



Banks, Credit Derivatives and Financial Stability

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Agenda

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The importance of credit risk management

In a world of innovations, it is not surprising that, after the management of interest, equity and foreign exchange risk, it was the turn of credit risk management.

Banks, regulators and bank practitioners concentrated their efforts in credit risk management due to the following facts :

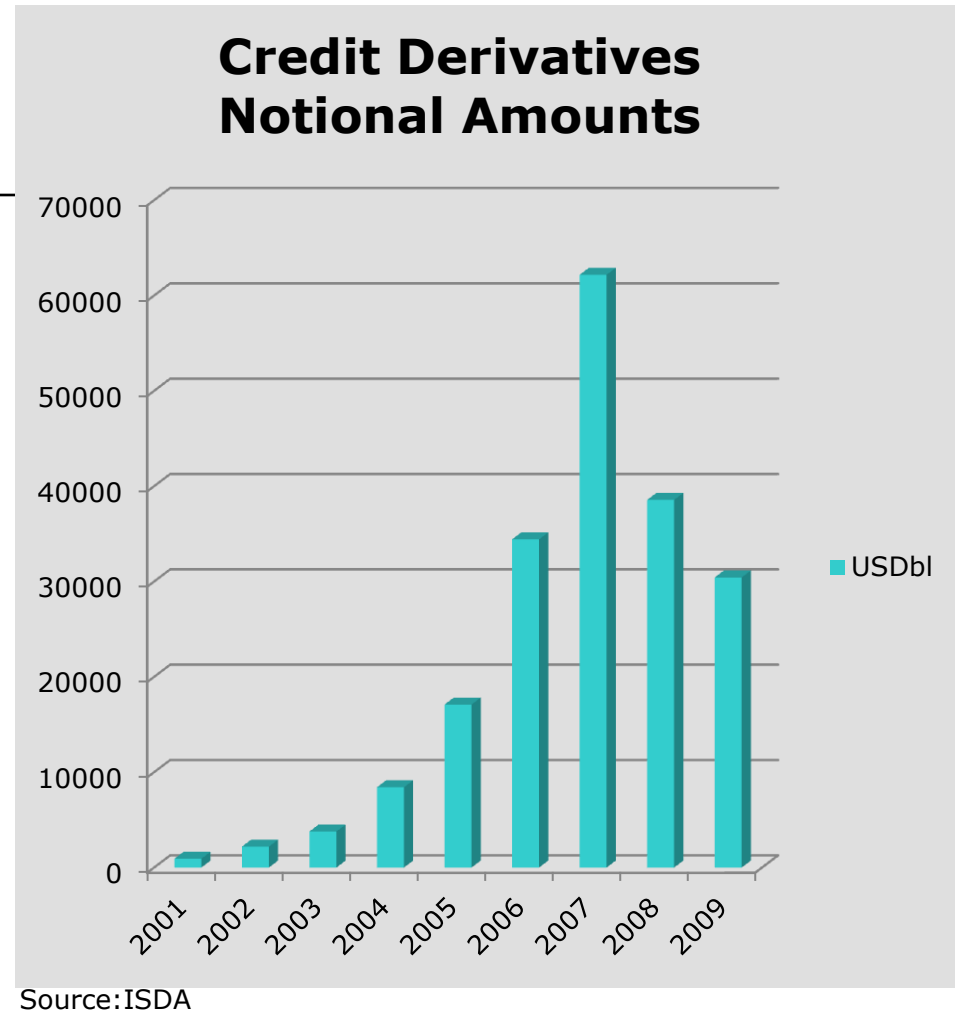
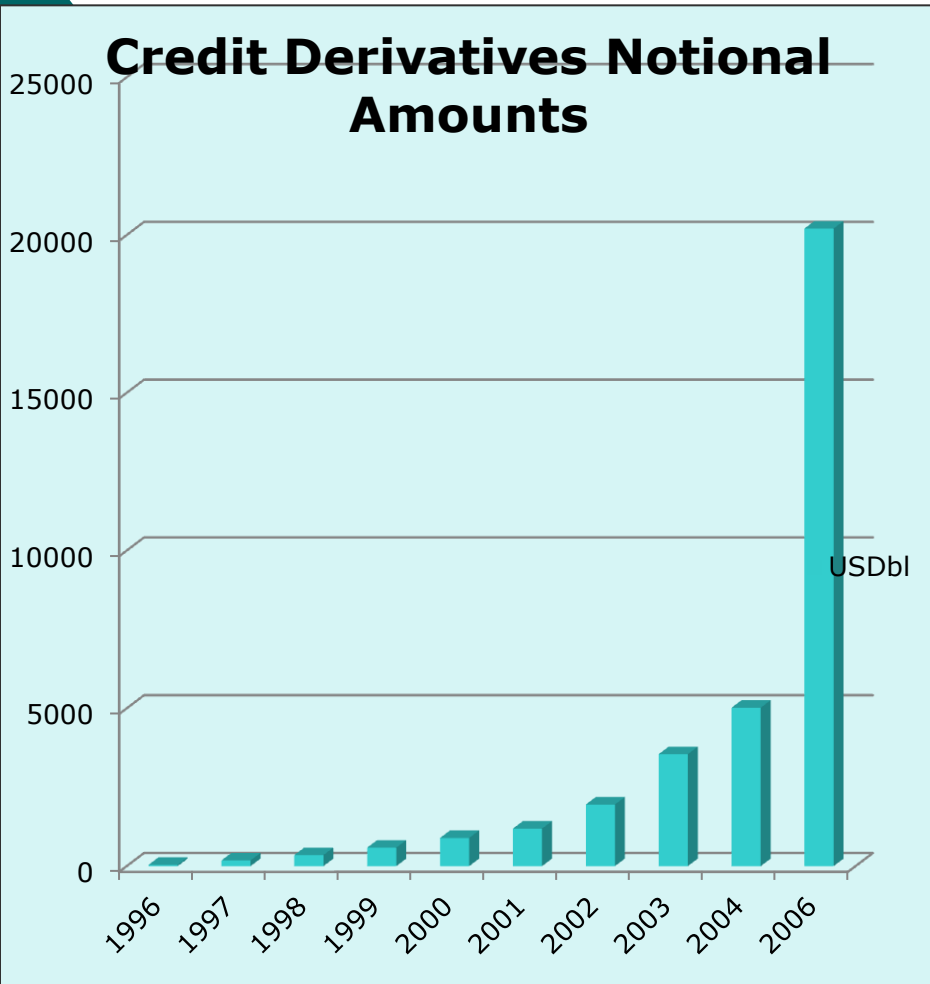
1. Improvement in credit risk modelling techniques,
2. Development of robust credit databases,
3. Development of corporate bonds market,
4. Development of new credit risk management instruments such as securitisations, credit derivatives (CDs) etc. joining loan sales technique.
5. Basel II capital regulation emphasis on more advanced credit risk management techniques,
6. Development of credit portfolio risk/return analysis. (Altman, 2002)

The expectations in early years...

- CDs introduction in credit risk management separates the origination and funding of credit from the holding and management of credit risk, and by insuring and protecting against adverse movement in the credit quality of the counterparty.
- The Bank of England stressed the potentialities of CDs by identifying a range of influences on banks and credit markets behaviour:
 - “- CDs can reduce credit concentration and manage loan assets and credit exposure on a portfolio basis.*
 - new assets and exposures can be created to widen investment opportunities*
 - credit views can ultimately be traded and arbitrated across instruments (enhance credit markets pricing).*
 - banks can use CDs to reduce exposures to relationship borrowers without damaging that relationship.*
 - banks which cannot achieve direct access to certain types of borrower or which lack infrastructure to service loans can use CDs to assume credit risk to a wider range of borrowers. Thus, CDs seem to offer considerable benefits of managing credit risk between parties in isolation from other forms of risk”.*

Bank of England, 1996

The Scope, the Use and the International Developments of CDs



- The total gross notional amounts are quite higher than the real underlying credit exposure.
- The volume for the period of 2010-2012 is between 25-30 trillion.
- CDs a mean for distributing idiosyncratic and market credit risks within an economy, affecting the stability of financial markets and financial systems.

The Scope, the Use and the International Developments of CDs

	2000	2002	2004	2006
Basket products	6%	6%	4%	1,8%
Credit linked notes	10%	8%	6%	3,1%
Credit spread options	5%	5%	2%	1,3%
Equity linked credit products			1%	0,4%
Full index trades			9%	30,1%
Single-name credit default swaps	38%	45%	51%	32,9%
Swaptions			1%	0,8%
Synthetic CDOs			16%	16,3%
Tranched index trades			2%	7,6%
Others	41%	36%	8%	5,7%

Source: BBA-CDS Market indices CDX, ITraxx, LCDX, LevX, ABX, CNBX, MCDX, SovX, (ECB 2009)

Reasons for engagement in CDs

- management of credit lines (risk and client-bank relationships),
- diversification of credit risk (geographic, sectoral concentration and correlation risk diversification),
- balance sheet optimisation
 - management of economic capital,
 - management of regulatory capital (reduction in risk weighted assets, efficient management of the opportunity costs of risk provisions),
- generation of capital gains and income fee.

The Scope, the Use and the International Developments of CDs

- CDs linked to sovereign assets and corporate assets due to many corporate credit events.
- Main players in the CDs markets are banks, securities houses, hedge funds, insurance companies, broker-dealers, special purpose vehicles, non-financial companies and investment funds.
- The market is highly concentrated especially after the banking crisis
- Banks' derivatives volume is due to trading (mainly) and hedging (ECB, 2009).
- US bank mostly involved in trading, EU banks mostly involved in balance sheet hedging (ECB, 2009).

Reasons for interest in CDs

- the change in the structure of incentives, which may affect market participants' risk appetite and system risk distribution;
- the high concentration of credit derivatives in the market;
- the soundness of their pricing and the respective counterparty risk;
- and issues of transparency and standardisation.

Important to understand impacts on both Microeconomic banking firm and Macroprudential system stability approaches

CDs and Bank's microbehaviour : Risk Taking Incentives

- Banks use CDs as a credit risk hedging
- Additional increase in credit supply without concerns (credit paradox), and consequently risk taking.
- Behaviour during the credit crunch, CDs helped credit supply at a lower pace than loan securitisation and loan sales due to the financial resources offered

(Bedendo & Bruno 2012, Hirtle 2009, Goderis et al, 2005, Ashraf et al, 2005)

BUT....

- Credit Derivatives increase asset liquidity and lower asset liquidation risk
- Banks may have greater incentive for risk taking
- Banks have reduced incentives to avoid crisis, since it is less costly.

If this liquidity is reduced due to macroeconomic factors or risk aversion preferences, this can cause sharper fall in asset prices

(Santomero and Tester 1998, Wagner 2007)

- Overall bank risk through CDs, especially when the credit markets perform high price elasticity making banks more aggressive investors in credit markets - Insterfjord, 2005
- CDs insider trading from banks exists. Information flow of firms, that have strong bank relationships, from CDs to equity markets especially for negative credit events (Acharya & Johnson, 2005)

CDs and Bank's microbehaviour : Informational Asymmetries 1/2

Information asymmetries cause adverse selection and moral hazard in behaviour of banks on credit risk management, and may lead to credit rationing.



CDs can be used by the bank to reduce its risk of financial distress by transferring the loan's risk when the lemons market problem is smallest (smaller at the early period of loan). (Duffee and Zhou,2001).



CDs may lead to breaking down other markets and weakening, or even disappearance of other risk-sharing markets (loan sales, securitisation) and consequently to the deterioration of risk allocation

- Mitigation of adverse selection problem but destroys the loan sale market, mitigating only credit risk of good quality loan and destroying poolability.

- Strengthening bank's monitoring incentives and weakening the loan sale market when moral hazard is present.

But Moral hazard is there for CDs as well...

- Reduced incentive for lender (credit protection buyer) to monitor borrower (credit monitoring). This reduced incentive can affect borrower's choice on selecting 'second best project', therefore causing disintermediation and welfare cost – (Morrison,2005), (Goodhart *et al*, 1998)

- Moral hazard where the probability of a credit event can be influenced by the protection buyer's behaviour after the agreement with CDs (premature credit event triggering; this is a reason why credit restructuring was proposed to be limited as credit event).- (BIS, 2003)

CDs and Bank's microbehaviour : Informational Asymmetries 2/2

Empirical work

CDs use is negatively affected by moral hazard and adverse selection problems – US banks trade more liquid names

Minton, Stulz and Williamson 2009 ,

CDs reduce or not informational asymmetries of the reference asset ?

- Creation of negative credit signalling about its quality with reputational effects,
- Cost of debt of the firms with traded CDs has been improved for less risky and informational firms and has been worsened for more risky and less informational firms and less (Ashcraft & Santos, 2009).
- CDs use and firm's cost of capital issue. The aim of use matters. Hedging use lowers cost of capital and unrestricted trading increases cost of capital (Che & Sethi, 2011)

CDs and Bank's microbehaviour : Capital Management

Theory

CDs can facilitate banks to reduce their capital stock held for unexpected losses, and also can lower expected losses reducing the optimal excess capital stock (Karras, 2009)

Empirical work

US Well capitalised banks are less likely to be net buyers of credit protection **or** the ones that have less regulatory capital are more likely to use credit derivative protection - Minton, Stulz and Williamson 2009, Ashraf et al 2005, Gonzalez et al 2012)

Large US CDs banks (size effect) use advanced credit risk management tools can make them able to hold lower capital through economic capital management (diversification and correlation effects)- Goderis et al., 2005)

Systemic crisis showed that more capital held during the good times was necessary for the system to absorb the crisis

CDs and Macprudential Management: Systemic Risks and Financial Stability

Concentration

1. CDs users are big size banks with no barriers to entry, other derivatives use, and higher proportion of income from non-traditional sources which can face high distress cost (Gonzalez et al 2012, Ashraf et al 2005, Goderis et al 2005, Minton, Stulz and Williamson 2009)

○ Interconnectedness

1. Banks with increased leverage due to CDs linked with other highly leveraged banks and not only banks, ECB 2009, Gerding 2011, Heyde & Heyer, 2010).
2. CDS spread correlation is present within industries with contagion effects after credit events such reorganization or liquidation of the relevant firms (Jorion & Zhang, 2007)
3. Correlation in CDS market of reference assets and protection sellers-wrong way risk (ECB, 2009)

○ Market Liquidity

1. CDS increase credit markets liquidity, lower credit risk premia and offer investors a broader menu of assets and hedging opportunities (Duffie, 2008).
2. CDs can enhance financial stability only if credit risks are priced and managed efficiently, and market participants behaviour and risk profile must ensure that there is heterogeneity in order to avoid herd behaviour during bad market conditions which will cause systemic liquidity stress. (ECB 2009, Trichet)
3. CDs reduce the banking sector stability, especially during recession, due to banks incentive to invest in more risky and thus less liquid assets during normal times, (Heyde & Heyer, 2010).

CDs and Macroprudential Management: Systemic Risks and Financial Stability

Credit expansion and system stability

CDs have improved the EU banks' financial condition when there are used for hedging purposes (Gonzalez et al, 2012)

- A less dependent supply of credit on banks' willingness and ability to take credit risk, makes credit crunches less likely. (Rule, 2001)
- Banks by undertaking more risk through increased bank assets liquidity, create a negative impact on stability within banking system, since increased bank assets liquidity means lower cost for a bank when a crises will take place (Wagner, 2007)
- Banks can follow a very aggressive credit expansion leading to concentrated credit risk positions and having less incentive to monitor borrower's creditworthiness. (Goodhart *et al*, 1998)

Macro and Monetary aspects

- Banks with increased leverage due to CDs, increase liquidity (money supply) and can cause asset prices increases & bubbles (Gerding, 2011).
- CDs should be examined whether they can affect the monetary policy conduct, and as it is pointed out this perspective should be combined with the fact that credit default swap premia may be sensitive to financial conditions, making the economy more sensitive to credit markets (ECB 2009, Trichet, 2007).

CDs and Macroprudential Management: Systemic Risks and Financial Stability

Off-load risk to other sectors....

CDs can spread risks from banking sector to another non-bank sector.

- Different risk management approaches and different regulatory designs in different financial sectors can affect the risk redistribution. (BIS 2003, Wagner and Marsh 2006, Insterfjord 2005).
- The transfer of credit risk from the banking sector to other financial sectors (insurance companies, securities houses, hedge funds, pension funds, corporates, etc.), is preferable, because it decreases systemic risk, since non-banking systems do not demonstrate systemic risks characteristics improving financial stability, than re-allocating additional risk within banking sector, which is a destabilizing factor (Wagner and Marsh 2006, Goodhart *et al* 1998).

BUT....

- The transfer of risk makes more difficult for the creditors, credit-rating agencies, regulators and central banks to investigate the actual credit risk amount of a banking firm or the banking system (Rule, 2001).
- CDs could create concentration of risk, built up in another financial institution or others sectors of the financial system, or might not have transferred adequately and perfectly the credit risk. In that case, corporate and country failures with contagious effects can cause an amplified shock to all sectors of the financial system (ECB,2009).
- AIG case !!!!!(ECB, 2009)

CDs and Macroprudential Management: Regulatory and market initiatives

Risks

- Liquidity risk, concentration risk, short squeeze risk (shortage of reference assets), counterparty risk, model risk, rating agency risk, settlement risk, legal documentation risk (restructuring, moratorium), and other operational risks, lack of transparency and disclosure, and market integrity-manipulation.
- CDs risks increase systemic risk (Kiff et al, IMF, 2009, Mengle, 2007, Tijoe 2007, Gibson 2007, Stulz, 2010).

All leading regulators promotes the need for good risk management and transparency & disclosure and for improved regulation coordination.

Issues to be considered

- Credit ratings reliance,
- Limited rights in bankruptcy of non debtors (naked CDs), (Partnoy & Skeel, 2007)
- CDs over the counter or exchange traded dilemma, (Stulz, 2010)

Capital Regulatory Framework

- Basel II framework recognizes regulatory capital relief with the use of CDs (lower risk weights or LGDs values),
- Basel II framework does not realise any capital relief from the one of the most important economic risk benefits of CDs, and that is the portfolio default correlation and diversification effects - not mature yet!!!.
- Basel II & III frameworks with Pillar II and Pillar III (i.e. improved published data on CDs positions and net exposures) try to enforce transparency & disclosure
- Basel III strengthens more counterparty risk capital requirements than Basel II does (Default risk, CVA, Asset Value correlation charges).