corporations.	+0.00010%
Link to commercial and treasury financing activities	There is a clear link to the commercial activities of the non-financial corporations as well as to their treasury financing activities. Foreign exchange contracts are of the essence in the normal course of the international business of non-financial corporations. However, the volatility observed in exchange rates, which can easily incur significant losses for the non-financial corporation, points to the advisability of taking a more prudential approach.	0
Final threshold		0.000134%
E. Commodities and other OTC derivatives contracts		
Starting threshold		0.00124%

Use by non-financial corporations	According to the BIS database, the category "other" represents, in average terms over the last five observations, 8.80% of the total OTC derivatives held by non-financial corporations. However, ECCBSO data reveal intensive use of derivatives by non-financial corporations in the energy sector.	-0.00020%
Link to commercial and treasury financing activities	For the companies working in the commodities sector, these derivatives may be understood as covering their commercial activities. However, as evidenced by the cases of Metallgesellschaft and Ferruci Finanziaria, it is advisable to take a cautious approach with this kind of derivatives. In addition, there is a perceived increase in the use of derivatives in commodities markets, which has made these markets more volatile.	-0.00010%
Final threshold		0.00094%

The two-step approach also includes a second threshold (γ) for those non-financial corporations which are expected to have proved resilient to negative shocks from their derivative positions. Basically, the calibration of γ would be similar to that of ε. The value of γ should in principle be higher than that of ε, in order not to impose stricter clearing obligations on non-financial corporations which are more resilient to adverse shocks derived from their holdings of derivatives. In order not to increase the complexity of the exercise and with the idea expressed in previous paragraphs of not subjecting to the clearing obligation derivative transactions that do not pose a risk to the system, the ESRB proposes merely to define these thresholds as three times larger than those calculated for ε.

As already mentioned in Section B of the report, both sides of the formula will be multiplied by a constant factor k, so that they can be easily interpreted. The impact of this constant factor k in the calculation is nil. Assuming that k = 1,000,000, the two-step approach for the calculation of the clearing threshold should be conducted as follows[36]:

1. Non-financial corporations should assign themselves to one of two subsets – corporations with a value of δ higher than 0.03 and corporations with a value of δ not exceeding 0.03.

$$\frac{TD\,(x)}{CR\,(x)} > 0.03 \quad \text{and} \quad \frac{TD(x)}{CR\,(x)} \leq 0.03$$

2. A subset of non-financial corporations with a value of δ higher than 0.03 would apply the following clearing thresholds per class of OTC derivatives:

[36] Strictly speaking, the ε and γ calculated here should be equal to the one proposed in Section B of the report multiplied by 1,000,000. In order for the number of variables not to artificially explode, it has been decided to keep the same notation in both sections of the report.

$$\frac{NCNTFD\ (x)}{GMVCD} \times 1{,}000{,}000 > \varepsilon$$

- Clearing threshold for credit derivative contracts, $\varepsilon_A = 8.4$
- Clearing threshold for equity derivative contracts, $\varepsilon_B = 9.4$
- Clearing threshold for interest rate derivative contracts, $\varepsilon_C = 12.4$
- Clearing threshold for foreign exchange derivative contracts, $\varepsilon_D = 13.4$
- Clearing threshold for commodities and other OTC derivatives contracts, $\varepsilon_E = 9.4$

3. A subset of non-financial corporations with a value of δ not higher than 0.03 would apply the following thresholds per class of OTC derivatives:

$$\frac{TD\ (x)}{CR\ (x)} < 0.03$$

$$\frac{NCNTFD\ (x)}{GMVCD} \times 1{,}000{,}000 > \gamma$$

- Clearing threshold for credit derivative contracts, $\gamma_A = 25.2$
- Clearing threshold for equity derivative contracts, $\gamma_B = 28.2$
- Clearing threshold for interest rate derivative contracts, $\gamma_C = 37.2$
- Clearing threshold for foreign exchange derivative contracts, $\gamma_D = 40.2$
- Clearing threshold for commodities and other OTC derivatives contracts, $\gamma_E = 28.2$

Box 4. Example of a threshold defined as an absolute amount under certain conditions

Class of OTC derivative: FX contract

- Gross market value of foreign exchange derivative contracts, on a global basis (from BIS) = €2,277,331
- Clearing threshold for foreign exchange derivative contracts = ε_D= 13.4

Non-financial corporation A

- Gross market value of foreign exchange derivative contracts classified as not related to commercial or treasury financing activities = €20 million
- Gross market value of foreign exchange derivative contracts classified as related to commercial and treasury financing activities = €40 million
- Total capital and reserves = €2,500 million
- Obligation to clear if $\delta > 0.03$ and $\varepsilon_D > 13.4$ or $\gamma_D > 40.2$

  Step 1. δ = (60 / 2,500) = 0.024 < 0.03 => apply clearing thresholds γ_D
- Then, obligation to clear if $\gamma_D > 40.2$

  (20 / 2,277,331) x 1,000,000 = 8.8 => no clearing obligation

Non-financial corporation B

- Gross market value of foreign exchange derivative contracts classified as not related to commercial or treasury financing activities = €200 million
- Gross market value of foreign exchange derivative contracts classified as related to commercial and treasury financing activities = €400 million
- Total capital and reserves = €25,000 million
- Obligation to clear if $\delta > 0.03$ and $\varepsilon_D > 13.4$ or $\gamma_D > 40.2$

  Step 1. δ = (600 / 25,000) = 0.024 < 0.03 => apply clearing thresholds γ_D
- Then, obligation to clear if $\gamma_D > 40.2$

  (200 / 2,277,331) x 1,000,000 = 87.8 => obligation to clear

Non-financial corporation C

- Gross market value of foreign exchange derivative contracts classified as not related to commercial or treasury financing activities = €20 million
- Gross market value of foreign exchange derivative contracts classified as related to commercial and treasury financing activities = €40 million
- Total capital and reserves = €1,000 million
- Obligation to clear if $\delta > 0.03$ and $\varepsilon_D > 13.4$ or $\gamma_D > 40.2$

  Step 1. δ = (60 / 1,000) = 0.06 > 0.03 => apply clearing thresholds ε

  Step 2. ε = (20 / 2,277,331) x 1,000,000 = 8.8 => no clearing obligation

Non-financial corporation D

- Gross market value of foreign exchange derivative contracts classified as not related to commercial or treasury financing activities = €40 million
- Gross market value of foreign exchange derivative contracts classified as related to commercial and treasury financing activities = €20 million
- Total capital and reserves = €1,000 million
- Obligation to clear if $\delta > 0.03$ and $\varepsilon_D > 13.4$ or $\gamma_D > 40.2$

  Step 1. δ = (60 / 1,000) = 0.06 > 0.03 => apply clearing thresholds ε

  Step 2. ε = (40 / 2,277,331) x 1,000,000 = 17.6 > 13.4 => obligation to clear

Lastly, if the clearing threshold is derived as an absolute amount, the final numbers in Table 2 must be multiplied by the latest available value of the global amount of derivatives per asset class[37] (see Table B in Annex 5). Thus, the new set of clearing thresholds ε' would be:

$$NCNTFD\ (x) > \varepsilon'$$

[37] In this case, the value from the latest available observation (2011 H1) has been taken but it would also be possible to take the average over the last observations.

- Clearing threshold for credit derivative contracts, ε'_A = €13 million
- Clearing threshold for equity derivative contracts, ε'_B = €7 million
- Clearing threshold for interest rate derivative contracts, ε'_C = €151 million
- Clearing threshold for foreign exchange derivative contracts, ε'_D = €31 million
- Clearing threshold for commodities and other OTC derivatives contracts, ε'_E = €16 million

In the case of the clearing thresholds γ, the thresholds in absolute terms would be[38]:

$$NCNTFD(x) > \gamma'$$

- Clearing threshold for credit derivative contracts, γ'_A = €39 million
- Clearing threshold for equity derivative contracts, γ'_B = €20 million
- Clearing threshold for interest rate derivative contracts, γ'_C = €453 million
- Clearing threshold for foreign exchange derivative contracts, γ'_D = €92 million
- Clearing threshold for commodities and other OTC derivatives contracts, γ'_E = €48 million

[38] Due to rounding effects, the clearing thresholds γ' of equity derivative contracts and of foreign exchange derivative contracts are not exactly three times higher than the clearing thresholds ε'. In order to facilitate the application of these thresholds, the ESRB has opted for not using decimal values and thus for retaining these minor discrepancies in the values of the clearing thresholds.

ANNEX 1. SHORT DESCRIPTION OF THE BIS OTC DERIVATIVES MARKET STATISTICS

The Bank of International Settlements (BIS) collects semi-annual OTC Derivatives Market Statistics, which contain data on notional amounts and gross market values outstanding for forwards, swaps and options on foreign exchange, interest rate, equity and commodity derivatives.

Data on amounts outstanding are collected and reported on a consolidated basis. Data from all branches and majority-owned subsidiaries worldwide of a given institution are aggregated and reported by the parent institution to the official monetary authority in the home country, where the parent institution has its head office. Deals between branches and subsidiaries of the same institution are excluded from the reporting.

Gross market values are defined as the sums of the absolute values of all open contracts with either positive or negative replacement values evaluated at market prices prevailing on the reporting date. Therefore, the gross positive market value of outstanding contracts of the dealer is the sum of the replacement values of all contracts that are in a current gain position to the reporter at current market prices. If they were settled immediately, they would represent claims on counterparties. The gross negative market value is the sum of the values of all contracts that have a negative value on the reporting date, meaning those that are in a current loss position and, if they were settled immediately, would represent liabilities of the dealer to its counterparties. Gross values indicate that contracts with positive and negative replacement values with the same counterparty are not netted. Thus sums of positive and negative contract values within a market risk category such as foreign exchange contracts, interest rate contracts, equities and commodities set off against one another are not netted.

Gross credit exposure are computed as the gross value of contracts that have a positive market value after taking account of legally enforceable bilateral netting agreements. Liabilities arising from OTC derivatives contracts are computed at the gross value of contracts that have a negative market value, taking account of legally enforceable bilateral netting agreements.

For each instrument in the foreign exchange, interest rate, equity and credit derivatives risk categories, reporting institutions provide a breakdown of contracts by counterparty as follows: reporting dealers, other financial institutions and non-financial customers.

Reporting dealers are institutions whose head office is located in one of the 13 reporting countries (Australia, Belgium, Canada, France, Germany, Italy, Japan, The Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States) and which participate in the semi-annual OTC derivatives market statistics, including all branches and subsidiaries of those entities worldwide. Reporting dealers are mainly commercial and investment banks and securities houses, including their branches and subsidiaries and other entities that are active dealers. Other financial institutions are financial institutions not classified as reporting dealers, including CCPs, banks, funds and non-bank financial institutions which may be considered as financial end users. Non-financial customers are any counterparties other than the aforementioned, mainly corporate firms and governments.

ANNEX 2. BRIEF DISCUSSION OF SELECTED BENEFITS AND COSTS OF CENTRAL CLEARING VERSUS DECENTRALISED CLEARING

Clearing is the process of transmitting, reconciling and, in some cases, confirming transfer orders prior to settlement, potentially including the netting of orders and the establishment of final positions for settlement. For the clearing of derivatives like futures and options, this term also refers to the daily balancing of profits and losses and the daily calculation of collateral requirements (referred to as margin calls).[39] The trades that are supposed to be cleared may have been entered into either on a central marketplace/exchange or decentrally "over-the-counter" (OTC). Clearing can be bilateral, i.e. with two counterparties involved, or centralised, i.e. a single third party interposes all pairs of the transacting parties.

The determination of positions in centralised clearing makes it possible to keep track of all the transactions that occur via the central clearing platform (CCP). This has two distinct benefits. First, it eases measuring the aggregate number of transactions and establishing aggregate exposures, via trade repositories. These measures can be reported to regulators and used in their decision-making. The measure could also be reported to the market itself in order to raise awareness about existing activity.[40] Second, central clearing makes it possible to counter a basic externality in financial markets. Without a CCP, when a party transacts with several others, any new transaction by that party affects existing transactions. However, this impact does not show up in the terms of the new transaction as the newcomer is unaware of the pre-existing transactions. A CCP can implement pricing schemes to reduce this externality as it is aware of all transactions. The major limitation to these arguments is that the cleared transactions must be sufficiently standardised so that it is feasible to sum up the information across a possibly large number of positions. Owing to the competition between CCPs, market participants could enter into new transactions on other trading platforms and send them to other CCPs.

The collateralisation of financial transactions limits counterparty risk. Transferring securities or cash to a counterparty means that this counterparty has a guarantee should the other counterparty be unwilling or unable to fulfil its obligation arising from the financial transaction. The benefit is larger for centralised than bilateral clearing since it applies to more transactions and not only to a small subset (as long as bilateral clearing is not as complete as central clearing). There are few drawbacks to such a transfer of securities apart from the fact that it may cause delays and, in the case of segregations, physically prevents the use of the same security for two different transactions (e.g. rehypothecation).

Clearing allows the implementation of margin calls calculated on a neutral basis. As in standard borrowing and lending, margins can be thought of as collateral, which offers certain benefits. First, collateral insures the lender against borrower default. Second, the mere presence of collateral and the threat of losing it improve borrower incentives to repay the

[39] See definition of "clearing" at http://www.ecb.de/home/glossary/html/glossc.en.html.

[40] It is important to note that there will always be non-standardised OTC derivatives transactions, which will not be cleared through CCPs but reported to trade repositories in any case.

loan. There is, however, an important difference between borrowing and lending on the one hand and trading financial instruments on the other. In trading, it is not clear who borrows and who lends. Moreover, this status may change during the life of the financial contract. If, for example, the trade consists of buying a forward, the buyer's position moves out of the money when the spot price falls below the forward price. In that case, the buyer expects to have to pay the seller. That is, the buyer becomes a borrower and could be expected to secure this borrowing by putting up a margin. The opposite occurs when the forward moves in the money. A clearing agent can be the institution that enforces such margin calls (as happened in the disagreement between AIG and Goldman Sachs about the margin calls on their credit default swap positions[41]).

Margins may, however, not always be optimal. First, there is an opportunity cost for assets sitting in margin accounts as they can no longer be used for other purposes. Second, since a margin insures transacting parties against default, they can become complacent and underinvest in socially optimal but privately costly protection against such default. Finally, margin calls may be destabilising since the selling of assets to reduce an exposure and avoid a margin call can depress prices, lead to a downward revision of asset values that requires a further margin call and so on. A CCP can mitigate such margin spirals by calculating margins on aggregate net positions rather than on individual positions.

Finally, clearing agents can offer direct protection against the default of a transacting party (counterparty risk). Although bilateral clearing opens up the possibilities of specialisation by some dealers in a certain class of OTC derivative contracts, it may be argued that the insurance benefits are largest in centralised clearing. By pooling a large number of risks, a CCP can exploit the law of large numbers to make insurance payments to some out of the insurance fees of others. A CCP, although subject to the prudential requirements in EMIR, does not need to set aside assets to make payments. Such a "mutualisation" of risk (as in health insurance) only works for independent risks. A CCP cannot insure against aggregate risk. Insurance against the aggregate component of one's own risk requires finding a counterparty with little exposure to this aggregate component (say from another industry or economic region). However, incentives to perform such "due diligence" suffer when parties are fully insured. Hence, a CCP must not offer full insurance so that private parties are still encouraged to search for counterparties that enhance the risk-bearing capacity of the entire system.

To sum up, centralised clearing has several advantages vis-à-vis bilateral clearing owing to neutral risk management, mutualisation, netting and information benefits. Clearing platforms can implement and enforce margins more strictly. Cleared trades will have to be standardised. Clearing changes the price of trades and thus alters incentives in the market. Only partial insurance should be offered in order to maintain incentives. Clearing has to be mandatory. The major risk of a CCP clearing environment is a potential situation where the default of one or several major dealers in a very concentrated market could overstretch the CCP risk-bearing capacity. As potentially all major dealers and infrastructures have

[41] See, for example, "Testy conflict with Goldman helped push AIG to the edge", New York Times, 7 February 2010.

relationships with that CCP, there are major contagion risks. A sudden loss in confidence within these complex business relationships could lead to an abrupt standstill of market activities and interbank business. Therefore, strict prudential rules for CCPs as laid out, for example, in the CPSS-IOSCO principles for financial market infrastructure are needed to safeguard the robustness of CCPs.

ANNEX 3. THE CASE OF METALLGESELLSCHAFT

Metallgesellschaft AG (MG) was a 112-year-old enterprise owned largely by institutional investors. At the end of 1992, MG had 251 subsidiaries with activities ranging over trade, engineering and financial services. Its subsidiary responsible for US petroleum marketing, Metallgesellschaft Refining and Marketing (MGRM), entered the business of supplying American heating oil and petrol retailers by offering retailers unprecedented 5-year and 10-year fixed price contracts. The MG affair of 1993-1994 conveyed three central messages to the petroleum industry: (i) one pertaining to the relationship between hedging and speculating, (ii) one pertaining to corporate governance and (iii) one pertaining to commodity market dynamics.

Regarding the first message (the relationship between hedging and speculation), MGRM designed an innovative programme aimed at a rapid expansion in a mature but evolving business, the marketing of petroleum products. MGRM used a strategy which combined OTC and futures instruments. That strategy implied some speculation on the relationship between near and distant prices. The speculation went against MGRM for a time, causing it to incur very large margin payment requirements and other cash flow disruptions.

Subsequent studies provide compelling evidence that MG's strategy was highly speculative, more risk-increasing than risk-reducing, because its estimates implied an implausibly high risk premium in oil future prices.

MGRM hedged long-term oil commitments on a one-to-one basis with short term futures. Two very different views on the effectiveness of this "hedging strategy" exist in the literature. According to the first of them, MG's strategy was basically sound and effectively reduced MGRM's oil price risk. On the other hand, a number of authors argue that instead of reducing its oil price risk, MGRM actually increased risk by using a grossly oversized hedge position. Studies show that the main reason for the diverging views lies in the implicitly assumed time horizon over which risk is measured. The analysis reveals that hedgers with short time horizons will use a small hedge ratio of only about one-third, while the 1:1 hedge strategy followed by MG is very effective when risk is measured over the complete contract length.

MG implemented a barrel-for-barrel hedge, that is to say, it bought one barrel of short-term energy futures or swaps for each barrel of oil that it was committed to deliver, regardless of whether it was obliged to deliver in 6 months or 10 years. There are strong reasons to believe a priori that this "hedging strategy" forced the firm to bear more risk than necessary. However, some authors defend the one-for-one hedge, claiming that MG employed an innovative synthetic storage (or carrying charge hedging) strategy that increased firm value while protecting MG against spot price increases over the 10-year life of the programme. They recognise that this strategy forced the firm to bear basis risk, but claim that this basis risk was small compared with the risk inherent in the firm's fixed price contracts. Even under very conservative assumptions, evidence implies that MG's exposure to energy price risk was greater with a barrel-for-barrel futures and swap hedge than it would have been if the firm had not hedged its long-term delivery commitments at all. The empirical results imply that the combined futures – the long-term contract position exposed the company to severe losses in the event of a steepening of the term structure of energy prices.

The barrel-for-barrel strategy was undesirable even if one accepts the claim that MG creditors mistook a liquidity crisis for a solvency crisis and thus intervened unwisely by forcing the firm to scale back its oil market activities. Barrel-for-barrel hedging increased the likelihood of such a mistaken intervention because it increased MG's liquidity needs. Thus, regardless of whether one examines liquidity or solvency considerations, barrel-for-barrel hedging was ill-advised. The studies provide compelling evidence that MG's strategy was highly speculative (more risk-increasing rather than risk-reducing) because the estimates imply an implausibly high risk premium in oil futures prices.

First, the stationarity of oil prices implies that volatilities decline systematically over time and finally expire. Second, the correlation between spot and deferred prices is imperfect and this correlation also declines systematically over the time to expiration of the deferred increases. A variance-minimising hedger should reduce hedge ratios far below 1 in response to those factors; MG did not. Empirical estimates provide compelling evidence that, due to this over-hedging, MG's position of long futures and short forwards was substantially riskier than its short position in forward contracts alone.

Long-term OTC derivatives subject their users to counterparty credit risk. Perhaps more importantly, few OTC derivatives dealers would enter into such a long-dated commodity swap without in turn also hedging that risk. In theory, MGRM should have hedged its long-dated short positions with long instruments with similar maturities. Instead, it went long on the near-month futures. This hedging strategy worked as long as the market was in backwardation (when the futures price is below the expected future spot price). But in September 1993, the New York Mercantile Exchange (NYMEX) futures markets for crude oil flipped into contango (when the futures price is above the expected future spot price).

MGRM was not using derivatives as part of a treasury function; conversely, they were part of its marketing programme, under which it offered long-term customers firm price guarantees for up to ten years on petrol, heating oil and diesel fuel purchased from MGRM. The firm hedged its resultant exposure to spot price increases to a considerable extent with futures contracts.

Another example of the misuse of derivatives by non-financial corporations is provided by the Italian agribusiness and industrial conglomerate **Ferruzzi Finanziaria** S.p.A. and its indirect US subsidiary Central Soya Inc. Their downward spiral began in a 1989 confrontation with the Chicago Board of Trade (CBOT). Following a major drought and short crop in 1988, the company needed lots of soybeans to process and to export. It had purchased a substantial amount of beans in the cash market and accumulated a large number of July futures contracts to buy the commodity. The firm's intention seemed to be not to hedge against increases in soybean prices, as Ferruzzi Finanziaria stated, but actually to squeeze the markets. In July 1989 CBOT, due to the size of firm's holdings, ordered the liquidation of soybean futures positions in excess of the speculative trading limit as prices could become artificially inflated. CBOT officials failed to convince Ferruzzi to sell out and, fearing a squeeze, issued an emergency order for the firm to liquidate its holdings in an orderly manner before the contract expired.

ANNEX 4. THE CASE OF COMMODITIES MARKETS: FINANCIALISATION, DERIVATIVES AND PRICE FORMATION

In parallel with a broad-based surge in commodity prices, the futures market for commodities has experienced substantial changes in the past few years. First, commodity futures markets have become more liquid, partly as a result of the surge in activity of non-commercial traders[42]. Second, new products were developed, such as long-only index funds, OTC swap agreements, exchange traded funds, etc., which extended the options for market participants to speculate on commodity price movements. These developments are widely referred to as the "financialisation" of commodity markets and were associated with massive inflows into commodity futures markets.

These developments triggered a debate on the role of financial institutions for the price formation in commodity markets. Clearly, increased liquidity can enhance price formation and lower the cost of commercial hedging. However, if the increasing participation of financial institutions in commodity markets has mainly non-fundamental, speculative grounds, regulation imposed on trading activities might be justifiable to curb excessive volatility and align commodity prices with their fundamentals.

However, the empirical literature on the impact of financial activity on commodity prices is inconclusive. Several studies find evidence in favour of a role of financialisation, while others reject that hypothesis.[43] The lack of consensus in the literature is mainly due to the limited availability of data on traders' position and more generally reflects difficulties in defining speculation in commodity markets.

Detailed data on commodity traders' positions tends not to be publicly available and the classification of traders into speculators and non-speculators is problematic. In general, three types of traders in commodity futures markets can be defined: (i) "commercial traders", who seek to hedge an underlying exposure to commodity risk, (ii) "traditionally speculative traders", who target commodities at times of high expected returns to make profits, and (iii) "index-related traders", i.e. passive investors aiming to hold and repeatedly roll over commodity index funds mainly for portfolio diversification purposes. As the positions of the latter group grew from negligible amounts in 2003 to a quarter-trillion dollars by 2008 and took up more than half the open interest in agricultural commodity futures contracts, these index fund traders have been regarded as the main trading group possibly affecting commodity price volatility.[44]

---

[42] The "non-commercial" trader category is defined by the CFTC as including professional money managers (CTAs, CPOs, and hedge funds) as well as a wide array of other non-commercial (speculative) traders. The "commercial" trader category, on the other hand, includes producers, merchants, processors and users of the physical commodity who manage their business risks by hedging. It also contains swap dealers that may have incurred a risk in the OTC market and have offset that risk in the futures markets, regardless of whether their OTC counterparty was a commercial trader or a speculator.

[43] See, among many others, Buyuksahin and Robe (2011), Fattouh, Kilian and Mahadeva (2012), Hamilton and Wu (2012), Masters (2008), Tang and Xiong (2011) and Singleton (2011).

[44] See for example Stoll and Waley (2010) and Irwin and Sanders (2011).

Until recently, the only data available from the Commodities Futures Trading Commission (CFTC) were positions of "commercial" versus "non-commercial" traders. Although the CFTC defines the activity of non-commercial traders as speculation, the level of aggregation results in a significant bias when using this data to analyse the role of financial institutions. For example, the above-mentioned index funds can either be classified as "commercial" or "non-commercial" depending on the issuer of the fund.[45] Recently, the CFTC has started disclosing data on index fund activity for most commodity markets, but even with the availability of more disaggregated or even confidential data, important caveats remain.[46]

Furthermore, defining speculative activity is also far from straightforward. This is due to the lack of transparency on the positions, identity and motives of the different types of traders in commodity markets. Therefore, depending on the definition of speculation that they employ, studies that do not use trader position data for the reasons mentioned above and rely on structural empirical models instead can also arrive at different conclusions on the role of financialisation for price formation in commodity markets.[47]

As far as non-financial corporations are concerned, the increased financialisation of commodity markets might have two main effects on them. First, increased trading of financial investors increases liquidity in futures markets. This enhances price formation and lowers the cost of commercial hedging as financial institutions absorb the risks to price changes. Second, as financial traders cause large inflows and outflows in commodity futures markets based on speculative grounds, they might create excessive volatility. Accordingly, financial traders might cause commodity prices to deviate from the level explained by supply and demand. The empirical evidence is, however, inconclusive on which effect dominates.

In conclusion, there is a lack of empirical evidence in the literature on the role of financial institutions for price formation in commodity markets. Some studies find that financial investors can move commodity prices beyond the level explained by supply and demand, while others reject this finding. Imposing increased regulation is a question of either curbing efficient price formation by reducing liquidity provided by financial investors or of possibly enhancing the robustness of commodity prices by limiting volatility in commodity markets.

What can be stated is that commodity markets in general have become more volatile over the past few years. It is, however, not clear whether this is due to financialisation. Brunetti, Büyükşahin and Harris (2011) for example find that speculators largely react to market conditions and thereby reduce volatility as they provide more liquidity. Hamilton (2009) ascribes the increased volatility of oil prices to fundamental factors, i.e. a lower price elasticity of oil supply and demand due to lower spare capacity in supply, for example, and reduced scope for substitution away from oil. Without knowing the cause of increased

[45] If the investment instruments are issued by a big bank that has stakes in airlines or in the commodity industry for example, it is likely that it will be classified as commercial.

[46] See, for example, Cheng, Kirilenko and Xiong (2012) and Buyuksahin and Harris (2011) and related papers.

[47] See, for example, Kilian and Murphy (2011), Lomardi and Van Robays (2011) and Juvenal and Petrella (2011).

volatility in commodity markets, the change in risk to the financial system is difficult to assess.

ANNEX 5. TECHNICAL AND STATISTICAL ANNEX ON THE PROPOSAL FOR THE DEFINITION OF THE CLEARING THRESHOLDS FOR NON-FINANCIAL CORPORATIONS

(A) Derivation of the final formula for the calculation of the clearing threshold as a weighted ratio (Box 3)

The starting point of the ESRB in theoretically defining a clearing threshold as a weighted ratio was to include an incremental weight, based on the amount of derivatives held for commercial and treasury financing activities (CTFD (x)). Thus, the starting formula would be as follows:

$$\frac{NCNTFD\ (x)}{GMVCD} \times \left(1 + \frac{CTFD\ (x)}{TD\ (x)}\right)$$

This formula has four different variables, which can be easily reduced to three, considering that the addition of the derivatives held for commercial and treasury financing activities and the derivatives not held for commercial or for treasury financing activities should be the total amount of derivatives held by the non-financial corporation:

$$CFTD\ (x) + NCNTFD\ (x) = TD\ (x)$$

$$CFTD\ (x) = TD\ (x) - NCNTFD\ (x)$$

Replacing the commercial and treasury financing derivatives by its two components in the formula first proposed for the calculation of the clearing threshold as a weighted ratio, one obtains:

$$\frac{NCNTFD\ (x)}{GMVCD} \times \left(1 + \frac{(TD\ (x) - NCNTFD\ (x))}{TD\ (x)}\right)$$

$$\frac{NCNTFD\ (x)}{GMVCD} \times \left(1 + \frac{TD\ (x)}{TD\ (x)} - \frac{NCNTFD\ (x)}{TD\ (x)}\right)$$

The following step takes us to the formula used in Box 3 of the report:

$$\frac{NCNTFD\ (x)}{GMVCD} \times \left(2 - \frac{NCNTFD\ (x)}{TD\ (x)}\right) > \beta$$

(B) BIS OTC Derivatives Markets Statistics

Table A. Global amount of derivatives held by all counterparties and by non-financial customers, gross market values, total contracts, EUR millions			
	All counterparties	Non-financial customers	Non-financial customers / All counterparties (%)
2009 H1	25,286,701	1,345,092	5.32
2009 H2	19,367,083	1,081,416	5.58
2010 H1	23,936,743	1,330,586	5.56
2010 H2	20,922,835	1,243,550	5.94
2011 H1	18,404,963	1,001,718	5.44
Average	21,583,665	1,200,473	5.56
Sources: BIS and own calculations			

Table B. Global amount of derivatives per class of OTC derivative held by all counterparties, gross market values, total contracts, EUR millions		
	Last observation (2011 H1)	Average of last five observations
Foreign exchange contracts	2,277,331	2,366,054
Interest rate contracts	12,184,522	14,070,149
Equity-linked contracts	694,293	749,033
Credit-default swaps	1,531,693	2,038,675
Total commodities and other	1,717,124	2,359,754
Sources: BIS and own calculations		

(C) European Financial Accounts by Eurostat

Table B. Information from the European Financial Accounts, non-financial corporations, EUR millions					
	Financial derivatives, assets	Financial derivatives, liabilities	Financial derivatives, net	Gross value added at basic prices	Gross disposable income
European Union	19,359.2	45,617.9	-26,258.7	6,266,564	1,313,950
Belgium	95.0	58.8	36.2	192,195	44,971
Bulgaria	36.8	36.3	0.5	18,718	7,264
Czech Republic	1,554.8	1,189.2	365.6	83,767	22,029
Denmark	-7,402.7	51.4	-7,454.1	116,622	32,810
Germany	na	na	na	1,353,590	271,460
Estonia	17.1	69.2	-52.1	8,654	2,521
Ireland	958.0	556.0	402.0	73,743	11,808
Greece	190.0	1,111.0	-921.0	85,529	32,986
Spain	-119.4	9,745.6	-9,865.0	510,473	124,769
France	62.0	139.0	-77.0	972,984	143,115
Italy	4,175.0	6,423.0	-2,248.0	716,821	126,903
Cyprus	568.2	1.2	567.0	7,334	309
Latvia	26.7	0.7	26.0	11,067	3,978
Lithuania	3.3	37.3	-34.0	17,111	5,584
Luxembourg	121.6	0.0	121.6	17,383	2,636
Hungary	295.6	574.3	-278.7	49,652	15,126
Malta	2.5	14.2	-11.7	2,920	na
Netherlands	10,705.0	14,999.0	-4,294.0	330,354	97,981
Austria	0.0	0.0	0.0	147,511	44,349
Poland	2,520.8	1,005.5	1,515.3	155,463	49,136
Portugal	4.4	971.9	-967.5	83,642	11,095
Romania	0.0	0.0	0.0	63,297	26,999
Slovenia	29.5	191.6	-162.1	17,582	3,621
Slovakia	704.1	16.5	687.6	30,786	10,199
Finland	3,844.0	3,754.0	90.0	95,685	24,621
Sweden	2,500.8	5,258.2	-2,757.4	202,486	47,782
United Kingdom	na	na	na	901,195	201,638
Total of 8 EU countries reporting to BIS				5,180,098 (82.66%)	
Total of EU minus Germany and United Kingdom					840,852
Note: Information from Luxembourg on the gross disposable income refers to 2009. There is no information from Malta on the gross disposable income over the whole time series.					
Sources: Eurostat and own calculations					

(D) Information from the ERICA database project of the European Committee of Central Balance Sheet Data Offices

eccbso

Available data on derivatives in ERICA databases
Aggregate: 1 Total/ 2 Energy/ 3 Industry / 4 Construction / 5 Services

ERICA 1

		Years					
		2008		2009		2010	
Items	Aggregate	n^er groups	value (thousands)	n^er groups	value (thousands)	n^er groups	value (thousands)
Gains/ losses							
1. Gains (losses) on financial instruments designated as hedges (IS) (CBSO code 146)	1	66	-54,169	76	-1,532,711	86	-1,206,385
	2	12	-659,952	13	-176,504	17	-422,629
	3	27	554,049	31	-618,271	39	153,350
	4	6	-446,515	8	-379,676	8	-672,895
	5	21	498,249	24	-358,260	22	-264,211
	Min		-551,000		-465,084		-502,919
	Max		862,000		225,600		908,000
	Q1		-11,670		-26,542		-22,000
	Q2		-607		-3,004		-3,838
	Q3		4,158		381		598
2. of which, gains (losses) arising during the period (OCI) (CBSO code 2010:592031; 2009: 59251; 2008: 592131)[1]	1	31	-3,515,661	102	-1,016,674	112	-1,104,804
	2	6	-1,477,992	12	-1,324,617	18	454,748
	3	14	251,820	48	1,530,998	46	-1,164,108
	4	3	-2,997,967	12	145,648	14	-870,571
	5	8	708,478	30	-1,368,703	34	475,127
	Min		-1,928,000		-1,393,000		-868,000
	Max		1,352,000		1,081,200		767,000
	Q1		-179,750		-17,396		-12,600
	Q2		-7,650		-1,603		-786
	Q3		4,838		7,008		3,625
3. of which, (-) reclassification adjustments for gains (losses) included in profit or loss (OCI) (CBSO code 2010: 592032; 2009: 59252; 2008: 592132)[1]	1	14	2,173,964	37	-2,125,420	47	-1,736,630
	2	3	511,535	7	-1,906,723	7	36,807
	3	7	1,722,783	15	565,151	19	-706,129
	4	1	-10,525	5	-500,261	6	-528,079
	5	3	-49,829	10	-283,587	15	-539,229
	Min		-66,000		-1,329,000		-667,565
	Max		1,427,000		908,000		296,000
	Q1		-3,310		-68,726		-81,924
	Q2		461		-3,351		-1,171
	Q3		53,099		4,739		6,721
Assets							
1. Derivatives, non-current (CBSO code 37)[2]	1	33	11,378,254	49	10,779,440	56	15,149,805
	2	7	2,459,705	9	4,087,353	8	4,745,668
	3	9	1,321,704	18	2,735,788	19	4,353,229
	4	5	1,235,553	5	884,612	8	1,112,657
	5	12	6,361,292	17	3,071,687	21	4,938,251
	Min		75		7		1
	Max		3,590,000		2,411,000		3,595,000
	Q1		1,825		808		2,294
	Q2		26,371		24,800		12,756
	Q3		197,000		146,600		78,100
2. Derivatives (including hedging assets), current (CBSO code 44)[2]	1	62	14,907,264	77	15,768,333	105	23,249,499
	2	9	6,310,390	8	10,701,210	14	17,499,367
	3	36	7,607,326	41	4,173,586	57	4,419,935
	4	3	103,990	4	78,739	6	274,871
	5	14	885,558	24	814,798	28	1,055,326
	Min		19		3		17
	Max		2,919,000		7,404,800		7,567,000
	Q1		4,048		1,006		1,000
	Q2		34,753		12,000		10,945
	Q3		179,300		55,000		56,000
Liabilities and equity							
1. Hedging reserves (CBSO code 523)	1	52	-117,376	76	-23,100	89	-1,971,676
	2	7	-300,021	8	-506,223	12	-121,358
	3	24	460,827	35	-48,113	39	-435,436
	4	7	-1,394,513	10	-1,276,713	12	-1,507,521
	5	14	1,116,331	23	1,807,949	26	92,639
	Min		-866,000		-730,251		-453,000
	Max		1,138,000		860,000		648,000
	Q1		-20,725		-18,700		-34,350
	Q2		-4,908		-3,119		-4,059
	Q3		5,711		2,000		-150
2. Derivatives (including hedging liabilities), non-current (CBSO code 66)[2]	1	37	15,198,730	75	14,341,789	85	17,038,200
	2	8	3,489,402	13	5,466,760	12	6,115,756
	3	14	1,602,885	25	3,185,219	27	2,985,376
	4	5	4,358,905	8	2,547,649	12	2,977,749
	5	10	5,747,538	29	3,142,161	34	4,959,319
	Min		4		94		40
	Max		3,215,000		1,791,900		2,591,000
	Q1		8,700		4,143		2,572
	Q2		40,188		34,899		25,000
	Q3		318,554		141,650		68,102
3. Derivatives (including hedging liabilities), current (CBSO code 761)[2]	1	59	12,578,833	92	21,334,602	110	17,758,960
	2	9	6,846,419	12	15,422,324	12	11,296,974
	3	31	3,979,233	45	4,036,632	54	4,341,821
	4	3	47,459	7	94,329	11	376,883
	5	16	1,705,722	28	1,781,317	33	1,743,282
	Min		38		6		29
	Max		2,434,000		7,169,600		7,214,000
	Q1		3,386		1,509		1,933
	Q2		25,000		9,148		11,731
	Q3		121,330		47,750		41,813
Total assets/ liabilities and equity							
1. Total sample		135	2,476,618,775	171	2,965,454,877	221	3,618,691,335
2. Sample with data in derivatives		104	2,279,552,002	141	2,890,559,088	181	3,553,095,033
Total equity							
1. Total sample		135	736,759,166	171	845,083,017	221	1,160,272,199
2. Sample with data in derivatives		104	685,153,604	141	842,031,156	181	1,134,414,680

[1] 2008 data were presented gross of tax, in 2009 net of tax and in 2010 both methods of presentation were applied.
[2] 2008 items were called "hedging assets/ liabilities".
Source: ECCBSO. ERICA database project

ERICA 2 (excluding ERICA 1 groups)

		Years											
		2005		2006		2007		2008		2009		2010	
Items		n^{er} groups	value (thousands)	n^{er} groups	value (thousands)	n^{er} groups	value (thousands)	n^{er} groups	value (thousands)	n^{er} groups	value (thousands)	n^{er} groups	value (thousands)
Gains/ losses													
1. Gains (losses) on financial instruments designated as hedges (IS) (CBSO code 146)	1	97	421,577	240	-569,934	288	-118,477	328	-1,509,452	326	403,028	232	351,121
	2	13	215,061	27	306,075	28	385,691	27	-599,655	29	898,292	24	473,326
	3	51	-105,775	125	-210,989	152	-647,495	177	-1,040,047	188	173,154	119	-210,758
	4	3	1,552	5	3,202	9	39,382	12	55,776	10	-19,441	8	-16,534
	5	30	310,739	83	-668,222	99	103,945	112	74,474	99	-648,977	81	105,087
	Min		-60,557		-614,000		-287,000		-626,000		-115,653		-294,000
	Max		201,000		383,000		165,000		118,000		871,000		852,000
	Q1		-951		-402		-303		-878		-3,212		-3,458
	Q2		-84		31		45		-5		-223		-505
	Q3		514		919		878		1,579		87		95
Liabilities and equity													
1. Hedging reserves (CBSO code 523)	1	94	711,094	202	733,566	272	5,180,418	341	-1,814,050	378	-613,892	327	-812,723
	2	6	1,145,528	14	-13,303	16	138,413	21	-1,763,143	30	-537,981	29	984,119
	3	56	-230,083	109	1,059,723	137	4,790,723	171	1,892,831	181	2,108,190	161	-132,924
	4	0	0	4	85,329	6	117,726	6	-307,340	8	-356,153	8	-451,985
	5	32	-204,351	75	-398,183	113	133,556	143	-1,636,398	159	-1,827,948	129	-1,211,933
	Min		-132,000		-1,131,000		-1,344,000		-1,208,000		-494,000		-389,849
	Max		654,000		851,898		1,547,000		1,138,000		1,155,000		1,122,000
	Q1		-3,070		-63		-305		-8,127		-6,088		-8,925
	Q2		-242		388		437		-1,139		-748		-1,014
	Q3		47		3,180		4,400		-24		-28		72
Total assets/ liabilities and equity													
1. Total sample		532	1,427,853,002	1,189	4,067,958,708	1,297	4,930,147,243	1,358	5,282,240,648	1,386	5,161,212,699	1,056	5,366,883,860
2. Sample with data in derivatives		170	1,010,847,266	387	2,555,606,029	474	3,442,183,254	570	3,933,241,304	578	3,752,601,925	456	4,152,338,769
Total equity													
1. Total sample		532	431,056,494	1,189	1,279,786,370	1,297	1,524,346,540	1,358	1,516,115,345	1,386	1,569,600,717	1,056	1,736,291,466
2. Sample with data in derivatives		170	267,313,704	387	757,197,846	474	3,442,183,254	570	1,057,110,028	578	1,064,092,373	456	1,253,938,132

Source: ECCBSO. ERICA database project

REFERENCES

Acharya, V. V., Shachar, O., Subrahmanyam, M., "Regulating OTC Derivatives", *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance,* New York University Stern School of Business, New York, 2010, pp. 367–405.

Biais, B., Heider, F., Hoerova M., *Clearing, Counterparty Risk and Aggregate Risk*, International Monetary Fund, Washington, 2012.

Biais B., Heider F., Hoerova M., *Risk-sharing or risk-taking? Counterparty risk, incentives and margins*, University of Bern, Bern, 2012.

Brown, G., "Managing foreign exchange risk with derivatives", *Journal of Financial Economics,* Volume 60, pp. 401–448, 2001.

Brunetti, C., Büyükşahin, B., Harris, J. F., *Speculators, Prices and Market Volatility*, Banca d'Italia, Rome, 2011.

Büyükşahin, B., Harris, J. H., "Do Speculators Drive Crude Oil Futures?", *Energy Journal,* Vol. 32, No. 2, 2011, pp. 167–202.

Büyükşahin, B., Robe M. A., *Does "Paper Oil" Matter? Energy Markets' Financialization and Equity-Commodity Co-Movements*, International Energy Agency, Paris, 2011.

Cheng, I. H., Kirilenko, A., Xiong W., "Convective Risk Flows in Commodity Futures Markets", *NBER Working Paper*, No. 17921, 2012.

Culp, C. L., Miller, M. H., "Hedging in the Theory of Corporate Finance: A Reply to Our Critics", *Journal of Applied Corporate Finance*, Vol. 8.1, Morgan Stanley, 1995.

Culp, C. L., Miller, M. H., "Metallgesellschaft and the Economics of Synthetic Storage", *Journal of Applied Corporate Finance*, Vol. 7.4, Morgan Stanley, 1995.

Fattouh, B., Kilian, L., Mahadeva, L., "The Role of Speculation in Oil Markets: What Have We Learned So Far?", *Working Paper,* University of Michigan, Michigan, 2012.

Guay, W., Kothari, S.P. "How much do firms hedge with derivatives?", *Journal of Financial Economics*, Vol. 70, Issue 3, pp. 423-461, 2002.

Hamilton, J. D., "Causes and consequences of the oil shock of 2007-08", *National Bureau of Economic Research Working Papers 15002*, Massachusetts, 2009.

Hamilton, J. D., Wu J. C., "Effects of Index-fund Investing on Commodity Futures Prices", *Working Paper,* University California at San Diego, San Diego, 2012.

Irwin, S. H., Sanders, D. R., "Index Funds, Financialization, and Commodity Futures Markets", *Applied Economic Perspectives and Policy,* Vol. 33, Oxford Journals, Oxford, 2011, pp.1–31.

Juvenal, L., Petrella I., "Speculation in the Oil Market", *Working Paper,* Federal Reserve Bank of St. Louis, No 2011-027D, St. Louis, 2011.

Kilian, L., and Murphy, D. P., "The Role of Inventories and Speculative Trading in the Global Market for Crude Oil", *Working Paper,* University of Michigan, Michigan, 2011.

Krapels E., “Re-examining the Metallgesellschaft affair and its implication for oil traders”, *Oil&Gas Journal*, March 26, 2001.

Lombardi, M. J., Van Robays, I., “Do Financial Investors Destabilize the Oil Price?” *Working Paper*, No 1346, European Central Bank, Frankfurt, 2011.

Masters, M. W., *Testimony before the U.S. Senate Committee on Homeland Security and Governmental Affairs*, May 20, 2008.

“OTC derivatives statistics at end-December 2011”, *Statistical release,* May 2012, Bank for International Settlements, Basel, 2012.

Pirrong, S. C., “Metallgesellschaft: A Prudent Hedger Ruined, or a Wildcatter on NYMEX?”, *The Journal of Futures Markets*, Vol. 17, No. 5, 1997, pp. 543–578.

Singleton, K. J., “Investor Flows and the 2008 Boom/Bust in Oil Prices”, *Working Paper,* Stanford University, Stanford, 2011.

Stoll, H. R., Whaley, R. E., “Commodity Index Investing and Commodity Futures Prices”, *Journal of Applied Finance*, Volume 20, Tampa, 2010, pp. 7-46.

Tang, K., Xiong, W., “Index Investment and Financialization of Commodities”, *Working Paper*, Princeton University, Princeton, 2011.

“Testy conflict with Goldman helped push AIG to the edge”, New York Times, Feb 7, 2010.

“The macrofinancial implications of alternative configurations for access to central counterparties in OTC derivative markets”, *CGFS Papers No 46,* November 2011, Committee of the Global Financial System, Bank for International Settlements, Basel, 2011.

Wahrenburg, M., *Hedging Oil Price Risk: Lessons from Metallgesellschaft*, University of Cologne, Cologne, 1995.

Whaley, R. E., *Derivatives: Markets, Valuation, and Risk Management*. John Wiley & Sons Inc., New Jersey, 2006.