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LES MARCHÉS INTERNATIONAUX DES C.D.S (CREDIT DEFAULT SWAPS) : ANALYSES CROISÉES

LIVRE BLANC

Ce rapport a été établi sous la supervision de Bernard MAROIS, Président du Club et Henri GHOSN, Vice -Président

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AVANT-PROPOS

Dans la mesure où les opinions et les positionnements professionnels des membres du Groupe de Travail « CDS » peuvent différer d'une façon substantielle, il a été décidé d'adopter une approche « additive », dans la rédaction de ce Livre Blanc. Chaque membre a souhaité présenter un éclairage personnel sur cette problématique du marché des « CDS », avec une introduction et une conclusion commune. Certaines sections sont en français, d'autres en anglais, en fonction des choix des auteurs. La structure du Libre Blanc s'établit de la façon suivante :

I. Introduction : qu'est-ce qu'un CDS (« Credit Defaut Swap ») ? par Bernard MAROIS, Président du Club Finance HEC

Rappelons d'abord ce qu'est un CDS, à travers un exemple simple. Une banque a prêté 100 millions d'euros à une entreprise sur 10 ans. Pour se protéger du risque de défaut de son emprunteur, elle va « acheter de la protection » à une société spécialisée, par exemple une « monoline » (établissement spécialisé dans le rehaussement de crédit) ou une autre banque, « vendeuse de protection », de même qu'un particulier se couvre contre le risque d'incendie de sa maison.

La banque est couverte, en cas de banqueroute de l'emprunteur, moyennant le paiement d'une prime, le coût du CDS (équivalent à la prime versée par le particulier qui veut se protéger du risque d'incendie). La « monoline » encaisse la prime du CDS, tout en espérant qu'il n'y aura pas de sinistre. Plus globalement, le coût d'un sinistre isolé (la faillite de l'emprunteur, ou, par comparaison, l'incendie de la maison) est intégré dans la « mutualisation » des risques, qui permet à une compagnie d'assurance de dégager des revenus (l'ensemble des primes collectées) supérieurs aux montants versés pour indemniser les victimes. Dans la transaction entre la banque et « la monoline », le CDS se comporte comme un contrat d'assurance classique, sauf qu'il relève d'une opération de marché. Là où les choses se compliquent, c'est que deux établissements financiers tiers peuvent également s'engager dans une deuxième transaction, utilisant le prêt originel comme sous-jacent, ainsi une banque B, qui estime que l'entreprise emprunteuse va faire défaut d'ici 10 ans, va acheter de la protection (elle paiera une prime de risque, mais encaissera l'équivalent du montant du prêt lors du sinistre) à un établissement C (par exemple un « hedge fund ») , qui n'anticipera pas un défaut de paiement de l'emprunteur et va donc améliorer sa rentabilité en encaissant la prime. On voit là que ces deux nouveaux acteurs « spéculent » sur l'occurrence (ou la non-occurrence) d'une faillite de l'entreprise sous-jacente. Et d'autres institutions financières peuvent également nouer des transactions à partir de cet emprunt. Pour que « l'indemnisation » soit déclenchée, il faut qu'il se produise « un évènement de crédit », soit un défaut de paiement, soit un moratoire, soit une répudiation de dette. On voit donc qu'un CDS est, en quelque sorte, un contrat d'assurance sur la capacité d'un agent économique à assurer le service de sa dette, c'est-à-dire de disposer d'un cash-flow suffisant pour à la fois payer les intérêts de cette dette et permettre son amortissement.

Dans ce marché des CDS, qui s'est développé d'une manière exponentielle jusqu'à atteindre 60 trillions de dollars, fin 2007, avant de se dégonfler partiellement avec la crise (32 milliards de dollars en décembre 2009), on peut désormais distinguer deux compartiments principaux : les « corporates » et les « souverains ».

Le marché des CDS souverains englobe à la fois les CDS adossés à la dette d'un Etat et ceux structurés sur des indices représentatifs de dettes publiques. Par exemple, l'iTraxx SovX Western Europe Index comprend un éventail assez large de CDS (15) correspondant à des emprunts levés par les principaux Etats de l'Union Européenne. Cet indice a été créé par le Groupe Markit de Londres, une société privée qui rassemble une quinzaine de grandes banques (Goldman Sachs, Morgan Chase, etc). En ce qui concerne les CDS corporates, ils englobent aussi bien les banques que les entreprises, les sous-jacents étant, soit des titres obligataires, soit des créances bancaires.

C’est sur ce compartiment du marché que nous concentrerons l’essentiel de nos observations.

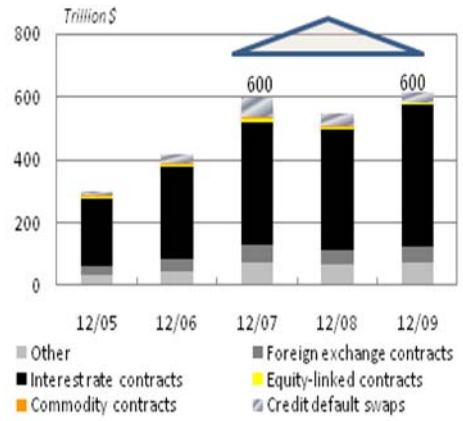
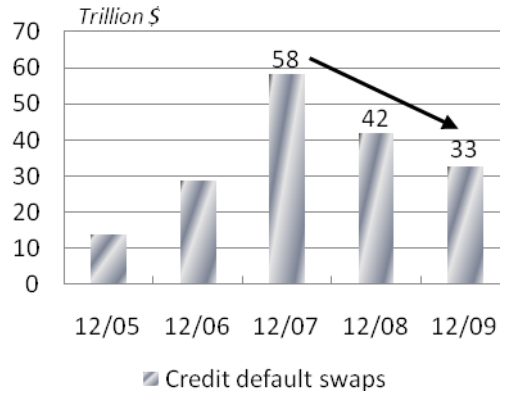
En plus de son double rôle de moyen de couverture et de spéculation, le marché des CDS permet également de procéder à une tarification du risque au même titre que le « spread » d’une obligation ou la notation d’une agence spécialisée (Standard and Poor’s, Moody ‘s, Fitch). Nous aurons l’occasion, à travers ce livre blanc, d’identifier les liens qui peuvent exister entre prime de CDS, « spread » de titre obligataire et notation.

II. "Risks and challenges for the Credit Default Swap market", by Nadège JASSAUD, Banque de France, Adjointe au chef du service des études sur les marchés et la stabilité financière, Banque de France

This chapter is based on an ECB report published in August 2009[1], "Credit Default Swaps and Counterparty Risk", to which the Banque de France made a significant contribution.

While over-the-counter derivatives (OTC) derivatives in the form of forward sales of agricultural goods date back to the 15th century, and perhaps earlier (the first options trade is attributed to the Greek philosopher Thales circa 600 B.C.), the modern forms of unregulated OTC derivatives started to develop in the 1990s in response to the three factors: the need to share and hedge risk; a number of restrictions on financial innovation - including regulation -, and finally, the internationalisation of finance and the associated technological advances.

Then, since end-2007, the value of the OTC derivatives market has stood at a mammoth USD 600 trillion. Its most dynamic segment over the last decade -until recently- has been the Credit Default Swap (CDS) market. The gross notional amount of CDS rose from about USD 4 trillion at end-2003 to just over USD 60 trillion at end-2007 (Figures 1 and 2), an amount exceeding worldwide GDP (USD 50 trillion). However, this segment fell to around USD 33 trillion in December 2009, and is likely to decline further, partly as a result of multilateral compression[2], which eliminates redundant trades. To gauge more accurately the size of derivatives market, other metrics exist (Box 1). Net notionals represent the genuine credit risk at stake after all netting arrangements, while positive and negative mark-to-market values account.

Figure 1: OTC derivative market- Gross Notional amounts, Dec 2006-Dec 2009, BIS data	Figure 2: CDS market- Gross Notional amounts, Dec 2006-Dec 2009, BIS data
	
Source: BIS	Source: BIS

[1] http://www.ecb.int/pub/pdf/other/creditdefaultswapsandcounterpartyrisk2009en.pdf

[2] In OTC markets to exit a contract, it is necessary to enter into an opposite position with the, same counterparty or another one. To eliminate those duplicated trades, third party operators - TriOptima and CreditEx- offer services, known as trade compression.

Box 1- Different metrics in the CDS market
Gross notional is a measure of turnover, on which premium calculations are based. As it is computed before all enforceable netting legal agreements, allowing the offset of reverse positions (but after multilateral netting from compression activity), it tends to inflate the genuine amount of credit risk transferred in the system. **Net notional** is a good proxy for the amount of credit risk transferred, after netting. It represents the maximum amount of funds that could theoretically be ceded by the seller of protection to the buyer, in case of a credit event. It assumes however a zero recovery rate following a default by the reference entity and does not take into account posted collateral. Net notional traditionally stands at 10% of the gross notional amount. **Mark-to-market values** reflect the market price of the CDS contracts (varying with the quality of the underlying reference entity) and then the replacement cost. For one specific contract, this cost of replacing the transaction represents the genuine amount at risk in normal times. It will equal the notional in times of default of the reference entity. Net market values are usually computed across all of OTC derivative positions in line with the scope of netting and collateral agreements. Thus, net market values on CDS only are not available.

1. The CDS market: a market with specific risks

During the subprime crisis, CDS displayed some positive mitigating features. Financial institutions used CDS to hedge their counterparty and credit risks. CDS were also viewed as playing an important role in disseminating information: revealing the bankruptcy prospects of financial firms as well as the decline in the value of subprime-backed assets.

By contrast, cases like Bear Stearns, Lehman Brothers and AIG have also showed the dark side of these products. Concentration and opaque linkages between these products magnified contagion as the crisis intensified, causing significant trade replacement costs, deleveraging, and credit market breakdowns. While they account for a relatively small share of the overall derivatives market (7%), CDS are arguably responsible for a much greater component of counterparty risk than this proportion might suggest.

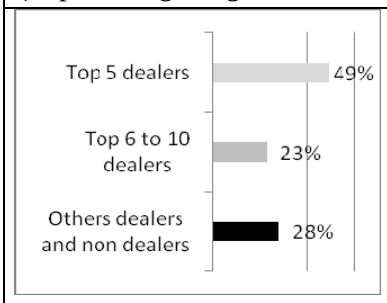
First, the CDS market is characterised by a high degree of concentration and circularity, raising counterparty risk concerns. Second, CDS are by nature leveraged products, with embedded tail risk, difficult to capture by risk management processes. Third, their opaqueness is potentially a support for contagion.

1.1- A high degree of concentration and interconnectness

The CDS market is a **highly concentrated market**. Such a degree of concentration raises systemic concerns if one CDS dealer defaults. Since all CDS users use the same CDS dealers as counterparties, this creates a chain of interconnected risks.

According to figures provided to the ECB, half of the trades are concentrated among the 5 largest dealers[3] (April 2009). Most recent data by DTCC confirmed that this dependence on a limited number of counterparties is a permanent feature of the market. 88% of trades are qualified as interdealer (Figure 4), while non dealers rarely trade among themselves, less than 1% (see below).

Figure 3: concentration of CDS trades among top 5 and top 10 market participants, April 2009
(as percentage of gross notionals)



Source: ECB report, CDS and counterparty risk

Figure 4: Percentage of "non dealers" in CDS activity, May 2010
(as percentage of gross notionals)

		SELLER	
		Dealer	Non Dealer
BUYER	Dealer	88%	12%
	Non Dealer	99%	1%

Source: DTCC

According to the latest survey by Fitch[4] (16 September 2010), such a trend tends to increase as a reflection of the dominant role of banks and dealers as counterparties, particularly after the collapse of important intermediaries in this market during the financial crisis. The top 10 counterparties comprised 78% of total exposure in terms of the number of times cited in Fitch's study, up from the 67% reported last year.

The CDS market also displays a **high interconnectness**. The major dealers in the CDS markets not only trade among themselves but also increasingly guarantee risks for other dealers. When the risk aversion towards banks was at its record high, credit default swaps on banks surged. It creates a "daisy chain" of interrelated credit. Thus, 9 out of 10 of the most traded corporate reference entities are financial institutions, of which 7 are CDS dealers (Figure 5). This phenomenon prevented the risk from exiting the banking sector (Figure 6).

Figure:5 Top 10 corporate reference entities (net notional amounts)

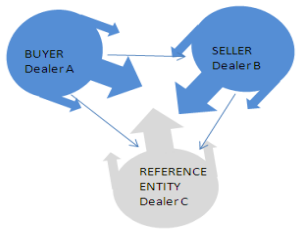
In trillion $

General Electric		11
Bank of America	Dealer	6,2
Deutsche Bank	Dealer	6
JP Morgan	Dealer	5,5
Goldman Sachs	Dealer	5,4
Berkshire Hathawa	Financial	5,2
Wells Fargo	Dealer	5,1
Morgan Stanley	Dealer	5
MBIA	Financial	4,9
Merrill Lynch	Dealer	4,5

DTCC, April 2010

Source: DTCC

Figure 6: a limited risk transfer



Source: author's illustration

[3] Depositary Trust and Clearing Corporation

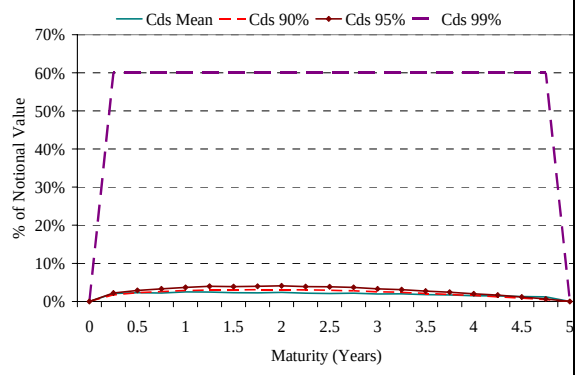
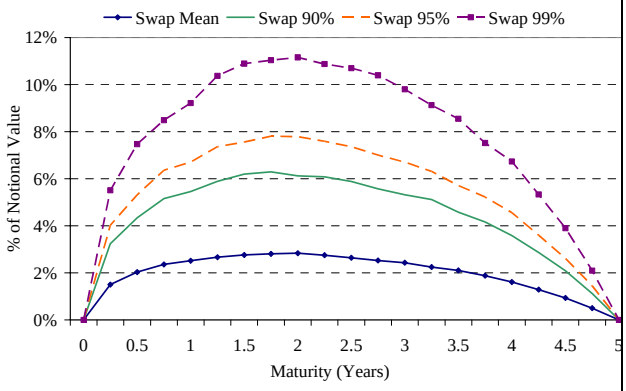
[4] Global Credit Derivatives Survey September 15, 2010

1.2- A heavily skewed payoff profile

Compared to other OTC products, CDS display a typically heavily skewed payoff profile, which makes these products particularly risky. Indeed, contrary to other bilateral OTC contracts like interest rate swaps, the pay-off of credit default swaps is **discontinuous** ("a digital risk[5]"):

- In normal times, selling protection is an attractive proposition, delivering a regular premium from the buyer of protection.
- In times of crisis, however, if the reference entity undergoes a credit event, the protection seller has to pay the protection buyer the loss given default, which can reach the notional amount of the contract should the recovery rate be very low.

This made CDS very **dissimilar** to other mainstream derivatives, where payments are usually small fractions of notional amount. When running 10,000 simulations using a Monte Carlo method, the loss distribution profile in proportion to the notional value is radically different for CDS, than for interest rate swaps for instance (Charts 7 and 8). The potential future exposure, which is an estimation of how much the value of the given contract might change over the remaining life of the contract shows how non-linear the loss distribution is. This one off increase in spreads is referred as "jump-to-default" risk.

Chart 7: Expected potential exposure: five-year CDS (percentages of total notional value)	Chart 8: Expected potential exposure: five-year interest rate swap (percentages of total notional value)
	
Source: ECB report on CDS and counterparty risk	Source: ECB report on CDS and counterparty risk

This specific risk profile makes risk measures and risk mitigation extremely challenging. Indeed, the jump-to-default effect reduces the risk mitigating role of the received collateral. For the protection buyer (i.e. collateral receiver) the risk is that the credit spread widens too quickly for it to adjust its collateral requirements. This occurs when there is a rapid default or deterioration before the market has had time to factor the increased default risk into the current spread.

5 Commission staff working paper accompanying the Commission communication ensuring efficient, safe and sound derivatives markets, July 2009, http://ec.europa.eu/internal_market/financial-markets/docs/derivatives/report_en.pdf

Moreover, the protection seller (i.e. collateral provider) may suddenly be required to post an amount of collateral that exceeds its short-term capacity and then be unable to meet collateral requirements and/or settlement obligations after the default.

1.3- Poor transparency increases contagion risk

The CDS market is an OTC market, whose transparency is relatively low. This lack of transparency is deemed to have contributed to the crisis in several ways. Not only did it make it difficult for market participants to assess the risk of other market players, meaning that risk-taking could not be controlled by market discipline, but it also made it impossible for regulators to discover and hence prevent the build-up of risk concentrations.

There are currently two main available data sources (Box 2):

- **BIS data** cover the largest banks in the G10 countries. Its coverage in terms of products is broad but its frequency remains limited (half yearly).
- **DTCC database** is operation-based, as it is derived from the repository system where its information on deals between counterparties is reconciled and subsequently stored. Indeed, DTCC is one of the two main providers of trade matching and confirmation services for OTC derivatives. Alongside its matching and confirmation service, it set up a trade information warehouse, the Warehouse Trust. It stores the "official legal records", or so-called "golden copies", of the transactions. In addition, the DTCC provides other post-trading services such as payment calculations for one-time fees and coupons, multi-currency payment netting and central settlement of payments (in connection with the CLS), centralised processing of credit events and novation consent, when a party assigns its position to another. Although complementary, these two sources of data still do not match due to different definitions, scope of products and reporting financial institutions.

Box 2: Strengths and weaknesses of the two current main CDS data sources

	Strengths	***Weaknesses***
DTCC- Depositary trust and Clearing Association	Weekly data	Starts end–October 2008
	Estimated coverage : 90% of the CDS market ⇨ over 95% of interdealer CDS contracts	Low coverage on bespoke products and medium-sized and small players ⇨ AIG, the monolines and the CDPC which sold protection via bespoke contracts would **not** have been reported into DTCC.
	Gross and **net** notionals	No information on market value
	Accurate data source ⇨ based on actual settlement instruction	Definition of CDS dealer different from BIS

BIS- Bank of International Settlement	Starts end-2004	Half yearly only (with a lag of 5 months, end of December released mid-May)
	Includes bespoke products and CLN	Voluntary survey (quality of data not checked by banking supervisors)
	Information on market value	Restricted sample: covers only banks, from G10 countries and Switzerland (Spain is not included)

2- Building infrastructures for the CDS market, among the top regulatory challenges:

The September 2009 G20 Pittsburgh communiqué sets out important steps for the CDS and the OTC market as a whole: "*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*".

Since then, across all jurisdictions regulatory reforms have been under way in order to implement these G20 commitments:

- In **the United States**, broad financial legislation was passed in July 2010, known as the Frank-Dodd Act. This Act contains provisions regulating OTC derivatives. In particular, it requires the reporting of OTC derivative contracts and the clearing of eligible contracts. Furthermore, it puts in place strict capital and collateral requirements for OTC derivatives that remain bilaterally cleared. So-called 'non users' should however benefit from exemptions in terms of clearing obligations. Finally, it puts in place a regulatory framework for trade repositories and upgrades the existing regulatory framework for CCPs.

- In the **European Union**, the European Commission published its formal legislative proposal for regulation on 15 September 2010, in line with the approach adopted by the US.

Even though critical technical details still need to be worked out, those regulations put a strong pressure for centralisation of clearing and data repositories.

2.1- Central Counterparties –CCP- to reduce counterparty risk

CCPs display different features that are beneficial for risk mitigation. First, they take over the counterparty risk management of its clearing members. They act as the middleman between the buyer and the seller of derivative contracts, guaranteeing the obligations of both parties. CCPs essentially become "the buyer to every seller and the seller to every buyer".

By contrast, on bilateral markets, in the event of a default, the unwinding of positions is likely to become a drawn out process accompanied by an extended period of uncertainty.
The experience of the crisis illustrated how interbank markets without an infrastructure were prone to panic. The case of Lehman Brothers has shown the systemic impact of the price of trade replacement costs incurred for trades for which Lehman Brothers was a counterparty.

In addition, CCPs have the possibility to net on a multilateral instead of a bilateral basis, thanks to their middleman function dealing with a large number of market participants. Moreover, they have the potential to reduce the total exposures in the system more than bilateral netting does.

Finally, CCPs ask for initial collateral and call for additional margins, based on risk management criteria. By contrast, in a bilaterally cleared market, derivative traders may be confronted with commercial pressures to refrain from requiring initial margins.

Furthermore, CCPs are institutions, with a capital, a clearing fund and burden sharing arrangements. This mutualisation of loss, which never happened in a bilateral market, is making the market more resilient. Last but not least, being regulated entities, CCPs greatly improve transparency, by giving to regulators an unfettered access to prices, volumes and making possible the setting of position limits.

However, even in CCPs, counterparty risk never disappears. Clearing houses concentrate the risks and remain vulnerable to a default by a major participant. Being cross-border and multi-currency entities, CCPs can be major channels through which shocks can be transmitted across domestic and international financial systems. Although unlikely, they may nevertheless face extreme scenarios in which their liquidity needs exceed their available resources to settle on time, and thus result in delayed or other non-routine settlements. Against this background and the fact that they are systemic entities, such infrastructures should operate under appropriate oversight from regulators and central banks[6].

2.2-Trade Repository to support macro-surveillance

Even in a world where standardisation is strongly incentivised, it is highly unlikely to reach a target of clearing 100% of all trades. Some are not liquid or standardised enough to go on platforms, and would be thus remained within the dealers' community.

Central trade repositories are a relatively recent phenomenon. They are centralised registries that maintain an authoritative electronic database of all open OTC derivative transactions. They collect data, derived from centrally or bilaterally clearable transactions. This record keeping will allow a complete audit trail and mandatory reporting.

[6] For further information, see the latest issue of the Financial Stability Review of the Bank of France, http://www.banque-france.fr/fr/publications/rsf/rsf_072010.htm

Trade repositories complement central clearing by providing a location for trades that are not centrally cleared while offering regulators an aggregated view for macro-prudential regulation.

Concluding remarks

CDS complete financial markets, offering a less costly and more flexible alternative to traditional credit insurance. They facilitate the allocation of credit risk to those who are most willing and, presumably, best able to bear it. However, they have demonstrated several weaknesses during the financial turmoil, in particular their opacity, interconnectness and concentration.

Current regulatory reforms under way aim at strengthening the regulatory framework, by imposing mandatory clearing at CCPs of standardized instruments, increasing transparency and enhancing capital charges for bilateral trades.

CDS trading and clearing infrastructures are likely to become systemically important institutions themselves and, hence, adequate risk management on the part of these institutions, as well as proper oversight and supervision of them, needs to be ensured in order to limit systemic risk.

III. « From CDS arbitrage to ALM », par Yann AÏT MOKHTAR, Executive Director, Head of Quantitative Research, Exane BNP Paribas et Nicolas BERTRAND

Depuis 2007, l'économie subit une crise grave. Le développement et la régulation du marché des subprimes furent rapidement mis en cause.

A notre sens, la crise a deux racines plus profondes : l'excès de création monétaire et la transformation. Dès les années 90, les banques centrales ont laissé la masse monétaire croître, via l'octroi de prêt, à un rythme très supérieur à l'équilibre usuel dont le niveau est la croissance du PIB additionnée au CPI. C'est ce qui explique les niveaux de spreads de crédit très faibles du milieu des années 2000. Par ailleurs, les acteurs économiques, Etats comme entreprises, se sont engagés dans des politiques de transformation. Les emprunts émis ont une maturité trop courte et nécessitent des refinancements. Cette activité de transformation permet de réduire le coût des financements actuels en échange d'une prise de risque parfois significative sur les financements futurs. A grande échelle, l'activité de transformation rend les marchés, structurellement et mécaniquement, instables et très volatiles.

Dans la même période, le marché du crédit est devenu plus sophistiqué et liquide. La croissance du marché des CDS (Credit Default Swap) a facilité le transfert des risques entre les acteurs. La recherche financière, et en particulier le développement des modèles structuraux (Merton's Contingent Claim Model) a permis son arbitrage avec d'autres classes d'actifs telles que les actions et les dérivés actions. Le marché est devenu plus efficient. La variation des spreads CDS est devenue un bon proxy de l'évolution du coût du capital action.

L'arbitrage peut être mis à profit par les entreprises car il rend le comportement des marchés actions et crédits plus prévisible. Pour cela, il faut créer un tableau de bord et développer la gestion actif-passif.

Le tableau de bord doit inclure quelques indicateurs (dont le niveau des CDS par maturité, les volatilités implicites du titre, la décote de liquidité…) et rendre compte de la perception de l'entreprise par les différents marchés.

La gestion actif-passif permet de :

- quantifier les risques pris et le capital consommé par chaque décision : mode, maturité et indexation des financements, mode de couverture des changes, niveau de levier, …
- exécuter des stress tests : la société peut-elle faire face à des situations de crises endogènes 5Toyota, BP, …) ou exogènes (Croissance, taux, crédit, déflation, …)

Les modèles de gestion actif-passif tels que l'ALRG ™, présenté dans ce document, autorisent la réduction du coût du capital tout en respectant des contraintes telles que le contrôle actionnarial. Le résultat économique des entreprises (résultat comptable diminué du coût du capital employé) peut ainsi être amélioré

« From CDS arbitrage to ALM », par Yann AÏT MOKHTAR, Executive Director, Head of Quantitative Research, Exane BNP Paribas et Nicolas BERTRAND

The economy has been mired in an extended crisis since 2007. The development and regulation of the subprime market was quickly identified as the cause.

We believe that the crisis has two more deep-rooted sources: an excessive expansion of the money supply and carry trade. In the 90s, central banks allowed the money supply to grow, through lending, at a pace far higher than the standard level (i.e. GDP growth added to the CPI). This explains why credit spreads were so low in the middle of the last decade. Moreover, economic agents – both governments and companies – have undertaken carry trade policies. The bonds issued mature too quickly and require refinancing. This carry trade activity makes it possible to lower the current cost of financing in exchange for a sometimes significant assumption of risk on future financing. On a large scale, the carry trade activity leaves markets structurally and mechanically unstable and very volatile.

Over the same period, the credit market has become more sophisticated and more liquid. The growth of the CDS market (Credit Default Swap) has facilitated the transfer of risk between players. Financial research, and in particular the development of structural models (Merton's Contingent Claim Model), made it possible to arbitrage CDS with other asset classes such as equities and equity derivatives. The market has become more efficient. The variation of CDS spreads has become a good proxy for changes in the equity cost of capital.

Arbitrage makes the equity and credit markets more predictable. Benefiting from these new market conditions is possible. This requires creating a dashboard and developing asset-liability management.

The dashboard needs to include several indicators (including the level of CDS by maturity, the implicit volatility of the security and the liquidity discount) and to reflect the perception of the company by the different markets.

Asset – Liability management makes it possible to

- quantify the risks taken and the capital consumed by each decision: type, maturity and indexation of financing, type of forex hedging, leverage level, acquisition financing structure, disposals or capital increase accretion.
- run stress tests: is the company able to manage a significant crisis, endogenous (Toyota, BP, …) or exogenous (GDP, Yields, Credit crisis, deflations, …)

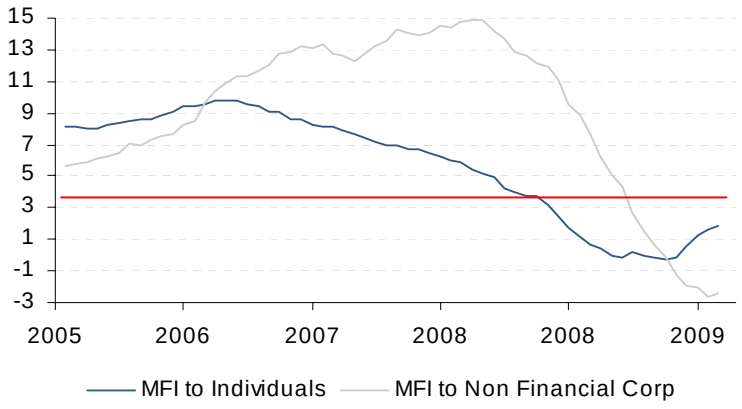
Asset – Liability management models such as ALRG ™, presented in this document, make it possible to lower the cost of capital while respecting constraints such as shareholder control. ALM helps improving the economic performance of companies (accounting net income less the cost of capital employed).

1. Crisis: a monetary and structural point of view

Money overhang…

Before 2007, Corporates and investment funds had easy access to credit. Banks increased their loans to corporates significantly, well above a sustainable rate equal to CPI + GBP growth rates (4.5%).

Figure 1: Loans growth rate



Source: ECBS

This led to extremely low credit premiums (spreads), in turn allowing the LBO industry to expand strongly. Any surplus money was also invested in real estate. This phenomenon was not regulated as central banks tend to use the CPI as benchmark.

The real money gap is defined as the difference between the actual level of M3 deflated by the HICP and the deflated level of M3 that would have resulted from constant nominal M3 growth at its reference value of 4.5% and HICP inflation in line with the ECB's definition of price stability, taking December 1998 as the base period.

… and carry trade

Despite this low-cost credit, many corporates have tried to improve the equity returns through carry trade. Many have used short-term financing, such as bridge-loans, to finance long-term acquisitions. Others have increased their leverage through share buy-backs.

By doing so, these companies have created significant exposure to the credit market, as refinancing was mandatory. This was obvious for the LBO industry. Opco's debt amortization is not possible as the FCF are generally returned to the HolCo (e.g. ProSiebenSat). This was also true for the properties where the fiscal regulation forces a large part of the free cash flow to be returned as dividends, leaving the debt repayment at risk.

Figure 2: A few deals

Acquirer	Target	Date	Bid size (EUR bn)	Financing
Enel	Endesa	2007+	30	Phase 1: EUR25bn credit lines (3y + 5y) Phase 2: EUR8bn loan (5y) + USD bond issue (7y, undisclosed amount)
Continental	Siemens VDO	Jul-07	11.4	EUR6bn loan (3y + 5y) + EUR5bn credit line (5y)
Heidelberg-Cement	Hanson	May-07	11.4	EUR2bn hybrid bonds + EUR500m capital increase + EUR1.4bn sale of Vicat
Lafarge	Orasom	Dec-07	8	EUR7.2bn bonds (1y + 5y) + EUR2.8bn reserved capital increase
Wendel	Saint-Gobain	Sep-07	6	EUR4.4bn SPV (~3y)
Pernod Ricard	Vin & Sprit	May-08	5.3	EUR2.7bn + USD10.2bn syndicated facility (1y + 5y)
PPR	Puma	Apr-07	3.3	EUR3.3bn loan: EUR1.8bn bond renewable once (1y) + EUR1.5bn bond (5y)

Source: Exane BNP Paribas Quantitative Research

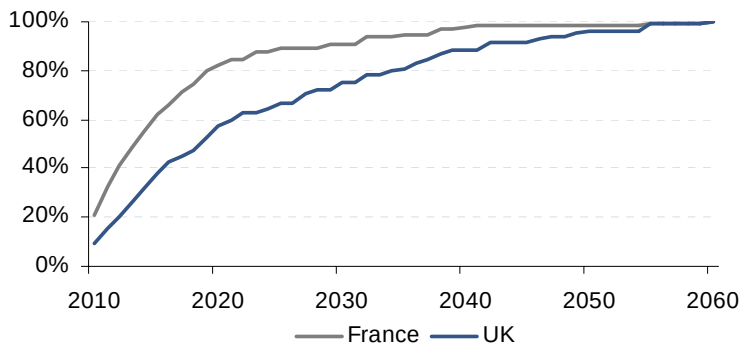
Those deals share the same characteristics. Implicitly, the companies increase their return if:

- the credit market remains stable or improves
- operational revenues increase (synergies, scale factor, etc.)

But this double bet is risky: they have implicit short exposure to the credit market and to the economic situation. Refinancing is necessary when cash flow generation no longer covers debt service.

Countries are also concerned

Figure 3: Debt maturities profile



Source: AFT, DMO, Exane BNP Paribas Quantitative Research

Countries are also forced to refinance their debts. US Federal debt has a 4-year maturity, euro zone treasuries generally mature after about 6 years. The UK has adopted an expensive 14-year maturity. The UK's debt financing system is more stable as the refinancing needs are lower.

Public debt management authorities seem to follow similar optimization programmes.

In France, the typical implementation of debt maturity management is described in a publication by Jean Paul Renne, DGTPE, Minefi, 2007, *"What are the consequences of active management of average debt maturity in terms of cost and risk?"*. An Abstract of the paper follows:

"Since 2001, Agence France Trésor has been managing the average maturity of debt. In "normal" circumstances, characterised by a rising rate curve, with higher long rates and weaker but more volatile short rates, reducing this average maturity should make it possible to reduce interest costs over the long term, all things being equal. On the other hand, this increases the variability of this expense. Average debt maturity management therefore requires quantitative assessment of the compromise between average interest payments and payments variability." (The views expressed in this working paper are those of the author.)

Similarly, the UK's official target given to the Debt Management Office (which can be found in the DMO's Annual Review) is to "minimise over the long term, the costs of meeting the Government's financing needs, taking into account risk, whilst ensuring that debt management policy is consistent with the aims of monetary policy".

Nevertheless, since the Budget 2007 at least, the policy has been to "skew [gilt] issuance towards long conventional and index-linked gilts". Part of the decision to lengthen the average maturity was an answer to "rising demand from defined benefit pension schemes" for this kind of bonds.

The optimization proposed here does not take into account asset liability structure as introduced by Gray, Merton and Bodie, in 2007, "Contingent Claims approach to measuring and managing sovereign credit risk". This paper provides a new framework for adapting the CCA model to the sovereign balance sheet in a way that can help forecast credit spreads and evaluate the impact of market risks and risks transferred from other sectors.

This new framework is useful for assessing vulnerability, policy analysis, sovereign credit risk analysis, and design of sovereign risk mitigation and control strategies.

In our view, an ALM approach is required to understand the dynamic of such huge financing. Regulations and risk management practises (VaR, etc.) have led to more and more pro-cyclical behaviour. This is dangerous if companies or countries need a continuously open market to face their refinancing needs.

2. A growing CDS market

The CDS as an insurance product

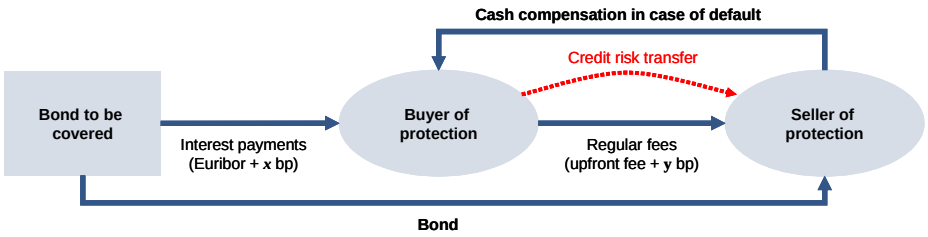
A Credit Default Swap (CDS) is a bilateral contract. It involves a protection buyer and a protection seller.Generally, the buyer pays regular fees to the seller and the seller compensates the buyer for the default of the underlying.

CDS are defined using:

- a price (Spread and/or upfront fee)
- a reference entity
- a tenor
- a reference obligation: it defines the lowest seniority that can be delivered in case of default
- credit events triggering the protection

The market trades CDS on many instruments including Loans and Bonds

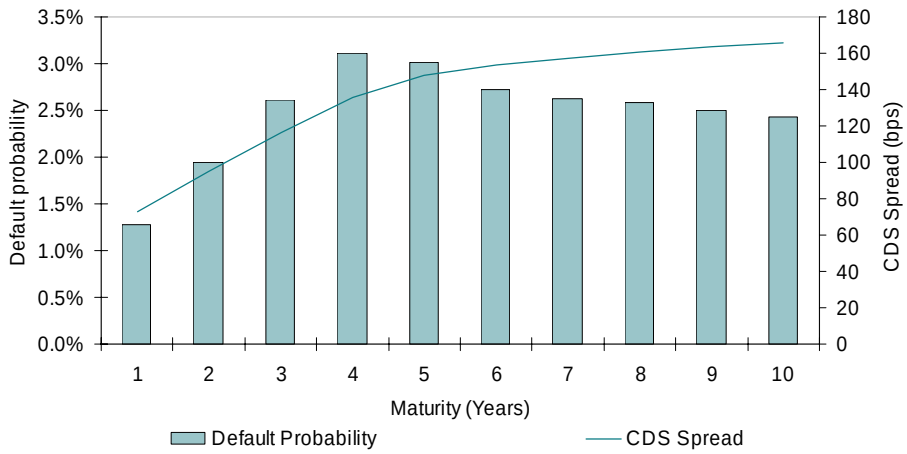
Figure 4: CDS money flows



Source: Exane BNP Paribas Quantitative research

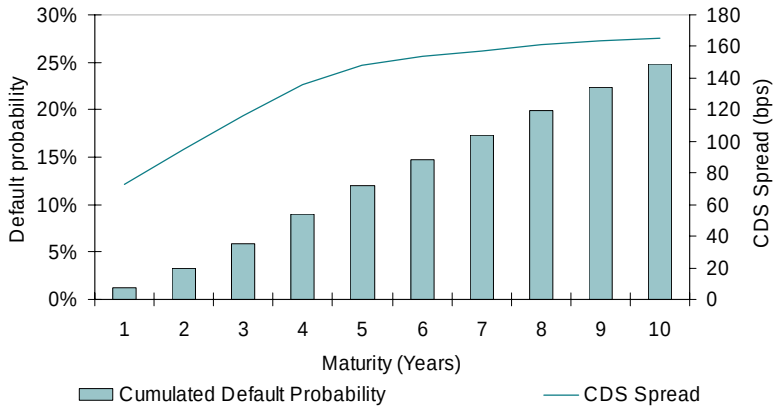
If we consider the CDS as an insurance product, we can calculate the implied default probability, based on estimated recovery rates. The following probabilities are calculated using the useful JPMorgan Formula.

Figure 5: Holcim – Yearly Implied default probabilities



Source: Bloomberg 13/03/2010 – Exane BNP Paribas Quant team

Figure 6: Holcim – Cumulated Implied default probabilities



Source: Bloomberg 13/03/2010 – Exane BNP Paribas Quant team

Considerable expansion

The CDS market has seen a considerable expansion as banks have found a way to improve risk portfolio management. CDS have helped increase risk diversification and design an active risk management policy. Of course, diversification reduces the volatility of the portfolio under normal conditions. It does not really improve the stability of the system during a crisis, due to contagion phenomena.
Arbs have been a usual counterparty for CDS buyers. They provide liquidity for this market. Capital structure arbitrage is an important family of arbitrage. Arbs look at the relative value of various instruments issued by corporates. This is possible, thanks mainly to Merton's contingent claims approach, which means that debt markets are consistent with equity markets. Arbs have the ability to transfer risks from the debt markets to the equity markets, buying equity put options to hedge debts. Share prices are linked to the capital structure.

In our view, corporates could capitalise on this highly efficient market. CDS spreads are good proxies for fluctuations in the cost of capital. High yield CDS demonstrate that investors require a high return on their investment due to market conditions or the company's situation. This should encourage corporates to develop Assets-Liabilities management. This would enable them to:

- Optimise the cost of capital, improving the risk adjusted return for their shareholders and not only the expected return,
- Analyse and prepare the structure for stress scenarios, whether endogenous or exogenous. This is possibly when using simple models like the ALRG™ presented in this document.

3. The Assets/Liabilities Refinancing Gap model

Classical approaches are not relevant for highly indebted companies

High Yield spreads are challenging for corporates but also for corporate analysis. Indeed, the usual methodology relies on the Assets = Liabilities assumption.

This assumption derives from the 1958 Modigliani-Miller Capital Structure Irrelevance theorem. Unfortunately, this theorem relies on two frequently forgotten conditions: no tax and no bankruptcy cost. It is easy to tweak the model for the first condition. It is much trickier to adjust it to reflect the second.

Generally, indebted companies offer a significant premium and, of course, no default risks.

Using investment grade financial estimates:

- EV = Nominal (i.e. accounting) debt value + Market equity value…
- ratios: EV/EBIT multiples…
- and asset-based discount rates,

… leads to inconsistent results. High Yield companies' debt value is far from its nominal value, so the usual EV calculation is no longer accurate. High Yield companies also have refinancing constraints (this is why the CDS spreads are so wide) and capital has to be considered as raw material for them. An assets-based return on capital employed is much lower than a liabilities-based one, breaching the assets = liabilities cost of capital expectation. Ratios calculated on such data are therefore significantly biased. Finally, "beta" calculations are no longer accurate as the expected returns are no longer linear due to the non-zero default probability.

Structural models limitations

We have studied structural models based on Merton's work. They are very useful for arbs since they explain how to hedge credit using equity. They also allow the valuation of companies with liquid assets. These models are a milestone in the understanding of the behaviour of high yield companies.

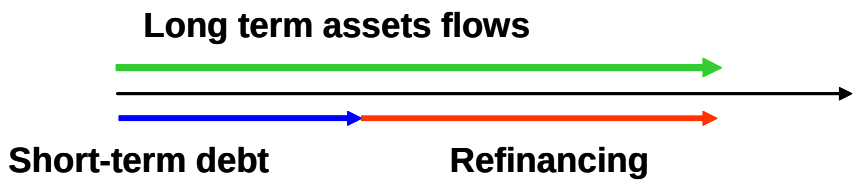
Unfortunately, many companies do not have liquid assets and are forced to refinance frequently. The Assets Liabilities Refinancing Gap Model focuses on such companies.

The hidden cost of the assets liabilities refinancing gap

Exane BNP Paribas' Quantitative Research team (quant@exanebnpparibas.com) has developed a model that seeks to capture the value that is being destroyed by the refinancing gaps – which are mismatches between the maturities of assets and liabilities. A company with a significant refinancing constraint next year should not have the same value as a similar company with no refinancing before 2020. The ALRG ™ gives an estimate of the cost of the asset/liability risk. It addresses the cost of future refinancing with regard to credit market conditions when a company's asset cash flows no longer secure the debt service.

In other words, the ALRGTM values the extra cost of re-aligning debt maturities with future free cash flow generation.

Figure 7: Assets Liabilities mismatch



Source: Exane BNP Paribas Quantitative Research team

Extending reference models

Figure 8: Capital structure models

Model	Author	Conditions	Results
Capital Structure Irrelevance	Franco Modigliani & Merton Miller (1958)	> No tax > No default risk (i.e. no spread)	Assets = Liabilities
Asset Value	Robert C. Merton (1973)	> Assets can be liquidated at debt maturity > No refinancing	The stock's value is a call on assets, the debt spread represents the premium of a put

Source: Exane BNP Paribas Quantitative Research team

The Modigliani-Miller theorem, which demonstrates that the value of the firm is independent of the structure of the capital, is valid under a number of assumptions including the following ones:

1) there is open access to the debt markets,
2) the probability of default is non-existent (no bankruptcy costs).

Therefore, one could infer that the theorem is only valid for solid investment grade companies and that, when a company is "risky", its value is also dependent on the structure of its liabilities.

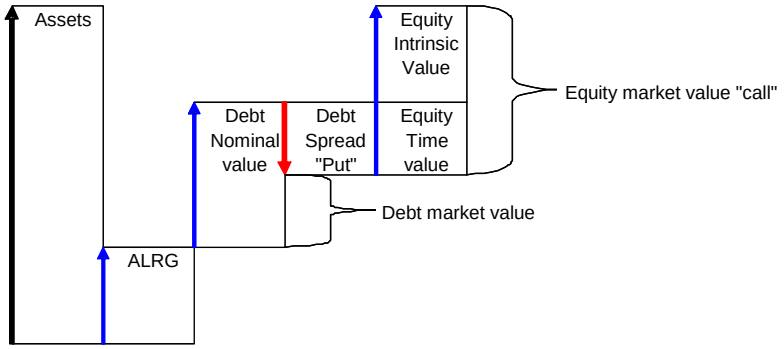
Under normal financial market conditions, "risky" companies can "create financial value" by raising short-term debt to finance long-term assets (basically a carry trade). The company needs to re-finance periodically in the market, but as long as liquidities are available and the cost of

refinancing is low, value is “created” since the cost of short-term debt is lower than the cost of long-term capital.

There is a “hidden” risk, however: given the mismatch between cash flows, companies will have to refinance. Thus they will depend on market conditions, which make future refinancing costs uncertain (what will spreads be in three, five or ten years time?). Thus, these companies speculate on their refinancing conditions.

Given the exceptionally favourable financing conditions of 2005-2007, a number of “risky” companies significantly re-leveraged their balance sheets. Since spreads tightened continuously over this period, many companies had overlooked or chosen to ignore the risk posed by refinancing in a few years. In 2008-2009, this risk was priced into the equity value of these assets.

Figure 9: Equity = Assets – debt – asset liability refinancing gap



Source: Exane BNP Paribas Quantitative Research Team.

A hidden option on the liabilities side

The value of the company’s assets should be equal to the debt + equity. However, the gap between the potential flows and guaranteed debt refinancing implies either a call on the market (debt, equity or banks) or a sale of assets + certainty on the amounts involved and the rates obtained. The value of the option is linked to the uncertainty of the refinancing conditions. This can be priced in and therefore the value of the equity is equal to assets – debt – market value of the ALRG. When the ALRG is added as a liability, there is no longer a default risk as assets and liabilities flows match. The Modigliani-Miller assumption is valid again and we are back to the usual Assets Liabilities equality.

Refinancing gap characteristics

When access to the debt market becomes more expensive, the value of the ALRG rises as the CDS spreads increase. The value of the equity falls accordingly. The higher the refinancing gap, the greater the impact.

Since the value of the ALRG is dependent on the length of the refinancing gap and the value of the CDS spreads, anything that moves these down is accretive for the equity holders. Again, this is only relevant for companies that have high refinancing gaps and an increasing cost of debt. There are many ways to do this:

- Assets: disposal/sale and lease back/securitisation.
- Equity: capital increase/mandatory convertibles/lower cash returns.
- Debt: prolong debt maturities/debt-to-equity swaps.

The time value of the refinancing gap is due to the fact that debt redemption amounts and dates are certain. This is not the case for the available cash flows. It is therefore necessary to diffuse the cash flows (using a drift and an expected volatility level). **The Simple comparison between a central scenario and the redemption schedule does not reflect the huge time value and implies a significant bias (the bad scenarios destroy more value than the good ones can create).**

Generally, the cash flow scenario based on consensus relies on the assumption that the market recovers when mid-cycle conditions are met. This is implicit when we look at brokers' forecasts (for instance, we could not find any analysis forecasting the default of major European industrial companies despite financing costs above the expected return on capital employed).

The value of the ALRG™ is driven by a few factors including:

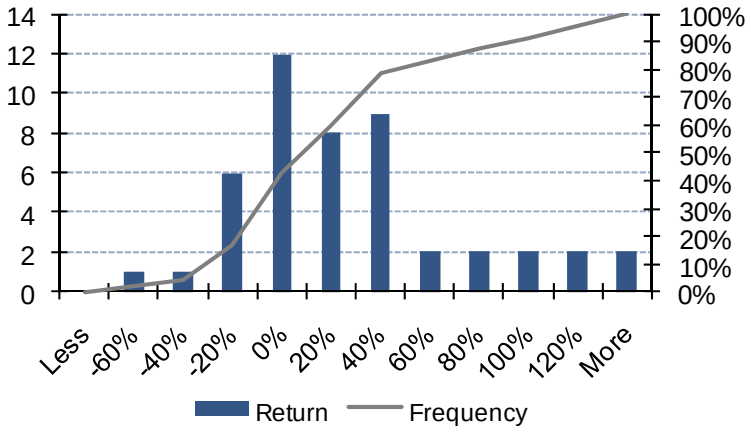
1) The future asset cash flows of the company: the weaker the cash flow generation, the greater the refinancing gap and refinancing cost;
2) The future credit spread curve: typically, the higher the CDS, the more the company will pay to refinance itself;
3) The future yield curve: the lower the interest rates, the higher the discount factor and the higher the refinancing cost;
4) Cash flow volatility: the more uncertain the future cash flows, the more the company should refinance itself immediately to limit its exposure to operational conditions.

Figure 10: Description of the ALRG™

Source: Exane BNP Paribas

This is a highly simplified presentation. Real world calculations require complex (and undisclosed)calculations.
This model is consistent with market behaviour. It demonstrates that a capital increase can be accretive for an indebted company

Figure 11: Excess return after a capital increase – sector hedged



Source: Exane BNP Paribas

The model has the ability to evaluate how the ALRG™ value is shared between debt and equity holders after a capital increase. It also makes it possible to estimate any capital structure improvement, such as a lengthening of the debt

4. Capital structure Arbitrage

The ALRG Model highlights that equity and debt valuations reflect companies' capital structure. Numerous models can be used for arbitrage. We present the first of its kind. The CDS market and equity market are highly correlated: the higher the CDS, the lower the equity.

- This reveals that some market players take relative positions between debt and equity; this is called **capital structure arbitrage.**
- Thanks to **Merton**'s 1973 pioneering work on the theoretical relationship between debt and equity arbitrageurs know how to hedge one asset with another.

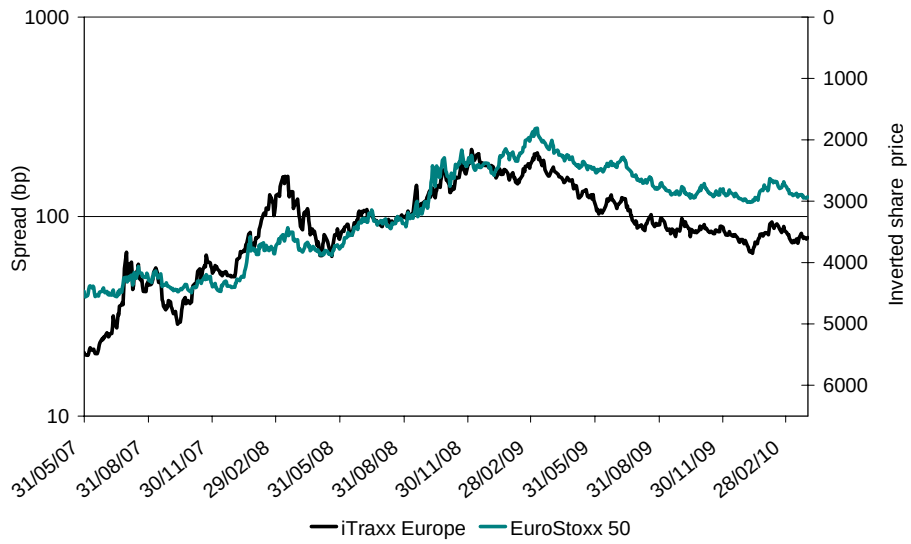
The most commonly used mechanism for arbitrageurs to hedge their long CDS positions is to buy out-of-the-money **put options,** but there are many others.

- For high-yield companies, the results are obvious.
- For investment-grade companies, correlations are obvious when looking at a portfolio. Diversification reduces noise.

Since the beginning of 2009, many arbitrageurs have played **restructuring scenarios (de-leveraging)**: they buy the debt and short the equity, considering that:

- Increasing the leverage favours equity over debt
- Lowering the leverage transfers value from equity to debt holders

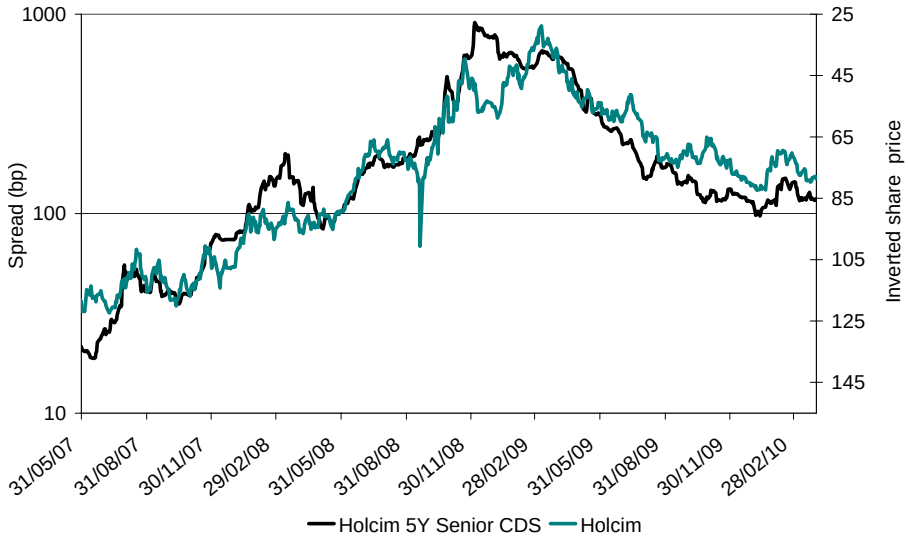
Figure 12: Itraxx & Eurostoxx are linked



Source: Bloomberg - Exane BNP Paribas Quantitative research

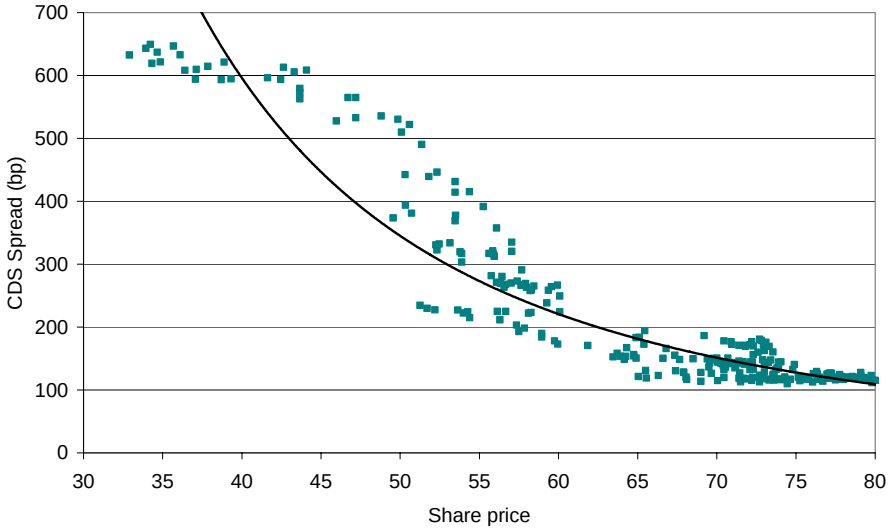
Higher CDS and lower share price have been highly correlated. Since March 2009, the debt market has outperformed – risk adjusted – the equity market. Corporates have favoured the debt market through capital increases, lower dividends, disposals, lower capex, etc.

figure 13: Holcim – Arbitrages are obvious



Source: Bloomberg - Exane BNP Paribas Quantitative research

Figure 14: Holcim – Arbitrages are obvious



Source: Bloomberg - Exane BNP Paribas Quantitative research

Hedge funds can transfer risk from the credit market to the equity markets:

- When credit holders (banks) are sellers of risk, hedge funds can transfer the risk to the equity market (2008, etc.). This hedge is gamma negative: any negative or positive move is amplified. It can consume more than the available liquidity on the market. This explains some of the 2008 market volatility.
- When credit holders are buyers of risk, hedge funds can structure 'synthetic credits', buying risk on the equity market (2003, mid-2007). This hedge is gamma positive: any negative or positive move is smoothed.

Figure 15: Transferring risk from debt to equity

	Protection Buyer	Hedge Funds	Equity Derivative Desk
CDS	Buy	Sell	
Put options		Buy	Sell
Equity shares			Sell

Source: Exane BNP Paribas Quantitative research

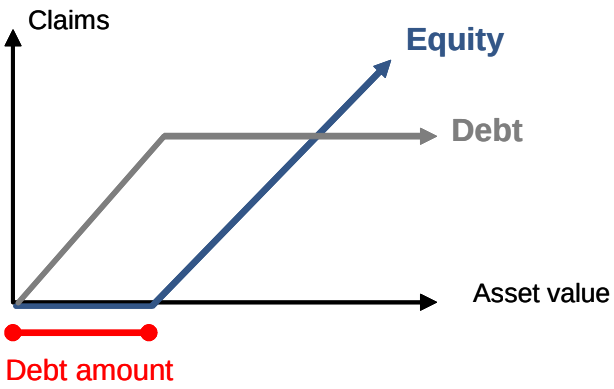
Figure 16: Transferring risk from equity to debt

	Protection Seller	Hedge Funds	Equity Derivative Desk
CDS	Sell	Buy	
Put options		Sell	Buy
Equity shares			Buy

Source: Exane BNP Paribas Quantitative Research

Merton's model

Figure 17: Merton's contingent claim model



Source: Exane BNP Paribas Quantitative Research

The sole driver of a firm's value is its asset value/

- As long as the asset value covers the nominal of the debt, the firm is solvent and continues to operate
- If not, the firm is liquidated and the proceeds go to the debt-holders

Debt and Equity are viewed as options on the assets:

- The debt-holder owns the nominal debt as long as the firm is solvent and receives the residual value of the assets in case of default; the payoff of the position is MIN (debt, asset)
- The equity-holder owns the net asset value (asset-debt) as long as the firm is solvent but loses everything in case of default; the payoff of the position is MAX (0, asset-debt)

These two options are related: debt and equity have relative prices.

As long as the market is liquid, arbitrages have mostly an impact on relative value, not on the underlying value. High yield companies have a highly discounted equity share price due to the ALRG value. During the 2009 crisis, high CDS spreads highlighted market participants' inability to hold risky assets. Spreads scale has remained consistent.

5. Corporates can profit from arbitrage

Arbitrage makes the equity and credit markets more predictable. Benefiting from these new market conditions is possible. This requires creating a dashboard and developing asset-liability management.

The dashboard needs to include several indicators (including the level of CDS by maturity, the implicit volatility of the security and the liquidity discount) and to reflect the perception of the company by the different markets.

Asset – Liability management makes it possible to

- quantify the risks taken and the capital consumed by each decision: type, maturity and indexation of financing, type of forex hedging, leverage level, acquisition financing structure, disposals or capital increase accretion.
- run stress tests: is the company able to manage a significant crisis, endogenous (Toyota, BP, …) or exogenous (GDP, Yields, Credit crisis, deflations, …)
- Asset – Liability management models such as ALRG, presented in this document, make it possible to lower the cost of capital while respecting constraints such as shareholder control. ALM helps improving the economic performance of companies (accounting net income less the cost of capital employed).

APPENDICES: CDS PRICES

The reliability of CDS prices can be checked:

They are supplied mainly by two independent entities

They are consistent with equity prices.

Sell side or buy side?

The market favours two sources of CDS prices.

One on the sell side (Dealers): Markit

One on the buy side (investors): CMA (Chicago Mercantile Exchange).

CMA and Markit use different methodologies. This is entirely justifiable as their data sources differ. CMA indicates whether the prices they publish are actual (mark-to-market) or derived (mark-to-model), for example, and also shows the number of contributing counterparties. But here too, data are adjusted using statistical and/or manual procedures.

Adjustment procedures are rendered necessary by the very nature of OTC markets or because of poor liquidity. The usual procedures for OTC markets (for bonds, for example) can include the following:

Bid-offer quotes that diverge significantly from other contributions are checked

Prices from few sources that do not change even though the market is volatile are checked

Wide bid-offer spreads render mid prices uncertain and are eliminated

For illiquid instruments, there may have to be recourse to mark-to-model.

Naturally, CMA and Markit argue in favour of their respective methods. And as it happens, price differences for the most liquid instruments are small and explicable.

What does the stock market correlation tell us?

Structural models, like Marton (a contingent claims model) or Lardy (CreditGrades) theoretically predict the behaviour of credit and equities as a function of the behaviour of the company's assets. They are seen as replicable contingent assets.

As the company's assets are rarely tradable, the market arbitrages credit spreads against equities. Lardy (ICBI, 2001), JP Morgan (2002)) shows that the CreditGrades model's estimates for spreads give rise to only minor errors and that may be interpreted as white noise.

This is a complete market because

(1) assets are replicable,

(2) there are no arbitrage opportunities (AoA, Absence of Arbitrage)

Therefore:

(1) there is only one 'possible' price for a company's shares and credit. Residual errors are simply white noise. This noise is random and averages to zero over time. Shares and credit necessarily track each other.

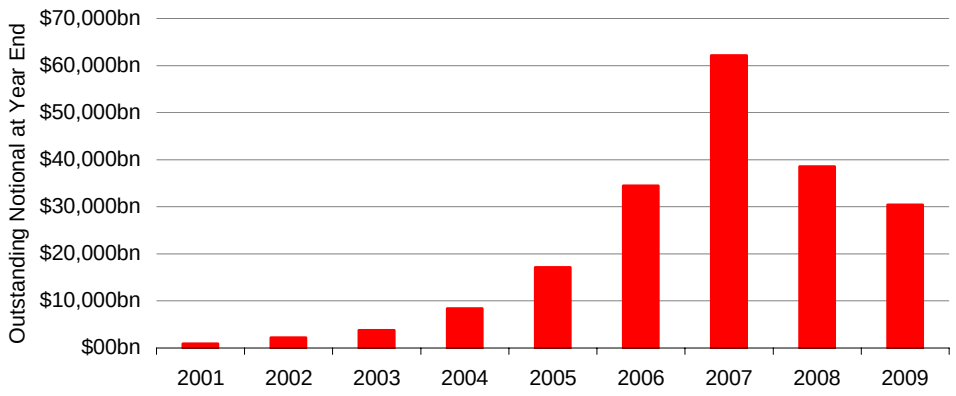
(2) noise apart, CDS prices are consistent with those of equities, which are deemed more liquid.

IV. « A bank's view point », par Guy STEAR, Directeur de la Recherche Crédit, Société Générale

In mid-May, German regulator BaFin banned the naked short selling of certain credit default swaps (or CDS) in order to curb upward pressure on credit spreads. The ban will last until late March 2011, and may prove a successful short-term palliative. But it has also spurred bigger discussions about the role of CDS contracts and whether naked positions should be permanently banned.

Participants who favour such a ban believe that CDS contracts are primarily a tool for credit bears and that it is easy - or at least possible - to see when CDS are used purely to hedge positions. We disagree. First, history suggests that credit default swaps are actually used more for increasing credit exposure than for reducing it. And second, from a technical viewpoint, time mismatches and product mismatches conspire to make it impossible to define what a "hedged position" might be.

First, let's look at how credit default swaps are used. The CDS market has experienced exponential growth since its inception back in 1997. Data from the BIS, which tracks the year-end outstanding amounts for various types of derivative, show that the market expanded at a compound annual growth rate of more than 100% between 2001 and 2007. Between 2007 and 2009, this growth went into reverse. As the chart below shows, the market halved in size between 2009 and 2007, although it still experienced an annual compound growth rate of more than 50% over the period.



Why did the CDS market grow so sharply? Those in favour of regulation seem to believe that it happened largely on the back of short-selling, with participants mostly interested in betting on - and profiting from - a company going broke.

However, the history of the CDS market neatly contradicts this idea. The market is generally seen as having started in 1994, when Blythe Masters and her team at JP Morgan sold a package to the European Bank of Reconstruction and Development which transferred the risk from an Exxon loan from JP Morgan's balance sheet to the EBRD. Three years later, the same

team created a proprietary product called the Broad Index Securitized Trust Offering (BISTRO) in order to reduce credit concentration on a bank's balance sheet.

BISTRO was actually a combination of credit default swaps and a collateralised debt obligation (CDO), since it used the principal of tranching. Tranching a credit portfolio means splitting it up into smaller parts with different risk characteristics which are not necessarily similar to any of the individual bonds in the original portfolio.

When the CDS market began, participants assumed that the products would almost solely be used by banks, to exchange credit risk. Thus a French bank would tend to buy protection on France Telecom from a Spanish bank, which would in turn buy protection on Telefonica. This would allow both banks to reduce their geographical concentration - and thus diversify their portfolios - without it necessarily costing them anything. CDS thus held out the promise of a free lunch for both sides of the transaction.

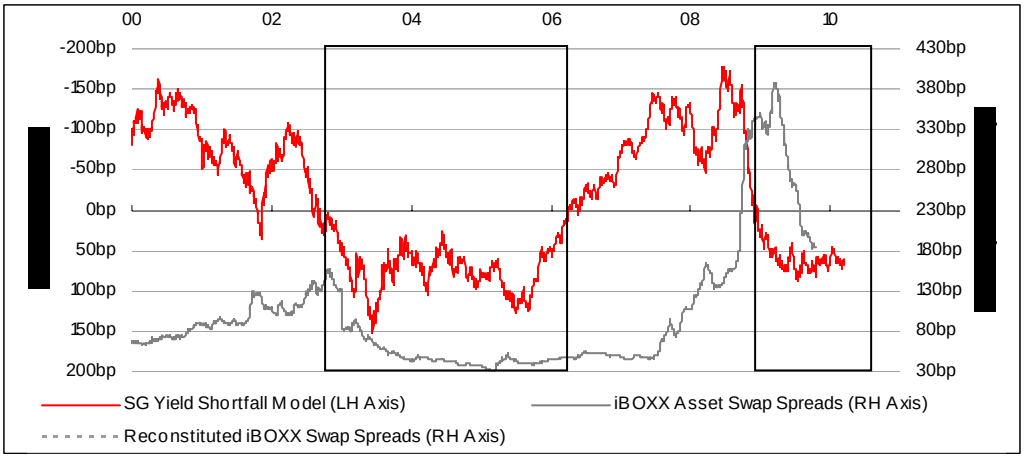
But credit default swaps also had two other advantages. First, they were more homogeneous than individual loans, or even bonds. This allowed participants to take on – or lay off – general credit risk. And CDS promised to be more liquid than the underlying, heterogeneous assets - as has indeed turned out to be the case. Second, because they were swaps, they did not require any upfront payments. So they were an ideal instrument for investors who wanted to take on leveraged credit risk.

It was this combination of homogeneity and leverage that really fuelled the very strong growth in the credit market. Collateralised debt obligations, which leaned on the ideas behind BISTRO, made these advantages even more powerful. By 2007, investors were being offered leveraged tranches of CDS portfolios, in effect piling leverage upon leverage. And the credit market grew because investors saw it as a good way of taking bullish – not bearish – positions on companies' prospects.

In hindsight, of course, it's easy to see that the piling on of leverage had to end in tears. Even at the time, investors were nervous about the amount of credit risk they were taking on. But two factors encouraged the positions.

First, this leverage allowed financial institutions to buy high-yielding products with high ratings and therefore low risk weightings. At the time, this was referred to as "ratings arbitrage," and it took advantage of the fact that investors were being paid for both credit and liquidity risk, while risk weightings only reflected credit risk. The strategy worked, as long as liquidity remained abundant.

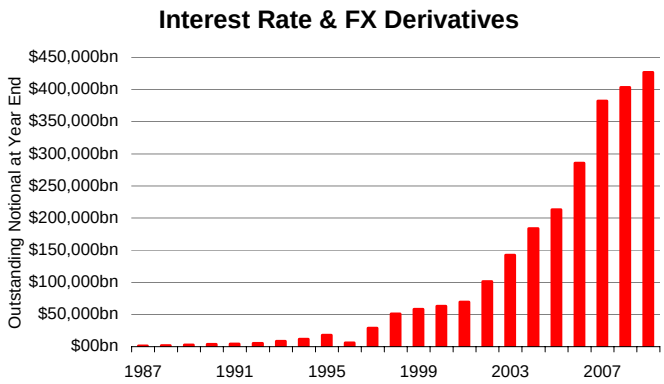
Second, bond yields were low in the mid-2000s relative to the rates which had prevailed in the recent past. For example, the chart below models the reinvestment problem for an insurer offering eight-year guaranteed investment contracts. The model shows that between mid-2003 and early 2006, government yields were low, forcing yield-based investors down the credit curve. At the same time, credit spreads were also relatively low, which meant that investors had to use leverage to make their required returns.

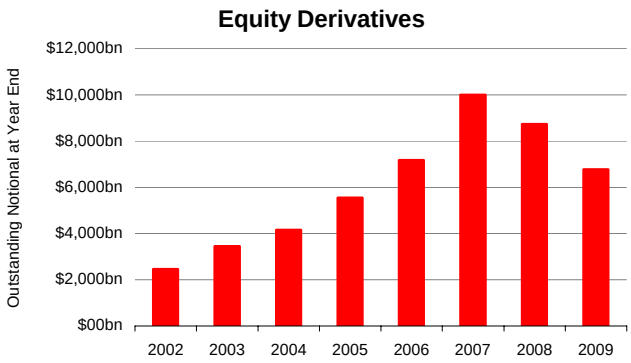


Was the more bearish mood on credit the only reason for the sharp shrinkage in the market? No: two other factors were also important. First, the standardisation of contracts led to more netting, reducing the overall amount of positions outstanding from 2007. However, trading volumes declined as well as the total amount of notional contracts outstanding in 2008, suggesting that netting was not responsible for all the shrinkage in the market.

Second, the decline may have partly reflected a heightened appreciation of counterparty risk and a general reluctance to trade derivatives, especially in the wake of Lehman Brothers' collapse. However, while we acknowledge that this may have had some effect, it seems very peripheral to us.

The two charts below show the change in notional amounts outstanding in the interest rate and FX markets and in equity derivatives markets. In 2008 and 2009, growth in the interest rate and forex derivatives market – which is still 14x bigger than the CDS market – slowed, but did not reverse or even stop. By contrast, equity derivatives market growth did go into reverse. This suggests that cyclical views on the direction of the assets, rather than counterparty risk, were the key driver of the market growth in the early 2000s.





In conclusion, our potted history suggests that growth in the CDS market was not due to investors being bearish about credit (and buying CDS to take out naked shorts), but rather due to investors being bullish about credit (and using CDS to leverage up positions). As a result, banning naked CDS positions is likely to trammel credit bulls more than credit bears.

We also find two serious technical difficulties in defining naked short credit positions. Some market commentators might consider hedged credit positions as hard to define but believe they know one when they see one, to borrow the expression coined by US Supreme Court Justice Potter Stewart.

In fact, it is often hard to tell whether a CDS position is a hedge or a naked position, due to two thorny issues – time mismatches and product mismatches. Imagine that a trader is asked to bid on a bond – for the sake of argument, let's say the France Telecom 3.625% October 2015s. The trader doesn't want to increase exposure to France Telecom, but wants to facilitate the business for the client. So she buys the bonds and buys protection on 5yr France Telecom to hedge the risk. This is clearly a hedged position.

Now assume that two salesmen have told the same trader that their clients are thinking about reducing exposure to France Telecom, and selling bonds. In anticipation of the orders, and to facilitate the clients' trades, the trader buys protection on France Telecom. Moments later, the clients ask for a bid on the bonds. The trader buys the bonds, and has the same position as in the first example. But the original purchase of the CDS was not hedged, so this trade would almost certainly fall foul of naked CDS positions.

Now let's move from the trading desk to the syndication desk. This time, the syndicators are preparing a deal for France Telecom. They have agreed to issue a five-year bond, with an October 2015 maturity and a 3.625% coupon. To lock in the current price in the market for the issuer, they buy 5yr France Telecom protection. Depending on when they do the transaction, this may or may not be considered a naked hedge.

Time mismatches constitute a serious problem for CDS regulation, and make investment banks less able to help their issuing and investing clients. But product mismatches are an even bigger problem.

In buying a bond, credit investors take on two types of risk – mark-to-market risk and jump-to- default risk. Mark-to-market risk is defined as the change in the spread multiplied by the

duration of the bond. Jump-to-default risk is defined as the probability of default multiplied by the loss given default.

These two kinds of risk are similar: as a company's default probability rises, so does its spread. However, hedging out the two risks requires different strategies. Let's return to our first example of a trader who is buying protection to hedge the France Telecom October 2015 bonds. To hedge the jump-to-default risk, the trader needs to buy an equal amount of CDS, at any maturity. If France Telecom defaults, then the payoff on the CDS should roughly equal the loss on the bond.

However, if the trader wants to hedge mark-to-market risk, she needs to create a CDS position with a similar duration to that of the original bond. In the above example, the trader would have to buy 5yr CDS.

The example above makes it seem like mark-to-market hedging is simply more complete than jump-to-default hedging. But it is in fact often impossible to hedge both mark-to-market and jump-to-default risk – so traders need to chose between the two.

To hedge out mark-to-market risk, a trader might decide to cover a portfolio with an average duration of 8 with a portfolio twice as big made up of assets with an average duration of 4. The jump-to-default risk on the hedge would then be twice as big as the risk on the portfolio. On the other hand, to hedge out jump-to-default risk, a trader might choose to hedge the same portfolio with 1-year CDS, leaving only one eighth of the mark-to-market risk hedged.

On balance, then, the idea of banning naked CDS positions seems flawed, for two reasons. First, CDS have been used more to take on credit risk than lay it off; as a result, banning naked shorts could actually undermine the market. Second, it is technically difficult, if not impossible, to define what is a pure credit hedge, since participants will always have to chose between hedging out jump to default risk and mark to market risk.

V. « Le marché des CDS : l'exigence de transparence demeure » par Mark VERSPYCK, Directeur des Affaires Financières, Air France KLM

Né au cours des années 1990, le marché des CDS (Credit Default Swap) s'est considérablement développé, pour atteindre un volume… qu'il est difficile de mesurer, aux dires des meilleurs experts. Cette singulière incertitude sur la volumétrie ne peut être associée qu'à un défaut de régulation et de transparence, que la faillite de Lehman Brothers et le démantèlement d'AIG ont également pointé du doigt.

C'est pourquoi les projets actuels de régulation des marchés de dérivés (tant en Europe qu'aux Etats-Unis) ne doivent pas aboutir à une mécanique trop complexe qui ne se poserait pas les questions de fonds : l'utilité des CDS, leur utilisation, et leur enjeu en terme de stabilité des marchés financiers. Une étude du Club HEC Finance reviendra sur ce sujet : cette note a pour objet de porter l'accent sur la question de l'opacité du marché.

1. Des enjeux majeurs pour une utilité … relative

Pour les entreprises, l'utilisation des CDS n'apporte pas de réponse au sujet qui pourrait éventuellement être posée : la gestion du risque de contrepartie. Les entreprises s'appuient, pour l'essentiel, sur des règles internes de gestion (par la notation, par l'analyse, par des règles prudentielles de plafond,…) pour couvrir ce risque. Elles ne recourent donc pas – dans leur très grande majorité – à l'utilisation d'un CDS. Si une entreprise a des craintes sur un débiteur, l'assurance-crédit pourra éventuellement être un instrument approprié.

A contrario, si les marchés traitent un CDS sur son nom, elle en subit les désagréments : référent pour le prix de sa dette, risque de manipulation, biais dans la relation avec ses banques,…

La question porte sur la finalité de ce dérivé, son utilité et la vision qui en est donnée : si une banque souhaite couvrir un risque de crédit équivalent à un crédit « en blanc », pourquoi ne pas le vendre ? S'il est avéré que les allocations de capital sont moins exigeantes en cas de couverture par une CDS – ce sont ces allocations qu'il convient de revoir. Et, finalement, le jeu de domino ramenant l'ensemble des risques concentré sur quelques noms revient sur la table.

2. Une singulière opacité de fonctionnement

Il est essentiel de rappeler les modalités actuelles de fixation de prix des CDS : ils sont recueillis par les sociétés spécialisées (Reuters, Bloomberg) sur la base déclarative de brokers, qui indiquent à quel niveau traite le risque de crédit de ladite contrepartie (« prix auquel des transactions se sont réalisées ou ont pu se réaliser »). Cette information n'est ni factuelle ni vérifiable: il n'y a pas forcément de lien entre des tickets réalisés et l'information donnée.

On voit bien la limite de l'exercice : prix indicatif, pas de prise en compte automatique de l'ensemble des transactions réalisées, concentration de l'information aux mains de quelques intervenants/brokers.

3. Les ambitions de la régulation à venir : un horizon trop lointain ?

Lehman Brothers : 15 septembre 2008. Depuis cette date, beaucoup de volonté… mais pas de concrétisation – dans un contexte où le sous-jacent souverain grec a remis les CDS à l'ordre du jour.

La réaction récente de l'Allemagne (décision de la Bafin d'interdire les ventes de CDS souverain Euro en Allemagne, non adossés à des expositions sous-jacentes avérées) est à la fois tardive et hors du propos s'agissant de la zone de transaction (Londres). Elle cherche à traiter un problème sans en connaître l'ampleur. Plus de 18 mois après le début des dénouements importants, nul ne connaît le nom des vendeurs de protections, des acheteurs et des risques systémiques actuellement portés (voire surajoutés au travers de nouveaux CDS traités depuis 2008).

La régulation des marchés des dérivés est indispensable dans un objectif de réduction du risque systémique. Elle doit en priorité traiter les CDS et passer par des obligations déclaratives. Ces dernières permettraient : (i) de mieux connaître les contours de la régulation à adopter, (ii) de savoir qui fait quoi et (iii) le cas échéant de mettre en place des mesures ad hoc afin de circonscrire des risques à court terme.

Tout acteur est en droit de savoir qui agit sur son nom : les relations entre certaines institutions ou corporates en seraient peut-être changées….

Conclusion : l'exigence de transparence demeure

Le rôle des CDS dans la crise financière de 2008/2009 justifie pleinement les volontés politiques actuelles de réguler le marché des dérivés, bien que tous les dérivés ne soient pas à l'origine de risques systémiques.

Seule une transparence du marché permettra d'avancer : déclaration de positions, de volume, de seuils ; règles de confidentialité et murailles de Chine ; appropriation du sujet par les régulateurs. Les plates-formes de compensation auront leur rôle à jouer ; d'ici-là les régulateurs doivent pouvoir demander des chiffres pour avancer et orienter les débats à venir.

VI. « Corporate Implications », par Robert SHAW, Vice President & Treasurer, Transocean

The CDS has fundamentally changed the financial markets for corporates because it links equity, bank and bond investors together into one liquid, easily-transacted instrument. Depending on the size, depth and liquidity of the debt markets the role of the CDS can be more or less important. Generally, the greater the liquidity in the primary and secondary debt and bond markets, the less influence the CDS instrument has on bond and equity prices for corporates.

1. Capital structure arbitrage: because the CDS is an insurance policy on the quality and quantity of a company's cash flow relative to its indebtedness, investors can speculate on a company's sustainability of its balance sheet structure. This is called a capital structure arbitrage (described in more detail elsewhere in this document). The CDS is the first financial instrument which allows investors to directly and actively take positions vis-à-vis this risk with sufficient pricing information and liquidity.
2. Debt: The CDS is an indicator of the cost and access to debt markets (banks and bond market). Because banks can use CDS to cover their asset risk, they often quote CDS spreads as an indicator of their cost of lending to a client. When issuing a bond, the level of the CDS is a consideration and has more or less influence depending on the availability of spreads on secondary bond trading.
3. Equity: because the CDS is an insurance policy on the quality and quantity of a company's cash flow relative to its indebtedness, the CDS price is generally inversely related to the equity value (share price). This allows investors to arbitrage a long or short equity position by taking the inverse position with a CDS.
4. Counterparty risks (clients and suppliers): Because current information available to counterparties tends to be backward looking (Credit rating agencies, D&B rating), the CDS is being used more and more to follow the creditworthiness of customers and clients, particularly those which are risky and or important to the company in question.

1. Transparency of information

How does this transparency compare to the other financial instruments. In France, the transparency of information for the different capital market instruments is extremely varied. The US and other markets the situation is different. We will look at his from a French-based company's perspective:

Equity: the equity market has the most developed level of information transparency. On a continual or daily basis, there is information on trading volumes, prices and top volumes by broker. Major equity positions are covered in France through obligatory declarations to the company, generally above 2% or publically above 5%. An in-depth study of shareholder identification can be done periodically through a "TPI". These "TPI" can be

done as frequently as a company wishes but due to the time and cost, are done between 1 to 4 times a year. However, there is little information to the company or publically of short positions on equity and share lending.

Bank loans / syndications: there is generally little public information. However, banks which sell their loan participations are required to either notify the company and/or get their prior approval.

Bonds: at the issue of the bond, the company knows allocation of the bonds to the investors. However following the issue, there is no reporting on trading and objective data is difficult to get. Information on trading data is generally received anecdotally through banks. There is no requirement for any quarterly or annual reporting of bond holdings.

CDS: On a per company basis, there is little information available. There are daily quotes communicated by Reuters and Bloomberg as well as two indexes developed by Itraxx. However, there is no information on daily volume, actual prices transacted, major participants or periodic disclosure of positions. This is rather concerning for companies because for a company, the CDS represents a number of interests to its relationship with financial market participants: it is a "shadow syndication" of its bank debt, an indicator of its access to debt markets, an economic sale of a long position in equity and an arbitrage on its capital structure.

2. Areas to consider for Corporations

The introduction of the CDS has had major implications in how companies interact with the financial markets, gives additional pricing information to integrate in their risk management and affects their choices available to strategically structure the balance sheet. The CDS changes affect the :

- Ability of financial market participants to arbitrage credit issues quickly
- Capital structure arbitrage which will have more and more impact on the equity prices and access to debt funding

The key area of focus for corporates is to ensure that they have fully thought through their asset / liability matching which can be viable throughout a full economic cycle . This strategic decision is most important when financing major investment programs (e.g. acquisitions or large capital expenditure programs). Corporate management and Company boards need to ensure they have the proper policies and governance mechanisms to oversee these critical decisions.

- Interaction with the financial markets:
  - Information: a company needs to have more information and follow the CDS market closely. It will need to understand the flows in the CDS market its relationship to the equity price movements and it's debt financing activities. This information can come through a close relationship with a particular bank or could be required by future regulatory changes.

- Banks: the relationships between companies and their banks have been strained through the2008/2009 financial crisis. Given the changes in financial market regulation and proposals for Basel III, the expectation is that credit will become more expensive and scarce. Given this context, the long term management of banking relationships should take on a more strategic importance in companies. Therefore, it will probably be of greater importance for companies to understand the underlying net engagement a bank has with them. Obviously, if a bank has sold all its exposure of a particular company, its economic interests will be different than a bank which has kept them. A company may want to consider how it should be able to follow a bank's net position and the volume of business, the type of business and rewards it may wish to allocate based on the net exposure. Corporates need to find a method to monitor the net CDS positions of their key financial counterparties (mainly banks) to understand their economic motivations in the relationship. This disclosure becomes acutely important when a company is facing financial difficulties and will need to negotiate with its financial partners.
- Given the re-activeness of the CDS market and pricing risk, the relevance of credit rating agency opinions may be challenged. Companies will need to take this possible change into consideration in the way they handle their credit rating agency relationships as well as its method of financial communication to the overall credit markets. In addition, because the CDS links the equity and the debt markets, corporate managers will need to ensure that equity and credit market communication is extremely coherent .
- New regulations, collateralization and central clearing platforms will change slightly which participants use CDS and the way they are used. However, it is our view that CDS will remain an important financial instrument used to arbitrage a variety of risks, notably credit quality, capital structure and equity positions.
- Financial communications: Companies will need to further integrate credit and balance sheet issues in their overall financial communications strategy to the financial markets, both equity, bank and credit. In the past, companies have used the credit rating agencies as the main conduit to the credit markets. Given the re-activeness of the CDS market, a company may wish to reconsider its financial communication program to the credit markets.

- Equity: as some equity investors will be using CDS to cover (ie short) their equity positions, corporate boards will need to decide 1) what disclosure requirements they may require in their bylaws 2) what voting rights will they give to shareholders who have different economic interests because of their CDS coverage than other shareholders.
- Risk management: the CDS opens new methods to value and oversee risks within a company's activities. CDSs do give more granularity to pricing counterparty risk. Audit committees should consider using CDS as a further input to their overall risk management policies and procedures. Notably these are three areas:
  - Clients and suppliers: CDS will most likely become part of the commercial relationship with large and strategic clients and suppliers. For companies

which require long term commitments between its clients and or suppliers, any significant degradation of the CDS levels may hamper further development of these relationships. Clients and customers will most likely be monitoring the CDS levels of its key relationships.

  - Country risk pricing: the CDS is a method to monitor and price country risk. CDS do give more granularity to pricing than in the past. The investment in a country is primarily based on strategic imperatives but the CDS can help price and understand the risks involved. It is also an instrument to monitor country risk.
  - Bank counterparty risk: just as banks use CDS to price and monitor their lending risk. Companies can use the bank CDSs as a method to monitor their counterparty risk. This can help companies allocate business and risk and certain levels of bank CDSs could trigger unwinding of positions.

- Strategic , short and long term approaches to capital structuring and asset / liability management
  - Capital arbitrage is here to stay and companies need to be extremely careful in putting themselves in a difficult position through capital structure choices.
  - Maturity profile: Companies need to ensure that their debt maturity profile matches their cash flows on their investments and take reasonable refinancing risks. Stress tests should be a standard practice when deciding the financing maturity profile due to the catastrophic nature of a major refinancing gap.
  - Fixed rate versus floating rate: companies need to understand the dynamics of the returns on their assets and match those returns with the appropriate mix of fixed and floating rate. With uncertainty of either inflation and deflation scenarios, corporates need to prepare for each scenario.
  - M&A financing: In major acquisitions, ensure that long term financing is implemented quickly. Recently, we have seen companies making significant acquisitions and implement long term financing extremely quickly (e.g. Kraft/Cadbury). The days where a company could get a syndicated bridge facility and wait to see when they would put implement a long term solution will become less and less prevalent. Fixed versus variable debt: companies need to understand the fundamental drivers of its operating cash flow and its correlation with the economic cycle and interest rate levels. In businesses where the cash returns on capital employed are generally fixed, a high proportion of fixed rate debt is generally appropriate. However, if operating cash flows are highly correlated to inflation and economic activity, a high proportion of variable debt would generally be more appropriate.

As a conclusion, there a number of significant strategic issues which a company is facing because of the CDS instrument. Financial markets will continue their role in challenging companies' performance and strategy and allocate capital to those assets where they expect the best returns. Company boards and senior management need to strengthen their resources, practices and governance this critical area.

VII. « Compensation des CDS et risques systémiques » par Marie-Agnès NICOLET, Présidente d'Audisoft Consultants

La volonté issue du G20 d'obliger les banques à passer par des chambres de compensation en vue de limiter les risques sur les CDS qu'elles négocient de gré à gré a été suivie par des recommandations dans le cadre des propositions dites de Bâle 3 diffusées tout récemment. Ces recommandations sont une avancée en la matière, car elles proposent de distinguer pour les établissements de crédit l'allocation de fonds propres à affecter aux expositions sur produits dérivés, selon que les établissements passent ou non par des CCP (contreparties centrales). Par ailleurs, les propositions de bâle III visent également, lorsque les établissements de crédit passent par une chambre de compensation, à opérer une distinction entre les CCP qui respecteraient des critères suffisants en matière de gestion des risques et les autres.Enfin, ces propositions visent à ce que les CCP aient les ressources financières nécessaires pour supporter le défaut de participants de taille significative, lié à des circonstances de risque exceptionnelles (mise en place de stress tests).

Ces propositions sont tout-à-fait justifiées et vont dans le bon sens. Comme nous l'avions montré dans l'étude comparative des CCP parue dans Banque Stratégie en novembre 2009, (la synthèse de l'étude parue dans revue banque est jointe en annexe), les chambres de compensation ne se valent pas toutes et il pourrait être dangereux d'inciter les établissements, par des règles prudentielles mal calibrées, à utiliser des CCP qui ne présenteraient pas de garanties suffisantes en matière de prévention des risques. En effet, ce que l'on souhaite éviter (retour d'une crise systémique majeure) pourrait être au contraire aggravé par le fait d'inciter les établissements à utiliser des CCP sans distinction entre les plus solides et les autres.

Cette avancée se double cependant de questions résiduelles. Tout d'abord, des questions se posent encore sur les critères qui pourraient être utilisés pour évaluer ces chambres de compensation. Dans l'article cité plus haut, nous avions évoqué parmi les crières pertinents les exigences en matière de règles d'adhésion des clients de la CCP (une simple notation par une agence de rating ne pourrait en aucun cas suffire), les modalités de calculs des appels de marge et du fonds de garantie, les collatéraux admis et surtout la réalité de la supervision de la chambre de compensation. L'idéal étant un statut d'établissement de crédit qui oblige la CCP à des normes rigoureuses de contrôle interne et à un contrôle externe régulier du superviseur, un statut spécifique qui engendrerait les mêmes exigences de contrôle et de maîtrise des risques pourrait également convenir.

Sur ce point, il faudra donc que les régulateurs présents à Bâle approfondissent leur réflexion pour que de réels critères permettent une évaluation pertinente des CCP et la diffusion transparente des résultats à l'ensemble des établissements et superviseurs concernés.

S'agissant d'infrastructures systémiques, il faudra surtout éviter, comme nous le disions dans l'article cité ci-dessus d'utiliser des agences de notation mais plutôt de disposer du résultat d'enquêtes régulières d'organismes internationaux (FMI par exemple).

Depuis la publication de cette étude en novembre 2009, au-delà de la diffusion des recommandations de Bâle III, d'autres événements ont eu lieu. LCH Clearnet a mis en place son offre de compensation pour les CDS, ce qui est une bonne chose concernant une CCP qui apparaît plutôt comme ayant un niveau adéquat de contrôle et de supervision. En revanche, la récente communication d'Euronext sur la dénonciation de son contrat avec Clearnet pourrait malheureusement avoir des incidences sérieuses sur cette CCP.

La place Financière dans son ensemble (Banquiers, pouvoirs publics et émetteurs) devra nécessairement réagir sur cet élément de contexte nouveau et inquiétant pour la Place de Paris.

ANNEXE

CHAMBRES DE COMPENSATION ET RISQUES SYSTÉMIQUES
"IL Y A CCP ET CCP"

Marie Agnès NICOLET
Présidente
Audisoft Consultants

Emmanuel de FOURNOUX
Directeur infrastructures de place et réglementation prudentielle
Amafi

Alors que la mise en place de chambres de compensation pour les CDS et autres produits dérivés progresse à grands pas, ces nouveaux établissements financiers auront-ils la capacité à gérer les risques, notamment systémiques, induits par ces produits complexes et leur concentration dans un nombre réduit d'établissements ?

Depuis le milieu des années 1980, les chambres de compensations (autrement appelées CCP pour *central counterparty*) ont été utilisées pour les produits traités sur les marchés organisés (actions et dérivés listés) puis, progressivement, pour les produits de gré à gré les plus standardisés (produits de taux au comptant) avec une efficacité indéniable.

Les réflexions liées à la crise menées par les régulateurs européens et américains, mais aussi par l'industrie financière, ont conduit à considérer que la protection contre le risque systémique, dont les marchés se sont révélé un outil de propagation, et la restauration de la confiance étaient en partie conditionnées par le recours plus massif aux chambres de compensation pour les produits dérivés de gré à gré, à tout le moins pour ceux qui pouvaient faire l'objet d'une certaine standardisation. C'est le cas notamment des *credit default swaps* (CDS) pour lesquels les établissements financiers, fortement stimulés par les régulateurs, ont entrepris un travail important de standardisation et se sont engagés à utiliser des CCP en Europe et aux États-Unis. Par ailleurs, le recours aux CCP répond également à l'objectif d'assurer une meilleure visibilité des superviseurs sur le volume des transactions négociées par les acteurs de marché.

LES EFFETS VERTUEUX DES CCP SONT INDÉNIABLES

Il est indéniable que les CCP, pour autant qu'elles soient bien contrôlées, contribuent efficacement à la réduction globale des risques liés aux opérations de marché. Deux éléments majeurs concourent à cette diminution du risque :

– le *netting* multilatéral des positions prises par les opérateurs ;

– la mise en place d'appels de marges systématiques qui permettent de réévaluer, au moins sur une base quotidienne, le montant des risques à assurer en fonction de l'évolution du prix des actifs pris en charge par la CCP.

Il convient à cet égard de noter que les CCP traditionnelles ont traversé plusieurs crises financières dans des conditions satisfaisantes.

Néanmoins, la prise en charge par les CCP de produits dont la complexité n'a rien à voir avec celle des produits au comptant ou des dérivés listés, et dont les volumes de sous jacents traités sont sans commune mesure avec ceux des marchés organisés, justifie que soit posée la question de la gestion des risques liés à l'utilisation des CCP, notamment pour risques systémiques. Cette question est d'autant plus justifiée que même pour les produits les plus traditionnels, de nouveaux acteurs sont apparus dernièrement en Europe à la suite de l'intense concurrence qui s'est développée entre plateformes de négociation avec la mise en œuvre de la directive Mif.

RISQUES SYSTÉMIQUES : L'EFFET DOMINO DES INSTRUMENTS DE GRÉ À GRÉ

Compte tenu des différences entre les chambres de compensation, la question du choix d'une CCP n'est pas neutre. Mais pourquoi se poser cette question aujourd'hui alors que les CCP existent depuis longtemps ?

> *Le risque systémique peut être accru par un effet de concentration des risques sur la chambre de compensation qui, ajouté à la perception des établissements bancaires de transférer leur risque de contrepartie, pourrait conduire les adhérents à accroître excessivement leur prise de risque sur les marchés financiers*

Il est vrai que les CCP traditionnelles sont étroitement liées aux marchés réglementés *cash* et dérivés qu'elles compensent, même si la directive Mif a récemment changé la donne. Mais pour les instruments financiers se négociant essentiellement de gré à gré (CDS et autres produits structurés OTC), le choix de la chambre de compensation est d'autant plus important que les risques encourus sont sans commune mesure avec ceux pris sur les marchés réglementés, de par les volumes en jeu et la nature des produits négociés (volatilité forte et liquidité faible).

Le risque systémique peut apparaître au sein d'une chambre de compensation si l'incapacité d'un adhérent à remplir ses obligations entraîne l'impossibilité, pour d'autres adhérents, de s'acquitter de leurs propres obligations à échéance. On parle d'effet domino, suite à une crise de confiance dans la capacité de certains établissements à honorer leurs règlements. Or, si les CCP ont pour vocation de réduire significativement les risques pour les acteurs de marché par le biais du processus de novation et de *netting* multilatéral des échanges, tout en renforçant le contrôle global de tous ses adhérents, il n'en reste pas moins qu'elles concentrent la majorité des risques en leur sein et ont une responsabilité cruciale en matière de gestion de ces risques.

DES SCÉNARIOS DE RISQUES MULTIPLES

Plusieurs scénarios de risques majeurs sont à souligner :

- un *clearing member* ne peut apporter tous les collatéraux suite à un appel de marge (risque de défaut de la contrepartie) pouvant provoquer un effet domino de défauts en cascade ;
- certains collatéraux de *clearing members* sont des produits émis par des établissements en défaut au sein de la chambre ou d'une autre chambre de compensation ou sont en situation de dépôt de bilan ;
- les collatéraux déposés et/ou le fonds de garantie ne suffisent pas à couvrir un défaut, soit parce que les conditions d'adhésion de la chambre de compensation ne s'avèrent pas adéquates, soit parce que les règles de calcul ont été mal calibrées (modèles utilisés erronés, absence de mise à jour et de suivi des contributions, etc.) ;
- une banque commerciale gérant les comptes de *cash* utilisés par plusieurs adhérents fait défaut. Les obligations de paiement des adhérents sont impossibles à remplir, créant un très fort risque de crédit et de liquidité pour la CCP. L'exposition totale de la chambre de compensation à cette banque peut largement dépasser l'exposition la plus large d'un adhérent unique ;
- une CCP a un lien d'interopérabilité avec une autre CCP qui tombe en défaut. Le risque de contagion à la CCP est important si les modalités juridiques du lien d'interopérabilité ne sont pas appropriées.

Ainsi, le risque systémique peut être accru par un effet de concentration des risques sur la chambre de compensation qui, ajouté à la perception des établissements bancaires de transférer leur risque de contrepartie, pourrait conduire les adhérents à accroître excessivement leur prise de risque sur les marchés financiers et ceci d'autant plus qu'on les y inciterait (par exemple en réduisant les exigences de fonds propres sur ces opérations). Dans ce contexte, tous les ingrédients d'une nouvelle crise systémique seraient rassemblés. Il importe donc que les risques relatifs aux systèmes de compensation soient gérés correctement afin d'éviter qu'ils constituent une source de perturbations systémiques pour les marchés de capitaux eux-mêmes, ainsi que pour les autres systèmes de paiement et de règlement.

SUPERVISION ET NORMES PRUDENTIELLES

Pour éviter le risque systémique, il paraît donc important de mettre en place (en même temps que l'incitation faite aux banques de recourir de manière plus systématique aux chambres de compensation) un système garantissant à la fois la sécurité des établissements compensateurs et la solidité des CCP.

Disposer de normes établies par des institutions internationales (cf. standards SEBC-CESR et CSPR-OICV) est nécessaire, mais pas suffisant, car les CCP ne sont pas toutes identiques et la seule manière de pouvoir s'assurer de leur solidité est de contrôler régulièrement l'ensemble des dispositifs assurant la pérennité de la chambre de compensation (dispositifs de contrôle, règles d'adhésion, calculs des appels de marges, collatéraux admis, réalité de la gouvernance, des dispositifs de contrôle interne et de la supervision).

Dans un environnement de plus en plus concurrentiel, il paraît même nécessaire que les superviseurs combinent contrôle périodique sur place et contrôle permanent, en complément de l'*oversight* des banques centrales ou que cet *oversight* soit renforcé ou étendu à une

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surveillance sur place s'il représente le seul dispositif de suivi des CCP. Cette évolution ne sera cependant possible que dans le cadre d'une harmonisation des statuts des chambres de compensation vers un unique statut bancaire ou vers un nouveau statut spécifique propre à tous les systèmes de compensation (cet aspect étant aujourd'hui absent des normes internationales servant de socle à l'évaluation des CCP).

MISE EN PLACE D'UN CADRE EUROPÉEN DE POST-MARCHÉ

Il est indéniable que la situation du post-marché en Europe n'est pas satisfaisante. L'approche de la Commission européenne, fondée sur la concurrence et l'autorégulation (cf. le Code de conduite européen), n'a pas donné les résultats escomptés. S'agissant du règlement livraison, le système T2S mis en place sous l'égide de l'Eurosystème, devrait offrir une solution européenne efficiente. En revanche, la situation est particulièrement préoccupante pour l'aspect compensation. Pour cette activité, la notion d'interopérabilité promue par la Commission Européenne doit être regardée avec une circonspection accrue dans le domaine des dérivés, compte tenu de la nature des risques encourus. En particulier, la mise en place d'appels de marge entre chambres de compensation, permettant d'éviter des contributions mutuelles aux fonds de garantie, et l'étanchéité des *memberships* entre les différentes CCP semblent constituer un bon dispositif pour endiguer tout risque de contagion. Enfin, cette interopérabilité souhaitée peut contraindre les CCP à mettre en place des liens nombreux entre elles constituant des "spaghettis *networks*" coûteux, complexifiant les opérations et dont l'influence négative sur les risques opérationnels semble d'ores et déjà évidente. Dans un contexte où les systèmes de compensation mais aussi les systèmes de règlement livraison sont de plus en plus interconnectés, la solidité globale du système ne vaut que par celle de son maillon le plus faible.

Les standards CESR-ESCB [1], récemment adaptés pour tenir compte de la spécificité des marchés dérivés de gré à gré, constituent un premier socle utile d'harmonisation pour les CCP en Europe. Néanmoins, ce socle n'est pas suffisant pour assurer un véritable *level playing field* en Europe dans la mesure où ces standards n'ont pas une nature contraignante, où certains d'entre eux sont trop peu précis et où certains aspects ne sont pas traités (statut, gestion de certains risques...).

Il est dès lors indispensable que soit défini au niveau européen un cadre d'exercice des fonctions de post-marché qui, nécessairement, va bien au-delà des recommandations CESR-ESCB. S'agissant spécifiquement des CCP, cette régulation devrait *a minima* porter sur les points suivants :

- encadrer les risques liés à l'activité de compensation (risque juridique, risque opérationnel, risque de crédit, risque de marché, risque de liquidité...) ;
- définir les conditions de compétition entre les CCP qui peut naturellement porter sur la nature et l'étendue des services à valeur ajoutée proposés, ainsi que sur les tarifs, mais ne devrait en aucun cas affecter négativement leur gestion des risques ;
- prévoir, le cas échéant, une gouvernance des CCP par les utilisateurs, le contrôle par les entités qui prennent des risques vis-à-vis de la CCP pouvant être un moyen efficace de prévention du risque.

Comme l'ont montré certains événements intervenus pendant la crise financière, un des risques majeurs auquel doit faire face une CCP en cas de défaillance d'un participant important est le risque de liquidité. Pour prévenir ce risque, il est nécessaire que la CCP ait un lien direct avec la monnaie banque centrale des produits qu'elle compense. En situation de crise, seul un lien étroit avec la banque centrale permet l'injection de liquidité en cours de journée (et en tant que de besoin, au-delà de la journée) nécessaire pour que la CCP puisse continuer de fonctionner de façon efficace vis-à-vis des participants non défaillants.

Sur ce point, il convient de souligner que les autorités américaines préconisent que les systèmes de *clearing* importants soient placés sous l'autorité de la Fed et aient accès à la monnaie banque centrale. Dans son rapport publié en juin 2009[2], le Département du Trésor déclare ainsi : "*We propose that the Federal Reserve have the responsibility and authority to conduct oversight of systemically important payment, clearing and settlement systems, and activi-*

[1] CESR-ESCB : "Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties in the European Union" (23 juin 2009).
[2] Rapport "A New Foundation : Rebuilding Financial Supervision and Regulation" (17 juin 2009).

ties of financial firms" et ajoute : "*We propose that the Federal Reserve have authority to provide systemically important payment, clearing, and settlement systems access to Reserve Bank accounts, financial services, and the discount window.*"

LES DIFFÉRENCES DE QUALITÉ ENTRE CCP DOIVENT ÊTRE TRAITÉES PRUDENTIELLEMENT

Suite à ces réflexions, et pour éviter l'effet d'accroissement des transferts de risques vers les chambres de compensation, il est également nécessaire de traiter la chambre de compensation comme un risque de contrepartie, du point de vue bâlois.

À l'heure actuelle, lorsqu'un établissement transfère son risque de contrepartie vers la CCP, il ne conserve plus qu'une couverture en fonds propres liés aux dépôts de garantie et appels de marge calculés en fonction de l'exposition de ses opérations compensées par les CCP.

Les risques pris devraient alors faire partie du montant global alloué aux risques opérationnels, mais il faut souligner que, pour un niveau d'activité identique, ce transfert du risque de contrepartie ne nécessite aucune allocation supplémentaire au titre du risque opérationnel. En effet, pour le mode forfaitaire proposé par le comité de Bâle (approche de base et approche standard), l'exigence en fonds propres est calculée comme un pourcentage du produit brut moyen et ne sera pas influencée par les risques pris par les établissements vis-à-vis de leurs chambres de compensation. Par ailleurs, même en méthode avancée, le montant des fonds propres alloués reste très dépendant des méthodes d'évaluation des établissements.

Parallèlement, à considérer que ce risque n'existe plus en tant que risque de contrepartie, on incite les établissements à multiplier les volumes vers les CCP les plus concurrentielles qui peuvent être les plus risquées.

De même que les normes de solvabilité ont été revues pour conserver une allocation de fonds propres en face de risques titrisés, il ne faut pas considérer que le risque de contrepartie n'existe plus, mais considérer que chaque CCP constitue une contrepartie nécessitant une allocation de fonds propres chez ses adhérents plus en phase avec le montant de ses expositions, même si ce montant de fonds propres nécessaire devrait être plus faible que si l'établissement n'utilisait pas de chambre de compensation.

“De même que les normes de solvabilité ont été revues pour conserver une allocation de fonds propres en face de risques titrisés, il ne faut pas considérer que le risque de contrepartie n'existe plus, mais considérer que chaque CCP constitue une contrepartie nécessitant une allocation de fonds propres chez ses adhérents plus en phase avec le montant de ses expositions.”

PONDÉRATION DU RISQUE : L'EXEMPLE AMÉRICAIN

La réévaluation du montant de fonds propres à mettre en face de chaque établissement compensateur pourrait alors être réalisée en fonction d'une cotation spécifique des CCP.

Ainsi, une CCP supervisée directement par une banque centrale et qui répondrait de manière sécurisante aux critères définis plus haut (dispositifs de contrôle, règles d'adhésion, calculs des appels de marges, collatéraux admis, réalité de la gouvernance, des dispositifs de contrôle interne et de la supervision) pourrait voir son risque pondéré diminuer fortement, tandis que d'autres CCP nécessiteraient une allocation de fonds propres supérieure selon la typologie des produits traités, le profil de risque de la chambre et son niveau de conformité aux standards internationaux

À ce sujet, il est intéressant de noter qu'aux États-Unis, le Bureau des gouverneurs de la Fed s'est récemment exprimé au sujet de la pondération des risques de contrepartie dans le cadre de l'exposition des établissements aux CDS. En réponse à un collectif d'adhérents de la chambre de compensation américaine, ICE US Trust LLC, le Bureau des gouverneurs indiquait ainsi dans une lettre publiée en juin dernier [3], que, si dans le cadre actuel de l'approche avancée Bâle II, un établissement bancaire pouvait attribuer une exposition de zéro pour toutes ses transactions en cours sur produits dérivés avec une *qualifying central counterparty* (QCC), la position du comité de Bâle était en cours de révision. Le Bureau précisait enfin qu'une pondération du risque à hauteur de 20 % de l'exposition en produits dérivés CDS compensés par ICE Trust serait adéquate, étant entendu que cette chambre de compensation est sous la supervision directe de la Fed et du New York State Banking Department.

En conclusion, s'il apparaît qu'une allocation de fonds propres réévaluée en fonction de l'exposition des adhérents et spécifique à chaque CCP représente une solution efficace pour éviter tout risque systémique, prévoyons que les cotations des chambres de compensation soient réalisées par les superviseurs eux-mêmes et non par des agences de notation privées qui ont montré leurs limites en matière de gestion des conflits d'intérêts et de pertinence des évaluations. Enfin, compte tenu de l'enjeu de place que représente la compétitivité des chambres de compensation nationales, on peut supposer qu'une évaluation croisée des CCP par les différents superviseurs non impliqués dans leur contrôle permanent, voire un contrôle direct par l'Eurosystème pour les CCP européennes, constituerait une orientation à la fois équitable et efficace. ■

[3] Letter to Paul E. Glotzer granting an exemption from the Board's risk-based capital guidelines for state member banks and bank holding companies (12 CFR Parts 208 and 225, Appendix A) to permit participants in ICE US Trust LLC ("ICE Trust"), New York, New York, to assign a 20 percent risk weight to claims on ICE Trust (5 juin 2009).

VIII. « Clearing of CDS by a Central Counterparty in the Eurozone: Immediate Benefits and Potential Risks », par Clément SAUDO, Avocat à la Cour, Gide Loyrette et Nouël,

1. Since October 2008 and the first G20 meeting in Washington[7], many authorities both at the national and international levels have taken position in favour of central clearing of derivatives[8]. The final declarations of the leaders of the G20 after the international Pittsburgh Summit included a recommendation in this respect: "*all standardized 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*"[9].

2. Since then, several central counterparties have begun offering clearing services to satisfy the demand expressed by the European Commission and the European Central Bank to have clearing services launched in the euro zone. The French CCP, LCH°Clearnet SA, launched its offer of central clearing services on March 29, 2010[10]. This development was supported by undertakings[11] by both market participants and the International Swaps and Derivatives Association, Inc. (ISDA).

3. This global trend for the central clearing of credit default swaps (CDS) grew rapidly. A CDS is a financial product by which a CDS Seller compensates a CDS Buyer in case of occurrence of a credit event with respect to a reference entity or with respect to one of the reference entities comprised in an index. Unlike collaterized debt obligations, CDS have not been "toxic assets" all through the financial crisis, the market has always remained active and liquid.

4. Despite the resilience of this liquidity, a dramatic loss of confidence arose. This can be explained by the high degree of exposure of financial institutions coupled with a lack of transparency on their positions[12]. The situation of AIG, a net seller of protection, was considered symptomatic of the risks attached to CDS, it further contributed to bring counterparty credit risk into the spotlight. Counterparty credit risk is classically defined as the investor's risk of loss arising from a counterparty who does not make payments as promised. Such risk is directly linked to the risk of default of the counterparty on any payment of interests or principal.

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[7] See the address of the European Commissioner for the Internal Market and Services then in function, Charlie Mc Creevy of October 17th, 2008, "*Time for regulators to get a better view of derivatives*", available on the European Commission's website;

[8] On the implication of the a stronger regulation of Credit Default Swaps, see "*Les proposition du G20 en matière de sécurité sur produits dérivés*" by Hubert de Vauplane, in *Revue Banque*, January 2009, page 83; "*Compensation des Credit Default Swaps : quels enjeux ?*", by Haroun Boucheta, Bulletin Joly Bourse, March -April 2009 page 158; and "*Marché des Credit Default Swaps, La régulation est en marche*", Revue Banque, May 2009, page 93;

[9] See the Leader's statement at the Pittsburgh Summit of September 24 and September 25, 2009, paragraph n°13, "*Improving over-the-counter derivatives markets*";

[10] The German CCP, Eurex Clearing, an entity held for a part by Deutsche Börse, launched its offer of clearing services in the euro zone in July 2009;

[11] Letter addressed to European Commissioner Charlie McCreevy from nine major dealers by which they commit to use a CCP located in the euro zone for eligible CDS contracts on European Reference Entities by the end of July 2009;

[12] See *Le Règlement des défauts sur le marché des* Credit Default Swaps*: le cas de Lehman Brother* in Revue d'Economie Financière n°97, February 2010, by Virginie Coudert and Mathieu Gex;

5. To fight against counterparty credit risk, international institutions and leaders have pushed for CDS to be centrally cleared by CCPs. A CCP stands between over-the-counter derivatives counterparties, thus insulating them from each other's default[13]. It mitigates systemic risk by lowering the risk that default of one counterparty may propagate to another.

6. The launch of central clearing services was rendered possible by some important evolutions which occurred in the past two years in the over-the-counter credit derivatives environment (I)[14]. On this basis, CCPs have been able to develop central clearing solutions. These solutions share some common characteristics (II). This "race to central clearing" should nevertheless not hide the potential risks which remain when using CCPs. There are many different types of CCPs. Presenting these risks should help to assess what should be the appropriate characteristics and the business model of a CCP (III).

1. Preliminary developments in the world of over-the-counter CDS

6. Following the financial crisis, various initiatives have contributed to the passage from a whole "over-the-counter environment" in which legal provisions are freely determined by parties to a more standard or regulated framework. These evolutions came from the International Swaps and Derivatives Association, Inc. (ISDA) but also from various companies which launched services to enhance transparency on derivatives.

1.1. The evolution of the documentation published by ISDA

8. The first type of evolution is linked to the documentation used for CDS. When an over-the-counter CDS (OTC CDS) is entered into, counterparties are free to choose the legal and financial terms applicable to their transaction. The vast majority of credit derivatives are documented under the 2003 ISDA Credit Derivatives Definitions published by ISDA[15]. Following the crisis, ISDA took strong commitments to rethink its documentation and organized a review of the existing documentation for credit derivatives. An in-depth presentation of these evolutions is not the subject of this note but it is important to present the key changes. One of the important change brought to North American and European standard terms has been the passage from a floating periodic coupon to a fixed coupon with an upfront payment intended to take into account the evolution of the spread linked to the cost of protection on a reference entity. The fixed payments now have to be made on specific dates

[13] It should be noted that central clearing also reduces the degree to which the solvency problems of a market participant are compounded by a flight of its counterparties in case of default, see on this subject, *Does a Central Clearing Counterparty Reduce Counterparty Risk?*, by Darrell Duffie and Haoxinag Zhu, March 2010;

[14] In this first part we focus on the evolutions necessary for the development of clearing services. Other evolutions could be added to the list: the development of CDS Indices, negotiation and confirmation platforms for credit default swaps, the launch of the MarkitSERV platform by Markit and DTCC for confirmation, affirmation of all credit derivatives including CDS;

[15] The *2003 ISDA Credit Derivatives Definitions* were published by ISDA in 2003 and were amended and supplemented by various supplements including the *2009 ISDA Credit Derivatives Determinations Committee and Auction Supplement to the 2003 Credit Derivatives Definitions* published on March 12, 2009 (*March 2009 Supplement)* and by the *2009 ISDA Credit Derivatives Determinations Committee and Auction Supplement and Restructuring Supplement to the 2003 Credit Derivatives Definitions* published on July 14, 2009 (July 2009 Supplement);

notwithstanding the trade date of the original OTC CDS (these periods being called *standardized accrual periods*)[16].

9. An other important evolution brought to the documentation was the setting of *ISDA Credit Derivatives Determination Committees* which meet at the request of market participants and decide on the occurrence of a credit event on a reference entity, on the possibility to hold an auction for the settlement of a CDS and on the list of eligible obligations for the settlement of such trades[17].

10. In the new standard documentation published by ISDA, the "normal" method of settlement for a CDS becomes the auction settlement method by which the parties cash settle their CDS using a market value determined through auctions. This evolution is aimed at fighting against the difficulties associated with a possible "short squeeze" where all CDS buyers seek to buy the same debt obligations for the physical settlement of their CDS. The March 2009 Supplement (for the auction following a "failure to pay" credit event or a "bankruptcy" credit event) and the July 2009 Supplement (for the auction following a "restructuring" credit event) implemented these changes. If counterparties do not elect for auction settlement or did not adhere to the Big Bang or Small Bang protocols, they will continue to bilaterally settle their CDS in accordance with the settlement method agreed upon by the parties in an executed confirmation.

1.2. The launch of new services for OTC CDS

11. Other services have been developed which helped to build a safer environment for OTC CDS. These services pursue two aims: reducing the risks associated with CDS and increasing transparency. The first is the development of "compression" services for existing trades. The main market participants have recourse to compression in order to reduce notional amounts[18] and, at the same time, the counterparty risk linked to a portfolio of trades while, at the same time, keeping the financial characteristics of their portfolios. Thanks to compression, the notional amount of credit derivatives has decreased significantly. The incidental advantage of compression is that it allowed to achieve standardization of the terms of the CDS[19].

12. The development of "backloading" of existing CDS has also been key as it allowed for a decrease in the number of unconfirmed trades between parties. When counterparties agree to backload their existing trades, they confront the terms of their portfolios in order to solve the inconsistencies which may exist for the terms registered by each of them and, following this, confirm the transaction. Thanks to backloading, the number of unconfirmed trades has been reduced whereas the recourse to electronic confirmation has increased.

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[16] The fixed payments are due every 20th March, 20th June, 20th September and 20th December;

[17] This process is applicable to all transactions entered into after April 8, 2009 and subject to the 2009 Supplement and to all transactions which have been entered into prior to this date as long as the parties have adhered to the *Small Bang Protocol* or *Big Bang Protocol*;

[18] Compression offers have been developed by platforms like Tri Optima or the platform developed by Markit or Creditex;

[19] The compression platform jointly developed by Creditex and Markit has allowed for the compression of 1,35 trillion dollars of notional amount of CDS for the year 2008;

13. The launch of a trade registry for CDS, the Trade Information Warehouse (TIW), the central data repository developed by the Depository Trust Clearing Corporation, Inc. (DTCC), has been a major improvement since it provided greater transparency on notional amounts as well as on the positions of each market participant. The TIW registers the financial terms of a transaction and allows to follow the state of a trade. The "golden record" of the TIW is presented as an up-to-date "legal status" of a registered CDS[20].

2. Presentation of central clearing of CDS

14. ISDA has brought a greater standardisation to the documentation and rendered the decisions on the occurrence of credit events or succession events less arbitrary and more uniform, meanwhile participants have rationalized the over-the-counter market. The result has been the constitution of a favourable ground for the launch of clearing services. In this second part, we present the main characteristics of the central clearing services launched. As mentioned in the introduction, various CCPs have launched central clearing offers on CDS. We will therefore try to present the common characteristics of the central clearing offer launched by Ice Trust, ICE Clear Europe, Eurex and LCH.Clearnet SA.

2.1- Intervention of CCPs on CDS

15. Counterparties have to submit their original OTC CDS to the TIW in order for such trade to be cleared by a CCP. By submitting their OTC CDS, counterparties accept that the OTC CDS be repealed by the resulting cleared transactions within the TIW in accordance with the provisions of the applicable rules of the CCP. The CCP is not a counterparty to the original OTC CDS and only enters into CDS with its clearing members.

16. The CCP is therefore agnostic as to the content of the master agreement which may have been entered into between the counterparties and as to how the relation between the counterparties and their clearing members is documented. Novation will only occur and the OTC CDS will be replaced by two cleared transactions between the clearing members and the CCP as long as the OTC CDS is eligible for clearing pursuant to the eligibility criteria determined by the CCP and, as long as no event of default has occurred prior to novation. The CDS to which the CCP is a party is the cleared transaction resulting from the novation of the OTC CDS registered within the clearing system.

17. By interposing itself between two clearing members, a CCP takes over the risks inherent to post-trading operations. These risks include counterparty credit risk, the liquidity risk, the legal risk, the operational risk and the risk vis-à-vis the settlement agent[21]. Following

[20] The TIW allows the parties to register and to update the "golden record of their CDS trades: the parties, the characteristics of the trade, the notional amount, the triggering of a credit event. The legal value of such golden record and the extent to which it would be binding on third parties would require a thoroughgoing analysis which is beyond the purpose of this note;

[21] These risks are those defined by the Technical committee of the International Organisation of Securities Commissions (IOSCO) and the Committee on Payment and Settlement Systems (CPSS) in its "Recommendations for Central Counterparties" published in November 2004 and in the Consultative report of May 2010 "Guidance on the application of the 2004 CPSS IOSCO Recommendations for Central Counterparties to OTC Derivatives CCPs;

novation, the CCP sends a message to the TIW relating to the creation of two new cleared transactions between the CCP and the relevant clearing members, together with a file including details of the cleared transactions.

2.2- Eligible CDS

18. Parties entering into an OTC CDS are, as usual, free to choose some characteristics of their trade even when they use the standard ISDA documentation in place for an index CDS[22]. When they however intend their OTC CDS to be eligible for clearing, their OTC CDS will have to fulfil certain eligibility criteria listed in the clearing rules of the CCP[23] and be documented under the appropriate ISDA documentation.

19. Different types of factors will limit the categories of credit derivatives which may be cleared by a CCP: fungibility, liquidity and the risks associated to credit derivatives. Some risks are specific to credit derivatives: the correlation risk and the risk of "*Jump to default*"[24]. The existence of these risks helps understand why most CCPs only offer central clearing services for CDS on indices at this stage[25]. Only two CCPS (Eurex Clearing and ICE Clear Europe) offer clearing services for CDS on single names[26]. LCH.Clearnet SA, the French CCP, is planning to extend its offer to CDS on single names in the course of 2010. It should be noted that CDS on single names will be cleared by the French CCP LCH.Clearnet SA when they are component of Index CDS Trades of the iTraxx indices and are created following a "restructuring" credit event for the purpose of settlement.

2.3- Margin Calls and Collateral Management by a CCP

20. Although, as a counterparty to every clearing member, the CCP reduces the scope of the counterparty risk between clearing members and is legally responsible for the financial performance of the cleared transaction registered, the clearing members have to transfer collateral to the CCP. Clearing members have to deposit various types of collateral to the CCP in order to cover the risk on their net positions. On the contrary, CCPs do not transfer any collateral to clearing members.

21. An initial margin is called at the start of the clearing process and aims at covering the future price fluctuations in case of unfavourable market movements. Variation margins are called daily and follow the mark-to-market of the CDS. CCPs woul sometime request an additional margin intending to cover the risk of an event of default with respect to a clearing member coinciding with a credit event on a reference entity (the risk of double default).

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[22] In the case of CDS Trades on the iTraxx Europe 125 index, the parties may use the iTraxx® Europe Standard Terms Supplement to cover the transaction;

[23] For example, see Annex 5 to the CDS Clearing Rule Book of LCH.Clearnet SA entitled "Eligibility Criteria";

[24] The "Jump to Default" risk is the risk that a credit default occurs suddenly before the market has had time to factor its increased default risk into the spreads;

[25] The cleared CDS are the CDS on the CDX index for the United States published by the American company Markit Group Limited. In Europe, the index is the iTraxx Europe 125 (Main, Hivol or CrossOver) published by the International Index Company Limited and published by Markit Group Limited;

[26] With a single same CDS, the seller of protection if selling protection to the buyer of protection on only one reference entity;

22. Moreover, in most CCPs, clearing members contribute *ex-ante* to a guarantee fund intended to cover the liquidation of a clearing member's portfolio under extreme market conditions. In the alternative, a CCP may have entered into an arrangement to recover losses ex-post from the clearing members that have agreed limited or unlimited liability.

23. The daily margin calls aim at covering potential losses incurred by the CCP. Should the losses exceed this amount, other resources will be called upon. Tor this purpose, the clearing rules of all CCPs provide for default procedures which are relatively similar. In case of liquidation of a clearing member's positions, the CCP will make use of the resources available: the collateral deposited by the defaulting clearing member to meet its margin requirements, any amount deposited by the defaulting clearing member to meet its obligation to contribute to the guarantee fund and, if applicable, any surplus of assets deposited by the defaulting clearing member in favour of the CCP, the amounts deposited by other clearing members to contribute to the fund, and, last, the CCP's own capital.

2.4-. Management of credit events

24. The occurrence of a credit event triggers the protection under the CDS. The credit events applicable to American CDS under the standard documentation published by ISDA are "failure to pay" and "bankruptcy". For European CDS, these events are "failure to pay", "bankruptcy" and "restructuring". With respect to the occurrence of a credit event, in principle, CCPs follow the decisions taken by the ISDA Credit Derivatives Determinations Committee. The consequence is that credit event notices which a counterparty would have delivered in respect of the OTC CDS are not taken into account[27] and requests by clearing members as to the occurrence of a Credit Event must be submitted exclusively to ISDA to convene the ISDA Credit Derivatives Determinations Committee[28].

25. Differences however exist between the various CCPs. Some CCPs have put in place their own determination committees, which includes some or all of their clearing members, to take decisions, in specific circumstances on the occurrence of a credit event[29]. On the contrary, the French CCP, LCH.Clearnet SA, strictly applies the March 2009 and July 2009 Supplements. No mismatch is therefore possible between the decisions of the ISDA Credit Derivatives Determinations Committee and LCH.Clearnet SA as to the occurrence of a credit event. In the system put in place by the French CCP, no credit event will be deemed to have occurred unless it has been decided by the ISDA Credit Event Determinations Committee[30].

[27] For the example of LCH.Clearnet SA, see article 5.1.2.4 of the CDS Clearing Rule Book;

[28] For the example of LCH.Clearnet SA, see article 5.1.2.2 of the CDS Clearing Rule Book;

[29] For example, Eurex Clearing and ICE Clear Europe provide in their clearing rules that committees may be called to decide on the occurrence of a credit event or a succession event (respectively a *Eurex Determinations Committee* and a *Regional CDS Committee*);

[30] See Article 5.1.1.1 and Article 5.1.2.4 of the CDS Clearing Rule Book of LCH.Clearnet SA;

2.5- Settlement following a credit event

26. Following the publication of the ISDA March 2009 Supplement and the ISDA July 2009 Supplement and in accordance with market practice, the auction settlement[31] is the normal settlement method applicable to CDS as long such an auction is organised by ISDA. CCPs typically entered into license agreements with ISDA in order to be able to settle cleared transactions in accordance with the final settlement price determined in the auctions organised by ISDA and the administrators.

27. As a consequence, when a final settlement price with respect to a CDS which is of the same type as a cleared CDS is determined following an auction, the settlement of the latter will take place in accordance with the final settlement price[32]. Before making any payment, the CCP may proceed to any netting for transactions having the same settlement date. The seller of protection under the cleared CDS will then pay the auction settlement amount due to the CCP on the auction settlement date, the CCP will then pay the auction settlement amount to the buyer or protection in accordance with the provisions of the clearing rules of the CCP.

28. Physical settlement is applicable to the cleared CDS only as a fallback settlement method. It will most notably apply when an auction was cancelled or when no auction takes place. CCPs do not manage directly the physical settlement but create settlement pairs between clearing members for the purpose of the physical settlement. CCPs continue to call margins and those margins remain payable in relation to any cleared CDS until physical settlement is completed, and the CCP guarantees the successful completion of the physical settlement.

3. Potential risks induced by central clearing of CDS by CCPs

29. As an introduction to this last part, it is interesting to note that the absence of counterparty risk may have two incidental consequences. This may lead market participants to take larger positions on the CDS market considering they do not have to limit their positions when facing a CCP[33]. A danger may also exist that the mutualisation of risk that the CCP achieves lead some firms to exceed the levels of risk that they would accept to take should they have traded on a pure over-the-counter market. Because the cost of a clearing member's default may be less than the risks it has introduced into the system, this may not work as an incentive to reduce such risk.

30. All markets are not necessarily suitable for central clearing and a CCP is aimed, by definition, concentrates and reallocates the risk, it therefore has the potential to decrease, but also to increase systemic risk. This is the reason why such risks should not be underestimated.

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[31] We will not go into the details of how such auction process works in this article. For a detailed study of the process, see *Le Règlement des défauts sur le marché des Credit Defauls Swaps : Le cas de Lehman Brothers*, in Revue d'Economie Financière n°97, February 2010, by Virginie Coudert and Mathieu Gex;

[32] See for example the solution implemented by the French CCP in Section 5.2.2 of the CDS Clearing Rule Book;

[33] See *La compensation des produits financiers derivés est-elle la panacée ?*, by Michel Castel, in Revue d'Economie Financière, February 2010;

3.1- The other ways of controlling counterparty credit risk

31. In the past 12 months, central clearing seems to have been considered among regulators and political leaders as the only way to reduce counterparty credit risk whereas clearing is only one of many possible ways of controlling counterparty credit risk[34]. In the over-the-counter world however, participants may choose between various means which are not mutually exclusive and may even be used even though CDS are cleared by a CCP.

32. A market participant may manage its credit exposure by diversifying its portfolio with various counterparties. It may also determine exposure trading limits for each counterparty or enter into credit derivatives to buy protection on its counterparty. It may also use a number of security mechanisms and techniques, from recouponing to margining, in order to secure its OTC CDS governed by a master agreement. More classically, it may execute guarantees or security interests in order to secure its OTC CDS as its would do under any contract.

32. Most of the time, counterparties would organize for bilateral collateralization (with the transfer of initial margins as well as periodic variation margins). ISDA has published various collateral annexes in order to document these transfers of collateral between counterparties[35]. According to ISDA, in 2009, for all over-the-counter derivatives, 65 percent of trades were subject to collateral agreements, compared with 63 percent in 2008 and 30 percent in 2003[36].

3.2- Which CDS should be eligible for clearing?

33. In order for central clearing to be possible, the financial products need to be standardised. The first advantage of standardisation it to allow clearing members to offset their exposures with other clearing members. A clearing member will be able to extinguish its positions by entering into an equal and opposite trade with any other clearing member.

34. CDS eligible to clearing need to be fungible. The positions of a defaulting clearing member will be easily liquidated when the CDS is a fungible and highly liquid financial product. It will also be easier for a CCP to value such product and, as a consequence, to evaluate the required margins which need to be transferred by a given clearing member. When assessing which CDS should be eligible for clearing, one should keep in mind that the lower the liquidity, the higher the risks when a clearing member defaults.

3.3- Which criteria for membership?

35. The question of the membership criteria is a crucial one. Whereas some advocated for an easier access to CCP for buy-sides, this would also mean less stringent financial

[34] See, on this subject, *Central counterparty clearing houses and financial stability*, by Bob Hills, David Rule, Chris Young, the Financial Stability Review, June 1999;

[35] In 1994, ISDA published the 1994 ISDA Credit Support Annex. In 1995, two additional standard form credit support documents were published by ISDA for use in documenting bilateral security and other credit support arrangements under English law between counterparties for transactions governed by an ISDA Master Agreement: the ISDA Credit Support Deed, and the ISDA Credit Support Annex;

[36] See the "*ISDA Margin Survey 2009*" published by ISDA on April 22, 2009;

membership criteria. By imposing such criteria, CCPs impose minimum standards of credit worthiness and capital adequacy requirements.

36. The way these membership criteria are determined by a CCP is important, since firms with above average solvability may choose not to use central clearing because it reduces their comparative credit advantage. If a CCP sets uniform margin requirements to protect itself against firms with average credit quality, more highly-rated counterparties may decide to trade bilaterally so that they do not have to provide margins[37]. Clearing Members may not be willing to share the risk of less solid financial institutions and may put pressure on the CCP to impose more stringent criteria. The reasoning would be: "*we want mutualise the risks, yes, but not with anybody*".

37. Another question raised is the question of common membership. Should a CCP offer to clearing members common services for the multiple markets if clears? In other words, when a CCP offers clearing services on CDS but also on shares, repos and commodities, should a firm be able to have a single membership for all the markets cleared. The major benefit for clearing members is that this allows them to use "cross-margining": their margin calls and their contribution to the guarantee fund is calculated globally for all the markets on which they are members. Moreover, the CCP is then in a stronger position to monitor the clearing member's positions as they have a more global view of its overall trading book. Some authors have demonstrated that adding a new CCP dedicated to only one class of derivatives, such as CDS, reduces netting efficiency and therefore increases exposure to counterparty default[38]. The study concludes that is more efficient to have a single CCP that jointly clears various types of financial products than to have separate CCPs which clear the respective classes[39].

38. Yet, a unique membership concentrates both the credit and operational risks to an even greater extent. The members may also be quite different from one market to another (the members for a commodities market may be very different from the members of the CDS market). They may have divergent interests and the products cleared may not require the same degree of risks, and therefore not the same degree of collateralisation (the initial margin required from clearing members on the equity market may not be the same as the initial margin required from clearing members on the CDS market).

3.4- Systemic Risks induced by CCPs

39. In general, a CCP will reduce systemic risk and, as such, help to insulate the market from a financial crisis. However, the simple existence of a CCP will not eliminate the risk. The action of a CCP concentrates the majority of the risks and they therefore have a vital responsibility in terms of management of these risks[40]. This includes situations where a

[37] See *Central counterparty clearing houses and financial stability*, by Bob Hills, David Rule, Chris Young, the Financial Stability Review, page 125, June 1999;

[38] See, on this subject, *Does a Central Clearing Counterparty Reduce Counterparty Risk?*, by Darrell Duffie and Haoxinag Zhu, March 2010;

[39] *Idem*;

[40] See, on this subject, *Systemic Risks : There are CCP's and CCP's*, in Banque Stratégie n°275, November 2009;

clearing member is unable to transfer collateral or when the margins and the guarantee fund are not sufficient to cover a default. This could also be the case when a CCP interoperates with another CCP which defaulted, when the financial instruments transferred as collateral are issued by a defaulting company, or when such financial instruments are tied up in a bankruptcy context[41].

40. It is important to note that the risk of default a CCP is not entirely theoretical. Some CCPs have already defaulted in the past. This was the case for the French CCP, Caisse de Liquidation in 1974. Following a strong correction from the market, many participants became unable to meet their margin calls and the losses of one participant, Nataf Trading, forced the Ministry of Finance to close the market. The CCP was accused of having exacerbated the situation by not correctly monitoring the positions of certain members and not having adjusted the margin requirements. This had a procyclical effect.

41. An other example is the default which occurred on the Kuala Lumpur Commodity Exchange Oil contracts in 1983. Six brokers defaulted on positions of $70 million and trading was suspended. The blame was laid by the Malaysian government on the Kuala Lumpur Commodity Clearing House which was accused of not speedily addressing the problems and not having reacted promptly to the market squeeze[42]. More recently, during the Hong King stock and market crash of 1987, the guarantee fund, (HKFGC), a fund which separate from the CCP (ICCH (HK)), had to ask for a rescue package from the government because it was unable to act in a timely manner. The guarantee fund and the clearing house were accused of not effectively sharing information about the exposure of market participants.

42. The consequence may be less tragic than the bankruptcy of the fund. If any doubts exist about the solvency of the CCP itself, market participants may refuse to trade. Whereas this situation has a limited impact when counterparties stop trading with one counterparty in an over-the-counter market, its effect is far more drastic when the counterparty is a CCP. This underlines that strong prudential requirements need to be imposed on a CCP and that the latter need to be at all time transparent about its financial position.

CONCLUSION

43. CCPs are key elements which contribute to reduce counterparty credit and systemic risk. As a clearing house, a CCP calls margins and is in a position to adequately monitor the risks of its clearing members. The setting of default procedures by a CCP with a guarantee fund to which all participants contribute also achieves a risk-sharing between market participants. In its role as central counterparty it moreover takes the counterparty risk as it becomes the seller to each buyer of protection and a buyer to each seller of protection.

44. Nevertheless, for the high concentration of the risks it entails, central clearing will need to be adequately regulated and should not be considered as the unique solution. If

[41] *Idem*;

[42] See *Central counterparty clearing houses and financial stability*, by Bob Hills, David Rule, Chris Young, the Financial Stability Review, page 129, June 1999;

capital adequacy requirements are not imposed, CCPs could become new Fanny Mae or Freddy Mac in 20 years. An over-the-counter market should remain for all non standardised products not eligible for central clearing. Counterparties should enter into adequate collateralization agreements for such trades and should not be forced to clear products when theses products are not fit for clearing.

45. At the time being, in Europe, no harmonized status exists for CCPs. Only standards and recommendations issued by the Basel Committee, the International Organisation of Securities Commissions (IOSCO) and the Committee on Payment and Settlement Systems (CPSS) exist. This situation was adapted to the clearing of market traded securities, it is no longer adapted for the central clearing of derivative products. In the future, CCPs should be subject to adequate capital requirement at least equivalent to those of a credit establishment[43]. The method of allocation of losses of the CCP should be grounded on a robust legal framework. This is already partly the case in Europe, the Settlement Finality Directive protects transfer orders and collateral payments in securities settlement system[44] and guarantees the enforceability of the close-out netting arrangements entered into by an approved securities settlement system and its members also benefit from this regime. CCPs should also be adequately supervised and monitored by banking and financial market authorities both at the national and international level.

46. The French legal and regulatory framework applicable to CCPs is a robust one and can be considered as a model when envisaging an harmonized framework for CCPs at the European level. CCPs are supervised by numerous authorities and subject to strong capital requirements. The French CCP, LCH.Clearnet SA is licensed as a credit establishment, and therefore subject to concomitant prudential requirements and approved as a securities settlement system. Because of its various statuses, LCH.Clearnet SA is approved and supervised by French numerous authorities[45] and the French Financial Market Authority (*Autorité des Marchés Financiers*) approves its clearing rules. Moreover, due to the multinational activities of the LCH Clearnet group, LCH.Clearnet SA is subject to the oversight of a committee of international supervisors, the Coordination Committee on Clearing[46].

47. Discussions are now pending on the legislation on market infrastructures and the European Commission seems to share these concerns. In its current version the legislation expected for September 2010 would impose minimum prudential requirements on CCPs and they would need to have permanent available capital capable of preserving its stability and proportionate to its operations and size. As to the of the scope of CDS eligible for celaring,

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[43] Under French law, CCPs have to have the status of credit establishment pursuant to Article L.440-1 of the French Monetary and Financial Code;

[44] See the Directive 98/26/EC of the European Parliament and of the Council of May 19, 1998 on settlement finality in payment and securities settlement systems;

[45] LCH.Clearnet SA is supervised by the French Central Bank (*Banque de France*) for the systemic risks linked to its activities, by the Prudential Supervision Authority for its status of credit institution (*Autorité de Contrôle Prudentiel*), by the French Financial Market Authority (*Autorité des Marchés Financiers*) in respect of its functioning; and

[46] The banking supervisors and securities regulators of the Coordination Committee on Clearing (CCC) are the *Banque de France*, the *Commission Bancaire*, the *Comité des Etablissements de Crédit et des Entreprises d'Investissement*, the *Autorité des Marchés Financiers* for France, the *Banque Nationale de Belgique* and the *Commission Bancaire, Financière et des Assurances* for Belgium, *De Nederlandsche Bank* and *Nederlandsche Autoriteit Financiël Markten* for the Netherlands, the *Banco de Portugal* and the *Comissão do Mercado de Valores Mobiliários* for Portugal.

the European Commission, in the same way as the legislation currently discussed before the American Congress, seems to be willing to limit the scope of this obligation to standardised contracts. Complex problems have simple, easy to understand, wrong solutions. Central clearing is part of the counterparty credit risk issue but it should no be considered as the simple answer to a complex problem.

IX. Conclusion par Henri GHOSN, Vice-Président du Club Finance HEC

L'objet de cette conclusion ne peut pas être, bien entendu, de reprendre les développements détaillés que les différents contributeurs ont apportés à cette étude.

Nous nous efforcerons plus modestement de dégager les quelques idées forces qui nous ont semblé émerger à la suite de nombreux débats.

1. Rôle économique des CDS

Avant même d'aller plus avant dans des problématiques complexes, il nous paraît nécessaire, même si elle peut sembler abrupte de prime abord, de poser cette question originelle du rôle des CDS, tant les avis peuvent diverger en fonction de la nature des acteurs économiques et financiers.

Sans surprise, et comme on a pu la voir évoquée dans notre étude, la question de la faible utilité des CDS non pas dans l'absolu mais de leur point de vue spécifique, a été régulièrement soulevée par les entreprises non financières qui ne considèrent pas que ces produits soient pour leur propre activité d'une utilité avérée. Même la fonction d'indicateur de prix de marché leur semble aujourd'hui moins pertinente qu'elle ne l'a été, il y a quelques années.

Sans dérouler le sujet en termes antinomiques, il apparaît clairement que les banques et les sociétés de gestion ne peuvent partager cette approche. En effet, la fonction de couverture de ces produits, reste aujourd'hui indispensable pour le bon fonctionnement de leur activité et, partant, pour l'activité économique en général.

Par ailleurs, la complexification des marchés de ces dernières années, dans le sillage du développement des modèles financiers sophistiqués, a permis des arbitrages avec d'autres classes d'actifs, en particulier les actions et les dérivés actions. Pour les institutions financières, la fonction de tarification des marchés par la variation des spreads CDS, reste donc tout à fait d'actualité.

2. Les CDS peuvent-ils être des propagateurs de crise ?

Même si l'étude concerne principalement les CDS Corporate, nous ne pouvons éluder cette question qui a surgi, comme chacun sait, de manière brutale après la crise de l'euro consécutive aux craintes pesant sur la Grèce. A la défiance pesant habituellement sur les CDS quant aux risques de manipulation des marchés, est venue s'ajouter l'accusation de possible amplification des crises par le phénomène bien connu de « self fulfilling prophecy »

Sur ce point débattu de longs mois, il nous semble utile d'essayer de faire la part des choses. Que les CDS puissent dans certains cas, tant pour des risques corporate que pour des risques souverains, jouer un rôle aggravant, cela est aujourd'hui communément admis. En revanche, il nous importe de souligner également la confusion fréquente, tout au long de cette crise de la cause et de l'effet. S'est installée en particulier la tentation, qui nous semble infiniment dangereuse, de nier les difficultés en cassant le thermomètre. Les problèmes de déficit que pointaient les marchés étaient bien présents dans l'exemple que

nous avons évoqué et se réfugier derrière les dérives, par ailleurs bien réelles de la finance, pour retarder l'échéance, ne nous semble pas bien raisonnable. Les grands pays de la planète l'ont d'ailleurs désormais bien compris et ont commencé à traiter le mal à la racine.

3. Opportunité ou non des ventes « nues »

A la suite des récentes crises que nous évoquions, est redevenue d'actualité la question de savoir si, sans jeter l'opprobre sur l'ensemble du marché des CDS, il ne convenait pas à tout le moins, d'interdire les « naked shorts » (les ventes « nues »), c'est-à-dire le fait pour un acteur de marché d'acheter une protection, sans avoir lui-même un risque à couvrir.
Pour les tenants de cette interdiction, ce serait ces ventes « nues » qui en se multipliant, auraient transformé le paisible marché de couverture des années 90 en un vaste casino dans les années 2000 où les opérations purement spéculatives l'auraient largement emporté sur celles ayant une visée économique réelle. Cette argumentation peut compter, pour la soutenir, sur des voix sérieuses et autorisées y compris dans les milieux anglo-saxons. L'Allemagne, quant à elle, a décidé comme on le sait, de souscrire de manière générale à cette approche, même si les conditions et le périmètre d'application restent vagues.
Ayant présenté cette analyse, nous nous devons dans cette étude, d'exprimer également un autre point de vue à savoir les craintes de certains professionnels en cas d'interdiction, de voir le marché se rétrécir, perdre en liquidité et devenir ainsi par un paradoxal retournement des choses, plus dangereux et manipulable que s'il était laissé au grand vent de la spéculation.
Par ailleurs, il est difficile d'appliquer à la lettre une interdiction des ventes « nues » dans la mesure où les acteurs du marché sont obligés dans certains cas de se couvrir de manière certes imparfaite mais utile en prenant une assurance sur des actifs similaires à ceux qu'ils souhaitent couvrir parce qu'ils n'ont pas toujours la possibilité de le faire à l'identique.
Les deux postures, en faveur ou contre les ventes « nues », se tiennent, mais il nous semble qu'il faille en tout cas avancer avec prudence sur ce chemin, et ne pas prendre de décisions qui pourraient apparaître trop hâtives par la suite.

4. Régulation et transparence

Au-delà des quelques divergences apparues lors de nos débats tenant au point de vue spécifique de chaque contributeur, nous avons pu réunir un consensus sinon sur toutes les modalités du moins sur la nécessité d'une régulation et d'une transparence accrues, s'agissant d'un marché dont les actifs sous- jacents se montent à plusieurs dizaines de trillions de dollars, et nécessite donc pour le surveiller une vision la plus large possible, de manière à éviter les grands risques systémiques.
La solution, qui a été longuement évoquée dans l'étude passera de plus en plus par des chambres de compensation qui traiteront la grande majorité des contrats « standardisables » et qui devront faire preuve de leur fiabilité et de leur solvabilité. D'un point de vue politique, il nous semble important que la zone euro conserve des structures spécifiques qui lui permettent de mener à bien cette surveillance, sans devoir s'appuyer complètement sur des organismes extérieurs.

Qu'il nous soit permis à ce stade d'ajouter une dernière remarque, qui au-delà des CDS, concerne l'ensemble de la règlementation financière.

Certes Les Etats-Unis ont montré leur volonté d'avancer sur ce terrain avec la loi Dodd-Frank. L'Europe quant à elle, s'est dotée de nouvelles autorités de supervision - pour les banques, les assurances et les marchés - bénéficiant de pouvoirs étendus. La France a créé l'Autorité de Contrôle Prudentielle (ACP) et enfin le Comité de Bâle a édicté les règles prudentielles qui régiront le monde bancaire dans les années à venir.

Mais il est important de garder en tête que, davantage qu'un accroissement des contraintes même si celles-ci sont parfois nécessaires, c'est l'esprit d'efficacité et de responsabilité des acteurs qu'il s'agit de développer pour avoir à l'avenir, un paysage plus serein.

A l'instar des CDS, beaucoup de produits financiers ne méritent, pour reprendre le célèbre alexandrin de Racine, « ni cet excès d'honneur ni cette indignité ». La plupart sont utiles au bon fonctionnement de l'économie. C'est leur utilisation abusive qui peut aboutir, comme on le sait, à des conséquences funestes.

Veillons donc particulièrement au bon fonctionnement des marchés, en sachant qu'en définitive, c'est la prise en compte de l'élément humain qui sera déterminant.