

Market Shaping as an Answer to Ambiguities: The Case of Credit Derivatives

Isabelle Huault and H  l  ne Rainelli-Le Montagner

Isabelle Huault
University Paris
Dauphine, France

*Hélène Rainelli-Le
Montagner*
Sorbonne Institute
for Business
Administration,
Paris, France

Abstract

Building on Smith (1989), we describe the social processes surrounding a new financial OTC derivatives market,³ the market for credit derivatives. We show that in contradiction to more traditional derivatives, credit derivatives generate ambiguities of a cognitive and political nature. By conducting an in-depth longitudinal qualitative study from 1996 to 2004, we document the efforts made by the promoters of the market to alleviate these ambiguities and show how the size of resources needed results in the leadership of the most powerful. We thus provide a socially based explanation for the concentration and lack of transparency of the market. Our research exemplifies the contradictions between the rhetorical justification of financial innovations provided by financial theory and the empirical realities of a modern derivative market. It suggests that the actual structure of the market might best be understood by paying attention to the way different cognitive and political communities react to these contradictions.

Keywords: cognitive and political ambiguities, financial innovation, OTC markets, social construction of value, social studies of finance

Introduction

What relationship is there between the highly modern financial market for credit derivatives and the auction sale of a prize Kansas dairy cow? Although both involve some form of economic behaviour, the old-fashioned, if not exotic, ritual of auctions seems to be at odds with the style of transactions on one of the most modern and sophisticated derivatives markets. However, appearances can sometimes be deceptive.

Created around 1997, the credit derivatives market can be considered as an extension of other successful innovative financial markets, the first of which being the Chicago Board Options Exchange (CBOE). Enhanced by the valuation model proposed by Black and Scholes (1973), Chicago's options market rapidly spread around the globe.⁴ Building on this success, financial engineers soon realized the use they could make of the breakthrough and began to explore the potentialities of the new technology. Identifying the price variation of primary financial assets with 'risk', they proposed to create different kind of 'derivatives', in other

Organization
Studies
30(05): 549–575
ISSN 0170–8406
Copyright © The
Author(s), 2009.
Reprints and
permissions:
<http://www.sagepub.com.uk/journalspermissions.nav>

words financial products whose value can be related to the price of a given underlying asset through complex *à la* Black and Scholes's mathematical models. Credit derivatives result from an extension of this logic, in which the underlying asset is replaced by the amount of credit risk borne by a debt.⁵ This market has since been expanding at a fast pace to an estimated amount outstanding in December 2006 of \$28,838bn.

Yet, while the options market and its mathematical apparatus served as theoretical smelter for the invention of credit derivatives, the contrast between the empirical realities on the option and credit derivatives markets is sharp. Options are highly standardized contracts traded worldwide on organized exchanges that provide transparent and instantaneous access to prices through automatic quotation systems. On the other hand, credit derivatives are traded on an over-the-counter basis involving mainly private actors who conclude deals at nontransparent prices. In other words, while options markets appear highly standardized, liquid and transparent, the credit derivatives market remains irregular, opaque and concentrated.

How can a single theoretical apparatus produce so dissimilar empirical realities? And how can one explain the specific features observed in the market structure of credit derivatives?

We show in this paper that economic sociology can help to answer these questions. Focusing on the particular attributes of the credit derivatives themselves, we demonstrate that the absence of a simple relationship to a traded underlying asset makes these financial products truly specific, with numerous implications.

First, while the event triggering the exercise of options is clearly defined (the stock price goes above or below the exercise price), this is far from being the case as regards credit derivatives. Related to this question comes the problem of defining exactly what a credit derivative actually is. While options technology existed before the actual launching of the options market in Chicago (MacKenzie and Millo 2003), credit derivatives appeared as a brand new concept. Questions were then raised as to whether they should be considered as financial products or as insurance contracts, to which they bear some resemblance. Numerous issues depend on the answer to this question, such as who would be allowed to participate in the market and under what kind of regulation. The absence of any straightforward link to an underlying asset finally poses extremely intricate questions as regards the pricing of credit derivatives. The fact that stocks underlying options are traded on the market is crucial in the valuation formula proposed by Black and Scholes. The extension of Black and Scholes's theory to credit derivatives is indeed far from being straightforward. Overall, the specificity of credit derivatives casts a doubt on the notion that they can, like options, be used to manage 'risk', in the sense financiers grant to the word. Following Knight (1921), one traditionally defines 'risk' as a type of uncertainty that can be measured using probabilities, whereas 'uncertainty' refers to future events on which no probability assessment can reasonably be carried out. While risk in the Knightian sense seems acceptable as a description of the price variations of traded assets, the variation of the credit risk borne by a given debt might have more to do with 'uncertainty', than with 'risk'.⁶ Consequently, many ambiguities surround credit derivatives, which leads us back to the example of the Kansas dairy cow.

In his penetrating analysis of auction markets, Smith (1989) shows that many objects traded on auctions involve ambiguities of different kinds. When the goods at stake cannot be easily related to a standard market, or when ownership, allocation of goods and proper classification (Lounsbury and Crumley 2007) remain problematic, uncertainty prevails on the value of the goods to be exchanged. In such cases, Smith argues, the specific auction structure must be analysed as the result of a social process by which actors collectively attempt to resolve ambiguities. He explains the variation in type of auctions using the variations in the type of ambiguities the actors have to face.

Building on this analysis, and despite the apparent remoteness between some auction markets and modern derivatives trading, we propose to investigate the structure of the credit derivatives market by focusing on the many ambiguities faced by the actors on the market. We argue that this perspective allows a renewed understanding of the empirical contrasts observed on some derivatives markets. It is this need to solve ambiguity issues collectively (issues that differ from one market to another) that produces various cognitive and political communities that engage in a range of social processes shaping markets differently.

Conducting an in-depth qualitative study beginning with the origin of the market for credit derivatives through to the end of 2004, we propose an explanation as to why this market so greatly differs from the ideal vision of financial markets, with its atomistic and equal investors, anonymously exchanging on the basis of widely transparent prices. We show that credit derivatives pose complex definitional and valuation issues. Our contribution is to demonstrate how, while the rhetorical justification of the innovation requires the involvement of as many actors as possible, the social processes required to handle ambiguities engenders concentration and opacity.

The remainder of this article is divided into four parts. Using the main results of the social studies of finance, the first part focuses on the concept of the social construction of value on financial markets. The second part presents the research method, a longitudinal qualitative study over the period 1996–2004, taken from interviews with the principal actors of the market and an analysis of secondary data. The third part consists of a study of the development of the market for credit derivatives, and of market shaping as an answer to ambiguities. The fourth, and last, part draws the principal conclusions of the research.

1. The Social Construction of Value on Financial Markets

Financial markets are traditionally seen as the place where value is unequivocally set by the realization of Walrassian neoclassical economy. On securities exchanges, atomistic investors act as pure price takers, making their decisions on the basis of equilibrium prices. Economic sociology, however, challenges the view that value is unproblematic on financial markets and proposes to see it as the result of complex social constructions well worth exploring.

Kregel (1995) observes that Walras and Marshall modelled their divergent price theories on two real-world institutions: the Paris Bourse for Walras and the London Stock Exchange for Marshall. The diverse organization of the two stock exchanges

might explain the dissimilarity in the theories and raises the question of the evolution towards an optimal market organization. Conducting a historical analysis of the evolution of the New York and London stock exchanges, Kregel (1995) concludes that, although facing similar problems of external competition, the two stock exchanges produced responses which have led to different organizational forms showing no sign of convergence towards a uniform structure. Even in the purest case of application of neoclassical economy, the pricing process thus appears to result from a specific social organization, whose universality remains surprisingly limited.

Using NYSE, American Stock Exchange, and NASDAQ data, Zuckerman (1999) demonstrates the necessity to understand the precise social process of analysts' coverage to account for the market prices of public American firms in the stock market over the years 1985–1994. He shows that stock prices in this period were significantly discounted for firms who did not succeed in getting coverage by the securities analysts specializing in their industry. Similarly, Zuckerman (2004) explores the impact of a stock's position in the industry-based classification that analysts use on the market. Evidencing the fact that stocks that are difficult to classify exhibit more trading volume and higher volatility, he provides explanations related to the difficulty that investors of these stocks had in interpreting ambiguous economic information and converging on a common evaluation. The classificatory system can thus be seen as an imperfect functionalist social solution to market participants' uncertainty, and its impact on market prices is an unintended consequence. Focusing on arbitrage trading, Beunza et al. (2006) conducted an in-depth study of the social processes involved in these specific investment strategies. They illustrate the importance of trust and information exchange as well as the informal norms of conduct involved in the process, and show the efforts arbitrageurs must expend in order to convince others (investment bank managers, for example) of the correctness of their theories. In arbitrage strategies, price clearly appears as the product of complex and specific material and social interactions. Other works focus on the social processes involved in the slow adoption of Black and Scholes's valuation model on the options market created in Chicago in 1973 (MacKenzie and Millo 2003; Smith 2007). They show that acceptance of the model required time, the use of some scientific rhetoric (the model was highly mathematical and its promoters emphasized its modernity) and specific market conditions which financially favoured its early adopters. The Black and Scholes model was finally incorporated into technical mechanisms, thus creating the very phenomena it described (Callon 1998; MacKenzie 2004, 2006).

All these contributions of economic sociology provide in-depth analyses of the social construction of value on financial markets and suggest the existence of interrelations between market organization and the social processes required to achieve pricing. In this context, they also indicate that progress makes mastering the specific technicalities of various markets a necessity if one is to conduct fine-tuned investigations of the precise social construction of various market structures (Whitley 2006; Zelizer 1994).

We suggest using the insights provided by economic sociology on the social construction of financial markets in order to study a new, and quantitatively particularly successful market, the market for credit derivatives. Observing that this market bears strikingly little empirical resemblance to the options market, the research question we start from is thus the following: How could the theoretical apparatus developed by Black and Scholes (1973) produce such dissimilar market structures?

We propose to look for an answer to this question by studying the social construction of value that is observable on the market for credit derivatives. We argue that the starting point of the analysis is found by taking full account of the most striking difference between options on stocks and credit derivatives; this difference lies in the absence of a direct or simple link with any underlying asset in the case of credit derivatives.

We posit that this presents a certain number of practical problems for the actors of the market. A first series of questions are related to definitional issues. As noted by MacKenzie and Millo (2003), the CBOE developed on the basis of a small *ad hoc* existing market. Therefore, the definition of an option was widely agreed upon from the start. Definitional issues are more problematic in the case of credit derivatives, given the absence of any simple link with a quoted underlying asset. The triggering event, which decides whether an option on a stock will be exercised, is the passage of the stock price above or below a given exercise price. In the case of credit derivatives, the identification of the triggering event is more problematic. Another kind of definitional problem lies in the legal qualification issue. Options had a legal status when they began to be traded on the CBOE. The situation is different for credit derivatives which could be considered either as financial products or as insurance contracts with which they bear some similarities (de Goede 2004). The consequences of having one definition prevail over the other (Zelizer 1979) are significant for various categories of actors, making the alleviation of this ambiguity a crucial point for the development of the market.

A second series of difficulties is related to valuation problems. Strikingly, the performative role played by the Black and Scholes model in framing the options markets has no equivalent as regards credit derivatives. Overcoming the absence of any direct link with a traded underlying asset proves extremely difficult, given the core role played by this issue in Black and Scholes's theory. No reference model has succeeded in becoming established and the price of exchanged contracts result from nontransparent interactions between private actors which, given the concentration of the markets, are not numerous. Various actors complain about prices not being widely observable, especially for the more customized transactions, and even when they are (in the case of more standardized contracts), they are not highly reliable, as liquidity remains doubtful.

We propose to study the way in which actors in the credit derivatives market have confronted definitional and valuation issues (Smith 2007) stemming from the very peculiar design of the product. By so doing, we extend Smith's (1989) vision of auctions as inherently social processes for resolving definitional ambiguities to a more modern and sophisticated financial market. In particular, we show that the social responses of actors to the ambiguities faced actually explain the shape of the market as it now stands.

2. Methodology

This article is based on a longitudinal qualitative study of the emerging activity of credit derivatives from the mid-1990s to 2004. Our aim is to contribute to the understanding of the development and functioning of this financial market.

Inductive logic remains dominant in our research design (Lincoln and Guba 1985; Strauss and Corbin 1994) and qualitative procedures were appropriate for many reasons (Greenwood and Suddaby 2006: 31). First, the process observed in this financial market constituted a complex social setting in which causal dynamics were not immediately apparent. Second, analysis involving historical processes and such dynamic events are best studied through use of inductive techniques by which event sequences are clarified. Contextualization, vivid description, dynamic structuring of the organizational members' socially constructed world and the worldviews of the people under study (Maguire et al. 2004; Lee 1999: 43) were of critical importance.

Sources of Data

Our approach focuses on how French actors took part in the development of the market. Among the 75 financial institutions surveyed by Fitch Ratings in 2006⁷ as actors playing a major role in the credit derivatives market worldwide, three French banks (BNP Paribas, Société Générale and Calyon) consistently rank between 10th and 22nd from 2002 to 2005. French banks are acknowledged in Fitch Ratings' special report (2006) to be 'the biggest players in the European Credit Derivatives market'. Moreover, the type of study conducted in this paper requires a refined analysis of the institutional context, which is difficult to achieve on a global basis. French actors offer an interesting standpoint from which to understand the structuring of the European Credit Derivatives Market.

Although the research covers a 10-year period of development of the market, our interviews were conducted during one year and are based on a retrospective analysis. This methodology has its disadvantages (MacKenzie and Millo 2003: 112). In contrast to studies that use participant or direct observation (Abolafia 1996; Jacobides 2005), there is a risk of *ex-post* rationalization or memory bias in retrospective interviews. However, we drew upon numerous other sources of data (secondary sources such as documents, archival materials and professional press articles) allowing us to gain an in-depth knowledge of this field. The opportunity to compare and contrast the different positions of diverse actors in order to obtain a triangulated cross-section provided a certain degree of control over results by widening the range of data sources.

Informants

The central activity for data collection was individual interviews. As in MacKenzie and Millo (2003) and MacKenzie (1990), interviewing was necessary because neither financial/trade press sources nor archival sources were sufficient in addressing our research questions. Various categories of actors were interviewed between 2004 and 2005: traders and market practitioners in banks, regulators and experts in Paris and London. The actors interviewed were members of la Commission Bancaire (the Banking Commission), la Commission de Contrôle des Assurances (the Insurance Control Commission), l'Autorité de Régulation des Marchés Financiers (the Financial Market Regulating Authority, the SEC equivalent), the ISDA⁸ and various banks (Société Générale, BNP Paribas, Exane Asset Management, Fortis Banque). Financial market experts, legal experts and economists were also interviewed. A total of 35 interviews

were conducted: 8 with the regulators, 14 with traders from investment banks, 4 with mutual and hedge funds, 3 with insurance companies, 2 with members of ISDA and 4 with experts. Interviews were semi-structured and focused upon the most important actors in the market, the analysis of their activities and their relationship with regulatory and normalization institutions. The five main question areas were: What was the origin of the market? What type of resistance did the banks meet in developing this new market? What were the main crises and events in this market? What are the relationships between the actors? What are the main operating routines in this market?

Interviews lasted between 1½ and 3 hours and were taped and transcribed. All the interviews involved the two researchers of this study (see Appendix 1 for a complete list of interviews).

Secondary Sources

Many categories of archival information were consulted. We reviewed the studies of the Banking Commission in France, Fitch Ratings publications, Bank of England publications, Bank of International Settlements and documents from ISDA (see Appendix 2 for a complete list of documents consulted). These materials confirmed the chronology of events, gave details not available from interviews and provided textual accounts of debates and discussions.

Secondary sources also included a review of press articles. The criteria of specialization of the journals in the domain of financial information were used for selection. Three French professional sources were chosen: *La Tribune*, *l'Agefi* and the journal *Banque* (*Banque Magazine*, *Banque et Droit*, *Banque et Marché*). These reviews are those that are mainly read by the French professionals of financial markets. The articles were chosen from the study period 1996–2004. 1996 was the date from which the French media started to publish articles on credit derivatives. In total, 199 articles made up our database, beginning with research on the term ‘credit derivative’. Through these documents, we were able to reconstitute events.

Data Analysis

Following Miles and Huberman (1994) and Yin (1989), we arranged the data into chronological account in order to produce a ‘facts database’. We then tried to capture the ‘justificatory accounts’ of different actors (Greenwood and Suddaby 2006: 32) engaged in the development of this market.

One of the authors, a finance specialist, conducted an analysis of these accounts, first identifying sentences and words commonly used by actors to justify their activity and to explain the growth of the market. For example, references to *risk management* and *diversification of risks*; but also references to *size*, *volume of exchanges*, and *market liquidity* were made very frequently by banks. We identified an initial set of narratives, reviewed them carefully and interpreted the data using what we knew about the subject based on documents, press articles and interviews (Berg 2004; Greenwood and Suddaby 2006: 32). We were then able to analyse the way actors handled ambiguities. We focused on five main themes. The first three refer to definitional problems: (1) economic justification of the market, i.e. the efforts to show that credit derivatives are an instrument of risk

management; (2) lobbying dynamics, i.e. the efforts made by banks to promote the product, especially through legal qualification; and (3) normalization and valorization processes, i.e. the will of the actors to give credit derivatives a recognizable framework and valorization devices. The following two themes refer to the constitution of communities on this market: (4) heterogeneity of cultural and technical equipment of actors, i.e. the absence of a common cognitive framework for the actors of the market; and (5) conflicts of interests, i.e. the tensions and political conflicts between actors.

Then we used other data sources to verify the categories, in particular professional press articles. These data were collected after we had found the emerging themes from interviews, documents and reports. From the 199 articles analysed (see Appendix 3), we created a dictionary for the entire corpus using computer-assisted textual analysis software (SPAD-T). We obtained 8854 words, which were organized into a dictionary of 73 words (see Appendix 4). It was then possible to verify the main actors of the market and their specific vocabulary. Based on this analysis, we observed that only certain types of questions are more particularly put forward by certain types of actors.

3. Case Analysis

The development of the credit derivatives market is presented first. We then go on to analyse the market-shaping process that results from the different ambiguities the actors must handle.

History and Development

The first credit derivatives appeared in the early 1990s in the United States. Derivatives are typically financial instruments which are related to a risk, require little or no initial investments and may not be settled. While for interest rate swaps, the risk resides in the movements of interest rates, and for commodity derivatives in commodity price, credit derivatives would be written on the general credit risk of a reference entity. This risk would be materialized by the occurrence of certain events, called *credit events*, which include bankruptcy, failure to pay, restructuring, etc. In practice, the innovation resides in isolating the credit risk from a loan in order to be able to trade it on the market. In this way, the creditor (purchaser of the protection) can transfer the associated credit risk to another party (the vendor of the protection) while still retaining the debt on his/her balance sheet. Typically, the protection buyer will pay a certain premium to the protection seller, receiving compensation in the case where a credit event occurs. Theoretically, credit derivatives are also innovative for another reason. While they result from an extension of the standard derivatives technology, they do not rely straightforwardly on a traded underlying asset.

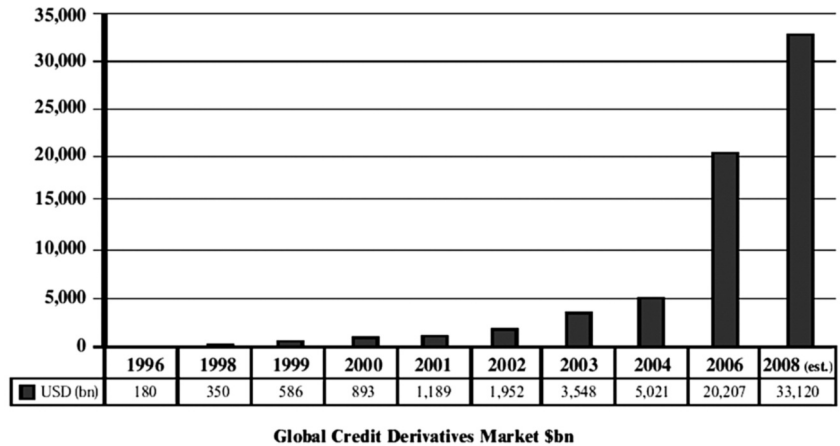
The principal actors in this market are large investment banks, insurance companies and mutual fund companies.⁹ Market information is based on estimates or surveys among participants and these estimates differ greatly. While investment banks primarily act as protection buyers to hedge their own exposure, the development of the market also allows them to sell protection according to their anticipations of the credit risk of various reference entities. Insurance companies

Table 1. Summary of Main Themes and Data Sources with Illustrations & Verbatims

	Themes	Data sources	Verbatims or illustrations
<i>Definitional issues</i>	Economic justification	Interviews with traders and economic experts	'This is a question of diversification' 'The credit derivatives market contributed much in halting the systematic risk'
	Lobbying dynamics	Press articles Books and reports (Ex: Fitch's inquiries) Interviews with regulators, traders, jurists and members of ISDA	Emphasis on risk management and risk allocation Statistics on the development of the market 'Our lobbying achieved its target. The legal qualification debate has been resolved' 'The ISDA has colossal clout and they lobby the regulators'
		Books and reports	A law thesis devoted to the question of the legal qualification of the product and that reflects the terms of the debates
		Press articles	Emphasis on debates about the legal qualification of the product and about the risk diminution provided by credit derivatives
	Normalization and valorization processes	Interviews with traders, ISDA and experts	'The first market problem was the absence of formalization of frameworks and definitions' 'Market techniques have been standardized, the ISDA has declared what options are possible' Definition of the Master Agreement and credit definitions
<i>Cognitive and political communities</i>	Heterogeneity of cultural and technical equipment of actors	ISDA reports Interviews with mutual and hedge funds, insurance companies, banks	'The market has been well accepted by the actors. The regulator, on the other hand, is less convinced' 'It has to be said that it is a market of whodunits who have years of study behind them, who are engineers. They find it interesting because it's complicated and that credit derivatives are funnier than interest rate derivatives' 'Bankers have often overcharged insurers who were not aware of the size of the risk because they didn't have enough technical knowledge'
	Conflicts of interests	Interviews with traders, regulators, insurance companies, mutual funds	'The insurance companies do not see any real interest in this market, they have the impression that the market is not very liquid, has not reached maturity, and they are not very keen. Insurance companies are not promoters of credit derivatives'
		Press articles	Transcription of debates between banks, insurance companies, regulators and mutual funds

Source: Inspired from Greenwood and Suddaby, 2006: 33

Figure 1.
Global Evolution of
Credit Derivatives
Market



Source: From the British Bankers' Association Credit Derivatives Report 2006

and mutual funds are typically protection sellers, using credit derivatives as an instrument of diversification, which they hope would generate interesting returns.

Other significant actors are regulators, who play an important role on the market. In France, they are organized in distinct bodies for insurance companies (Commission de Contrôle des Assurances), for banks (Commission Bancaire) and for management companies (Autorité des Marchés Financiers – AMF). The national regulators are also organized into international authorities, as part of the Joint Forum created in 1999.

Finally, the particular role played by the ISDA in the promotion and the development of the market should be noted. This global trade association representing leading participants in the over-the-counter (OTC) derivatives markets has over 650 member institutions worldwide. As we shall see, its role in the development of new OTC markets is crucial¹⁰ and mainly revolves around documentation and promotion of new products.

While the appearance of the first true credit derivative is difficult to trace back, 1997 can be chosen as the starting point for the development of the market, at least in Europe. That year, JP Morgan proposed a reference model to price and handle credit derivatives, the CreditMetrics model. In England, the ISDA had credit derivatives legally acknowledged as financial instruments, which launched the process of market development. Its ensuing growth was extremely rapid. From outstanding loans of 180 billion dollars in 1997, the notional amounts on which the derivative products are written, reached a record volume of 28,838 billion dollars in 2006, according to the Bank of International Settlements statistics. Estimates for the coming years suggest sustained growth (see Figure 1). The chronology in Appendix 5 reveals the main steps of the development of the market.

It must be noted that despite the great number of potential actors, the market remains extremely concentrated. A survey carried out on a sample of 27 companies in 2004 by the Banking Commission, the Insurance Controlling Commission and the Financial Market Authority helped to reveal the structure of the market as well as the concentration on the French market.

Table 2.
Credit Derivatives
Notional Amounts
per Category of
Actors (in %) by the
End of June 2003

	Banks	Insurance companies	Mutual funds
Purchase of protection	99.4%	0.05%	0.55%
Sale of protection	99.5%	0.4%	0.1%

Source: Banque de France, RSF. Results of a French survey on instruments of transfer of credit risk, June 2004.

One figure in itself reveals the high concentration of the global market for credit derivatives. Six main banks alone continue to realize 50% of worldwide transactions. According to Fitch Ratings, the top ten counterparts in the world (all banks) represent 86% of the sold and bought volume totals.¹¹

How can this concentration be explained? The next section proposes to look for an answer in the specific social processes observable on the credit derivatives market.

Market Structuring as an Answer to Ambiguities

Although credit derivatives were designed within the paradigm of the financial theory of risk, they entail a number of difficulties that were largely overlooked by their creators. For example, they were far from being well defined from the start. Diffusion was hampered by definitional issues and contractual uncertainties. Transparency appeared questionable as the first deals were made on a private basis within a circle involving but a few investment banks. It thus soon became apparent that the market for credit derivatives did not naturally match the theoretical description used to justify its creation, and that convergence could only be obtained through commitment and efforts on the part of the product promoters. These efforts can best be understood as attempts to deal with the multiple and fundamental ambiguities confronted by the various market actors. Two main problems remained: definitional issues needed to be solved and product diffusion enhanced.

Problems of Definition

One of the peculiarities of the credit derivatives financial innovation is that the very definition of the product was at the beginning (and to a certain extent still is) problematic. Definitional ambiguities had to be removed at three different levels.

The first is that of legal qualification. The specificity of credit risk – a risk materialized, not by the price variation of an underlying asset but by the arrival of a specific event – could lead one to consider credit derivatives as a kind of insurance contract. It was incumbent upon banks, which were the promoters of the product, to combat this vision for two reasons. Insurance contracts could only be treated by insurance companies in most European countries and therefore could not be treated by banking actors. In addition, the qualification of credit derivatives in financial products would allow mutual funds, especially hedge funds, to access these products. This was seen as necessary for the development of a market which, in order to exist, needs sellers as well as buyers of protection.

Promoters of credit derivatives chose to approach this issue by gathering within the ISDA. In June 1997 the ISDA succeeded in obtaining the legal decision they

wanted from Robin Potts QC,¹² mainly that credit default swaps were not insurance contracts but financial products. This was unanimously acknowledged as one of the great successes of the organization; what was at stake was of primordial importance.

'This point is essential as a bank cannot sell insurance. Without this "Potts' opinion", there would have been no market at all. This clarification was essential. The question of the qualification of the product had quickly been posed by the Financial Law Panel of the Bank of England (the regulator at that time).' (A representative of the ISDA)

The intensity of the debate around the legal qualification of credit derivatives was also illustrated in France when, in 1999, a law thesis was devoted to the question (Gauvin 1999). Later, in 2003, A. Gauvin maintained that credit derivatives could come under the gaming and gambling laws. Gauvin noted the way in which both French and British legal systems adopted legal qualification for financial products, and attributed the result to the victory of economic matters over purely legal thinking:

'The strength of financial stakes which [derivative products] represent is such that their being put into question in a given financial place or a particular country could have harmful consequences for the banking industry and local finance.'

In France, the debate on the legal qualification of credit derivatives had also become focused on the possibility for mutual fund companies (OPCVM) to use credit derivatives. This access of mutual funds, of critical importance to promoters of the product, was validated by decree on 10 December 2002 after four years of discussions and consultations. It expressively authorized mutual funds to sign credit derivatives as over-the-counter contracts. The ambiguity on legal qualification thus appeared to have been the first issue that needed solving. While several potential responses to the problem could have been envisaged, the prevailing solution was the one promoted by the community of investment banks, collectively acting to lobby the regulator. This social process is seen by promoters of the market as having yielded efficient results.

'Our lobbying achieved its goal: credit derivatives are no longer qualified as credit operations and no longer come under the banking monopoly. The legal qualification debate has been resolved.' (A trader)

However, it is highly likely that non-bank actors noticed whose victory it actually was. From the beginning, and continuing through to the resolution of the legal qualification issue, credit derivatives were taken in hand by a specific cognitive and political community, that of banks as opposed to other actors of the market.

A second definitional ambiguity arose from the lack of standardization which prevailed when the market was created. Over-the-counter markets cannot develop without precise definitions of how the products will work in practice. Contractual risk, if too high, will hamper the take-off of any financial innovation. As regards credit derivatives, those who decided to take this problem into their own hands were obviously the promoters of the market, and again they chose to handle it using the far-reaching experience that ISDA had developed over the years on other OTC markets. The process of standardization, however, was neither simple nor brief. During the development of the market, generally as a result of legal disagreements, the ISDA was forced to change its standards and norms several times.

'The pragmatic approach of the ISDA must be praised: every crisis, incident or dispute is an opportunity to reconsider and to improve the documentation. The ISDA has demonstrated its great flexibility and its ability to adapt to events.' (A legal expert)

'Certain crises and disputes, such as the Consecro, RealTrack, Parmalat, and LTCM affairs and the crisis in Argentina, meant we had to re-examine the documentation. The ISDA has worked very hard to clarify things – in particular those which concern the credit event that triggers credit derivative payments, as we have examples of cases in the U.S. where credit derivatives payments were unduly asked – without the default being acknowledged by the two parties.' (An ISDA representative)

This long-lasting process resulted in the *2002 ISDA Master Agreement* becoming the standard form governing future transactions. On 10 February 2003, the ISDA again renewed its documentation relating to credit derivatives by publishing new definitions, the *2003 ISDA Credit Definitions*.

'The first market problem was the absence of formalization of frameworks and definitions. It was therefore urgent to put ISDA documentation in place. ISDA norms represent a common language.' (A trader)

A third, and last, definitional issue of the credit derivatives market, which proved especially intricate, was that of pricing. Regarding this question, a discrepancy materialized between what the theory predicted and what could be done in practice. The financial theory of risk used by credit derivatives designers assumes that credit risk can be assimilated to a typical financial risk. As a result, credit derivatives are theoretically to be valued using the conventional mathematical models. However, setting a tariff on credit risk which materializes through credit events is practically very difficult. The failure of the CreditMetrics model publicized, on 2 April 1997, by JP Morgan, demonstrates this problem. 'The first portfolio model destined for the management of credit risk'¹³ was supposed to facilitate understanding and use of the new credit risk management instruments. This ambitious project failed and CreditMetrics never played the unifying role that JP Morgan had dreamed of. Banks continued to resort to various internal models, implicitly acknowledging the failure of their attempt to clarify the valorization ambiguity inherent in credit derivatives.¹⁴

'There are worries about mispricing as there are no good pricing models. Prudence is essential in a context where one is frightened of the weakening of the financial system worldwide. The technique is quite simple when the underlying asset is unique and when it is quoted on an Exchange, but otherwise we don't have adequate instruments.' (A regulator)

Although the ISDA fought particularly to obtain recognition of internal evaluation models¹⁵ by the regulators of the Basel 2 framework, the combat ended in defeat. It led, however, to renewed efforts in Basel 3.

'Within the framework of a working group preparing Basel 3, the ISDA will produce a study showing the growing convergence of models which increasingly achieve the same results. Concerning the model selected by Basel 2, the ISDA is not in a position to react.' (A representative of the ISDA)

As things stand at present, the absence of a consensus regarding pricing method most likely weakens banks' capacity to rally the other actors of the market around the idea that credit derivatives are beneficial to all. This leads us to the second broad category of uncertainty that actors of the credit derivatives markets had to face.

Who Is To Benefit from the Market?

The rhetorical justification for the creation of credit derivatives relies on the general assertion of the financial theory of risk, according to which the marketization of new risks is inherently advantageous. It is supposed to be beneficial to all financial actors, and more generally, to the financial and economic system as a whole. The case of credit derivatives, however, shows that in reality, ambiguities might remain as to who is to benefit from the development of the market. The interest of the product for the banks promoting it was obvious. First, since 1988 and the Cooke ratio implementation,¹⁶ international regulation had made it obligatory for banks to cover the risk of their assets with sufficient capital. This lessens the profitability for their shareholders, which induced banks to transfer part of their risk to markets, making so called risk management a strategic activity. In addition, credit derivatives also offered them the more traditional advantages of financial innovations. It might be sold to new customers with comfortable margins, as the product was new, complex and at least to begin with, not offered by all competitors. While promoters have thus a conspicuous interest in diffusing the innovation to sellers, as well as buyers of protection, and in sharing the risk as much as possible, other actors tended to suspect the innovation to be potentially detrimental to all but its promoters. The promoters, therefore, were led to provide varied responses to alleviate suspicion.

One category of customer was particularly resistant to the effort of promoters. Insurers tended to suspect American banks of having created the market in the first place in order to transfer their bad risks to European insurance companies, who would be at a disadvantage through the asymmetry of information.

'Bankers have often overcharged insurers who were not aware of the size of the risk because they didn't have enough technical knowledge.' (A regulator)

This circumspect attitude, which seemed to have originated from a few unfortunate affairs dating from the early days of the market involving reinsurers and insurers,¹⁷ led them to almost completely leave the credit derivatives market which had become quite illegitimate within the insurance industry.

'The insurance companies do not see any real interest in this market. They have the impression that the market is not very liquid, has not reached maturity, and they are not very enthusiastic. Insurance companies are not promoters of credit derivatives.' (A regulator)

'These products are somewhat diabolized by insurance companies. They are not put to the forefront in financial communication. Insurance companies are afraid that their stock exchange price will fall if they communicate about using credit derivatives; there is considerable mistrust. It must be said that the heart of the job of insurance companies is to provide people with the rates they promised.' (A regulator)

In the pursuit of their own interests, banks were also confronted with the regulators. Regulatory capital had indeed been defined in order to meet the regulators' concern about systemic risk. Regulators were thus bound to be cautious in the face of credit derivatives and convincing them was not an easy task, all the less so as their concerns were built on the potential opportunism on the part of credit derivatives sellers.

'Obviously, the problem is the trader who sells nuclear waste, and then once the bloke is irradiated he finds the trader has already taken off with his bonus in his pocket.' (A trader)

'We no longer know where the risk is with credit derivatives. The asymmetry of information between vendor and buyer is considerable. Some buyers do not even know what they are holding in their hands.' (A regulator)

'The public at large does not have direct access to credit derivatives and is not always aware of the amount of risk that it represents. The difficulty is to get developed and adapted financial information. This is true for all markets but more so for credit derivatives as banks keep their "secret of fabrication" close to their chest. This is a technique which justifies having reference documents, and as the banks release little information, there is an absence of formatting.' (A regulator)

'The risk of asymmetries of information is real as the bank retains a higher degree of information than its correspondent. The buyers do not really have the same means at their disposition as vendors of risk. ... the question is: are we not again going to transfer risks towards households and businesses? ... In a period of prosperity, they [credit derivatives] boost performance, which attracts subscribers. Only there have been examples of unfortunate experiences in certain European countries (for example in Italy with Parmalat shares and individual investors turned to the banks for explanations) ... The Italian example is not reassuring from this point of view.' (A regulator)

Promoters of the product did not remain inactive in the face of suspicion. They engaged in various endeavours to alleviate the ambiguity as to who was to benefit from the market and to reassure other actors regarding potential opportunism on their part.

First, an analysis of the specialized press permits quantitative evaluation of the effort made by banks to convince potential clients. Between 1996 and 2004, 77% of the articles written by professional financiers, publishing as experts in the specialized press, were devoted to the presentation of credit derivatives as instruments of excellent risk management performance, with 35% of the articles coming explicitly from banks (see Appendix 3). The advantages of credit derivatives for potential clients were put forward in terms of diversification and profitability.

In a discussion, when one of his colleagues stated that the market starting point was built on the desire of large investment banks to respond to the tightening of international banking regulations in 1998, a representative of the ISDA stated:

'I am not sure that this was the starting point The market existed before Another reason for the birth of the market was the relative blockage of the interbanking market. Banks played on a market of concentrated swaps and the counterparty risks were great. Credit derivatives appeared as an instrument of risk diversification It was also one way of offering certain clients higher returns by proposing tailor-made products.' (An ISDA representative)

Other affirmative voices supported the same view:

'What is important is to create new products for investors. We are always looking for new kinds of assets. It is a question of diversification.' (A trader)

'To begin with, it was a question of hedging. Then followed acceleration in the market which came from the question of investments.' (A trader)

Second, banks got actively involved in collaborative actions to enhance market liquidity and, as a consequence, price transparency. They resorted to two main actions.

In 2002, some banks joined together to produce standard product indices. The construction of indices is common practice in financial markets and it was hoped that credit risk indices would improve price transparency by giving clear signals to the market on the credit risk market price. The idea was to use the relative

standardization of the leading product – the Credit Default Swap (CDS) – in order to create a basket of CDSs dealt worldwide, and to furnish an average price of the operation which could be referred to at any moment. Two of the main promoters, JP Morgan and Morgan Stanley, were the first to independently launch two indices constructed from the CDS market in 2002. In 2003, these two indices joined together and created the TRAC-X index, whereas another group of banks (which included Deutsche Bank, ABN Amro, then Citigroup and Société Générale) launched, in competition, an index called iBOXX. In April 2004, the two competing indices joined up again. What we observe is thus an interbank alliance, created to tackle the perceived ambiguity on the reliability of market prices.

Enhancing perceived transparency was also attempted through the organization of the market into two distinct market segments, with the first participating in the liquidity of the second. The first segment is one of standardized products, where the aim is to develop and maintain transparency and liquidity. CDS represent the majority of that segment, which investment banks include in what they call flow markets.

‘Market techniques have been standardized. The ISDA has declared what options are possible. We chose termly dates in order to have more liquidity.’ (A trader)

‘In 2003, CDS trading joined together with bond trading: i.e. flow credit.’ (A trader)

As the development of this standardized segment impairs margins, investment banks also continue to develop a second market segment, consisting of structured products, otherwise known as tailor-made. The liquidity of the less profitable flow segment, if sufficient, is expected to warrant the applicability of the traditional financial theory of risk to credit risk by providing an observable market price for risk. Practically, despite the efforts to produce market prices that could serve as quotes (which are transmitted to all banks through means fine-tuned by Lombard, BNP in the form of a Reuters page, or by JP Morgan in the form of a Bloomberg function) doubt remains on the reliability of the obtained data.

‘It’s an over-the-counter market, more or less liquid. The sales argument here is one of liquidity but it’s wishful thinking.’ (A regulator)

‘Each bank to its method: mark-to-market prices remain somewhat divergent.’ (A trader)

Third, banks engaged in lobbying actions towards the regulators. National regulators were targeted first.

‘At the beginning, it was a question of credit establishments wanting credit derivatives market instruments legally recognized. Banks laid siege on supervisors to obtain a reduction in capital charges off their balance sheet To begin with the approach was not coordinated internationally. There were informal discussions but each country chose its own way of dealing.’ (A representative of the Commission Bancaire)

At the international level, banks again chose to put their weight against the regulators within the ISDA. The ISDA had very significant means at its disposition:

‘At a global level the ISDA has colossal clout, they pay lawyers worldwide, all the profession joins, and they lobby the regulators.’ (A trader)

At the organization level, the construction of demand and the alleviation of suspicion on the part of other actors required huge investments of technical and

human resources. Most of the actions taken emanated from the small number of sufficiently large and powerful investment banks. In this respect, the Société Générale appeared as a particularly well-equipped actor among French banks, whereas JP Morgan represented the precursor in the promotion of the worldwide credit derivatives market. Thanks to their technical and human resources, these two banks had at their disposition a particularly vast capacity for promotion, according them a key role in this market.

'The Société Générale is a very powerful actor which does a lot of lobbying. The doctrine of the Fédération des Banques Françaises comes from the Société Générale lobby. They impose their way of seeing things on everyone and some – mostly competitors – complain about this fact.' (A legal expert)

'The Société Générale has battalions of legal experts just like the American banks, a large number of legal PhDs, who are really very good. Not only do they master the product technically but they are well organized.' (A legal expert)

'There has been an effort of systematic promotion by JP Morgan. They have been consistent in their efforts, putting huge resources into manpower and technology. They very quickly became rapid in dealing with these products.' (A trader)

All these resources seemed necessary both to convince potential clients and to socially construct the demand for credit derivatives. Significantly, promoters of the product see cognitive issues as central to the process and sometimes as their main restriction.

'It has to be said that it is a market of "nerds" who have years of study behind them, who are engineers. They find it interesting because it's complicated and that credit derivatives are more engaging than interest rate derivatives.' (A trader)

'Very few people really understand what credit derivatives really are To establish a legitimacy of the market, we lobbied, did demonstrations to explain how it worked to clients, we organized conferences within the *AGEFI* framework – a formidable lobbying mechanism. We also published articles in the *AGEFI* and in *Banque et Droit*. We did everything, in terms of clients – especially mutual fund companies.' (A trader)

'It was primarily a question of discussing with clients, of education, of de-mystifying or popularizing complicated documentation.' (A trader)

Bankers complained about the way insurance companies regarded credit derivatives, seeing them as hardly concerned by the ISDA process and just as satisfied to apply their usual regulations. They explained the long-lasting tendency of insurers to consider credit derivatives as rather 'heretical' by emphasizing cultural determinants. They also complain about the cultural apprehension of the regulator:

'This is a new activity, very technical, conceptually disconcerting. One has to justify oneself frequently to the regulators and each other's positions are often restricting when one considers the complexity of the product.' (A trader)

'The regulator does not understand the product very well; he doesn't say it's not allowed but he doesn't say it is allowed either.' (A legal expert)

'The regulator's power to bring prejudice is quite strong. The regulatory environment can be considered as an obstacle, which slows business down. The biggest obstacle, in any case, is the cultural apprehension of many people who spend a disproportionate amount of time in controlling credit derivatives.' (A trader)

What our analysis shows, however, is that at the heart of the diffusion issue is the unresolved question of who is going to benefit from the innovation. As long

as it is not handled collectively by the different categories of actors, but taken in charge by a given category of them, this category is likely to be perceived by others as a political community defending its own interest. The refusal by the Spanish authorities to allow mutual funds in Spain to subscribe to credit derivatives is an example of the limited trust granted by regulators to investment banks in general. Similarly, in France, the AMF gave authorization very prudently. Only 20 mutual fund companies out of the 520 operating in Paris have so far received authorization.

To summarize, while the vision borne by the financial theory of risk is that any innovation of interest should be readily adopted by various categories of actors of the market, the empirical realities of the market for credit derivatives appears fundamentally different. Diffusion meets several obstacles, which requires collaborative commitment and endeavour from promoters of the product. The size of the resources needed brings the most powerful of them to take the lead and act as main drivers of the entire process. The actual structure of the market with its definitions, standards, indices and segments can be seen as the functionalist result of their endeavours. Moreover, our analysis evidences the political nature of the ambiguities at stake. The fact that these ambiguities are dealt with by the main investment banks, acting as what is perceived by other actors of the market as a specific cognitive and political community, provides an explanation for the relatively high concentration of the market.

Discussion

In 1993, in a speech which has since often been quoted, Charles Sanford Jr., the CEO of Bankers Trust, put forward his vision of the financial market in 2020. Traditional finance would be replaced by 'particle' finance creating progress of the same nature as that brought about by quantum physics and molecular biology. In dividing up classical financial assets (a loan note, for instance) into risk particles (interest rate risk on the one hand, credit risk on the other), this new finance would permit us to 'create order from apparent disorder', 'the amount of unwanted risk borne by individuals, institutions and the system as a whole' would be reduced in size. Even though credit derivatives were just emerging, and even though this wished-for new finance seemed to him to be a distant aim at the moment of his speech, Charles Sanford Jr. named credit derivatives as the pioneers of this new way of envisioning finance and the economy.

In this paper, we have evidenced the discrepancy between this ideal vision and the empirical reality of the market for credit derivatives. We have proposed to explain this gap by taking into full account the specific features of the product. While credit derivatives result from an extension of the financial theory of risk developed on the basis of the Black and Scholes model, they fundamentally differ from options in that they bear no simple link with a traded underlying asset. Promoters of the product, by sticking to their theoretical apparatus, largely overlook the implications of this specificity. We demonstrate that many dimensions they take for granted are, in fact, rendered ambiguous by the very design of the product. Credit derivatives are not easily defined, categorized, legally qualified or

valorized. They pose questions regarding who should be allowed to participate in the market and how ownership is transferred. They induce doubts concerning who will eventually benefit from the development of the market.

Facing these practical difficulties, a specific category of actors has had to collectively organize and decide on the means by which these questions can be handled. The most interested and well-equipped promoters of the market take the lead and jointly commit to a standardization and normalization processes. They carry on collaborative actions to impose their 'calculative device' (Callon and Muniesa 2005), to promote market liquidity and to alleviate suspicions from other actors. In so doing, they construct a cognitive and political community, taking the role of creator of the rules of the game (Fligstein 2001). These dynamics cannot be expected to favour the adhesion of other actors who feel technically handicapped and uncertain about the potential opportunism of the small group of active promoters. Hence, the ambiguities posed by credit derivatives are solved by social processes which eventually shape the market in such a way that opacity and concentration are practically unavoidable. Remember that the theoretical rationalization of promoters of the product relies on the identification of credit risk to a classical market risk, which implicitly assumes atomistic, numerous and anonymous actors exchanging on the basis of highly transparent prices produced by a pure supply and demand mechanism. Ultimately then, what we observe is a sharp contradiction between the empirical reality and the rhetorical justification of credit derivatives as financial innovation.

Our paper contributes to the understanding of financial markets in several ways. First, our study builds on Smith (1989) by acknowledging the crucial role played by uncertainty on the market for credit derivatives. Showing how ambiguities materialize through time, we provide a historical perspective in which the market appears as a functionalist work-in-progress solution to definitional and valorization uncertainties, as opposed to a given device assumed to manage well-defined risks. In this perspective, the conception of markets as definitional practices (Smith 2007) fits the market for credit derivatives extremely well. However, in contrast to Smith's (1989) description of auction markets, the structure of credit derivatives trading cannot be accounted for by recognition of cognitive ambiguities only. Ambiguities of a political nature must be added to the analysis. The manner in which these two types of ambiguities are handled by those who have the greatest interest in the development of the market, and the most resources to devote to the cause, is central in explaining the actual structure of the market, its concentration and lack of transparency. Although often overlooked or denied by the most active market promoters, this political dimension is recognized by other actors.

Second, our paper emphasizes the role played by academic knowledge in the structuring of modern financial markets (Whitley 1986). Credit derivatives would not have seen the light were it not for the conceptual and computational matrix provided by Black, Fisher and Scholes (1973) and their followers. In that perspective, the entire process of market promotion evidenced in this paper could be described as an attempt to perform the theory (Callon 1998; MacKenzie and Millo 2003). Although the definition of performativity is currently strongly debated (MacKenzie 2006; MacKenzie et al. 2007), efforts of market promoters to make the credit derivatives market more like its depiction by the financial theory of risk¹⁸

(index creation, segment organization of the market, promotion of transparency and liquidity) seem to fit quite well with the empirical reality we observed.

Yet, in contradiction with other works (MacKenzie and Millo 2003), what we evidence here is the relative failure of such an attempt. Our work provides some insight into the causes of this. When the setting surrounding a financial product is too distanced from the ideal assumptions of the financial theory of risk, it might prove extremely difficult for the market promoters to transform actors' perceptions from 'uncertainties' into 'risks'. Whatever the significance of the resources devoted (Fligstein 2001), the power of large financial institutions seems to find a very serious limitation here. This suggests that there may be a limit to the extension of the financial theory to the objectification (LiPuma and Lee 2005) and marketization of new risks. It can be expected that attempts at having CAT-bonds, risks of attack or rights to pollute exchanged in financial markets to be hampered if actors feel that uncertainties are too real for them to be considered under a crude risk perspective, or if market promoters fail to push the market towards an acceptable approximation of the theoretical assumptions. According to Beck (1990: 61), risks might be seen as 'the interminable needs sought by economists', because needs that are open to interpretation can be proliferated endlessly (Beck 1992, 2006). In this paper, we show that the interpretation provided by the financial theory of risk might have more limited applicability than is generally acknowledged.

Finally, our paper demonstrates the role played by private actors in the regulating and normalizing processes. Their lobbying capacity is a key issue in trying to ensure that the strongest actors' interests prevail. General interest defence of sophisticated over-the-counter markets thus remains a question. Are the regulators in a position to guarantee the preservation of the common good? Who is responsible in times of crisis (Sassen 2005)? Observation of the social processes apparent in the credit derivatives market gives some relevance to the issue of the re-politicization of financial risks (de Goede 2004), as emphasized by the recent subprime turmoil that occurred after we conducted this study.

Notes

We are most grateful to Richard Whitley, Senior Editor, and the anonymous reviewers for their significant contribution to the improvement of the paper. We also thank Glenn Morgan, Sigrid Quack, Rodolphe Durand, Philippe Monin, Ellen O'Connor, Edith Ginglinger, Bernard Leca and participants at the EGOS 2006 colloquium in Bergen and at the EGOS 2007 colloquium in Vienna for their advice and constructive comments on earlier drafts of this article. We finally thank Esthelle Toure for research assistance.

Both authors contributed equally to this study and are listed alphabetically.

- 1 OTC (Over-the-Counter) markets are financial markets where trading occurs directly between two parties as opposed to exchange trading, which occurs on organized exchanges. While some OTC markets have enormous liquidity and transparent reporting systems, the market for credit derivatives is well known for its opacity.
- 2 BIS, Statistics on derivatives, September 2007.
- 3 Although some credit derivatives are written on corporate or sovereign bonds, those underlying assets serve only as a reference. Their price variations are not directly linked to the credit event that will trigger the exercise of the credit derivative. Other credit derivatives are written on several reference entities.
- 4 For a historical account of the notion of risk and probabilities, see Reith (1999).
- 5 Fitch Ratings, *Special Report, Global Credit Derivatives Survey*, September 2006.
- 6 International Swaps and Derivatives Association: the ISDA is a global trade association representing leading participants in the privately negotiated derivatives industry, a business

which includes interest rates, currency, commodity, credit and equity swaps, as well as related products such as caps, collars, floors and swaptions. ISDA was chartered in 1985 and numbers over 650 member institutions from 44 countries on six continents. Its board is primarily composed of banks. For a comprehensive study of the role of ISDA on international financial markets, see Morgan (2008).

- 7 See *Deutsche Bank Research*, Current issues, June 2004, Credit derivatives, effects on the stability of financial markets.
- 8 See also Morgan (2008).
- 9 Fitch Ratings, *Special Report, Global Credit Derivatives Survey*, September 2006.
- 10 Robin Potts's employer is the London-based international Law firm Allen and Overy, which shares a common address in London with the ISDA European Office, One Bishops Square, London E1 6A0.
- 11 JP Morgan Chase 2001 *Annual Report*.
- 12 This difficulty could perhaps be related to the notion that Maki (1992) termed 'isolation'. Isolation refers to the high level of abstraction of the theoretical models used in contexts that require many more details to be adequately described or fully understood (Whitley 2008).
- 13 In other terms, the doctrine of the ISDA is that it should be the banks themselves who define the method of calculating the risk represented by their activities in derivative products. Regulators remain reticent when faced with the use of internal models. The key reason for disagreement is the absence in the case of credit derivatives of an independent liquid and transparent market for credit risk.
- 14 The Cooke ratio is also known as the capital adequacy ratio. It is the limit on the risk-weighted credit exposure allowed to each financial institution depending on its capital base. From 2005, it was progressively replaced by the McDonough ratios.
- 15 The insurance and reinsurance actors have been the largest recipients of credit risk transferred from other sectors. Some regulators have expressed worries about the (re)insurance sector's growing exposure to cross-sector credit risk transfers. These worries also extended to the commercial rating agencies and other market watchers. This sparked some responses from the reinsurance industry. For example, on November 2001, the French reinsurance group SCOR had discontinued its credit derivatives insurance activities. It had increased loss provisions by 30 million euros to 131 million euros in the third quarter of 2002 and it had taken an estimated 2.5 years for the exposure to run off.
- 16 Barnesian performativity in MacKenzie's sense.

References

- | | |
|--|--|
| <p>Abolafia, Michael
1996 <i>Making markets: Opportunism and restraint on Wall Street</i>. Cambridge, MA: Harvard University Press.</p> <p>Beck, Ulrich
1990 'On the way toward an industrial society of risk'. <i>International Journal of Political Economy</i> 20: 51–69.</p> <p>Beck, Ulrich
1992 <i>Risk society: Towards a new modernity</i>. London: Sage.</p> <p>Beck, Ulrich
2006 'Living in the world risk society'. <i>Economy and Society</i> 35: 329–345.</p> <p>Berg, Bruce
2004 <i>Qualitative research methods for the social sciences</i>. Boston, MA: Allyn and Bacon.</p> <p>Beunza, Daniel, Iain Hardie and Donald MacKenzie
2006 'A price is a social thing: Towards a material sociology of arbitrage'. <i>Organization Studies</i> 27/5: 721–746.</p> | <p>Black, Fisher, and Myron Scholes
1973 'The valuation contracts and a test of market efficiency'. <i>Journal of Finance</i> 27: 399–417.</p> <p>Callon, Michel
1998 'Introduction: The embeddedness of economic markets in economics' in <i>The laws of the market</i>. Callon M. (ed), 1–57. Oxford: Blackwell.</p> <p>Callon, Michel, and Fabian Muniesa
2005 'Economic markets as calculative collective devices'. <i>Organization Studies</i> 26: 1229–1250.</p> <p>De Goede, Marieke
2004 'Repolicizing financial risk'. <i>Economy and Society</i> 33: 197–217.</p> <p>Fligstein, Neil
2001 <i>The architecture of markets: An economic sociology of 21st century capitalist societies</i>. Princeton, NJ: Princeton University Press.</p> |
|--|--|

- Gauvin, Alain
1999 *Nature et régime juridique des dérivés de crédit*, Ph.D. thesis, Sorbonne Paris 1, September 8.
- Gauvin, Alain
2003 *Droit des dérivés de crédit*, Paris: Revue Banque.
- Greenwood, Royston, and Roy Suddaby
2006 'Institutional entrepreneurship in mature fields: The big five accounting firms'. *Academy of Management Journal* 49: 27–48.
- Jacobides, Michael
2005 'Industry change through vertical disintegration: How and why markets emerged in mortgage banking'. *Academy of Management Journal* 48/3: 465–498.
- Knight, Frank
1921 *Risk, uncertainty and profit*. New York: Houghton Mifflin.
- Kregel, Jan
1995 'Neoclassical price theory, institutions, and the evolution of securities market organization'. *Economic Journal* 105: 459–470.
- Lee, Allen
1999 *Using qualitative methods in organizational research*. Thousand Oaks, CA: Sage.
- Lincoln, Yvonna, and Egon Guba
1985 *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lounsbury, Michael, and Ellen T. Crumley
2007 'New practice creation: An institutional perspective on innovation'. *Organization Studies* 28/7: 993–1012.
- LiPuma, Edward, and Benjamin Lee
2005 'Financial derivatives and the rise of circulation'. *Economy and Sociology* 34: 404–427.
- Maguire, Steve, Cynthia Hardy and Thomas Lawrence
2004 'Institutional entrepreneurship in emerging fields: HIV/AIDS treatment advocacy in Canada'. *Academy of Management Journal* 47: 657–679.
- MacKenzie, Donald
1990 *Inventing accuracy: A historical sociology of nuclear missile guidance*. Cambridge, MA: MIT Press.
- MacKenzie, Donald
2004 'The big, bad wolf and the rational market portfolio insurance, the 1987 crash and the performativity of economics'. *Economy and Society* 33: 303–334.
- MacKenzie, Donald
2006 *An engine, not a camera: How financial models shape markets*. Cambridge, MA: MIT Press.
- MacKenzie, Donald, and Yuval Millo
2003 'Constructing a market, performing theory: The historical sociology of a financial derivatives exchange'. *American Journal of Sociology* 109: 107–145.
- MacKenzie, Donald, Fabian Muniesa and Lucia Siu (eds)
2007 *Do economists make markets? On the performativity of economics*. Princeton, NJ: Princeton University Press.
- Maki, Uskali
1992 'On the methods of isolation in economics' in *Intelligibility in science: Poznan studies in the philosophy of the sciences and humanities*, vol. 26. C. Dilworth, (ed.), 319–354. Atlanta and Amsterdam: Rodopi.
- Miles Matthew, and Michael Huberman
1994 *Qualitative data analysis: An expanded sourcebook*, 2nd edn. Thousand Oaks, CA: Sage.
- Morgan, Glenn
2008 'Market formation and governance in international financial markets: The case of OTC derivatives'. *Human Relations* 61/5: 637–660.
- Reith, Gerda
1999 *The age of chance gambling in Western culture*. London: Routledge.
- Sassen, Saskia
2005 'The embeddedness of electronic markets: The case of global capital markets' in *The sociology of financial markets*. K. Knorr Cetina and A. Preda, (eds). Oxford: Oxford University Press.
- Smith, Charles
1989 *Auctions: The social construction of value*. New York: Free Press.
- Smith, Charles
2007 'Markets as definitional practices'. *Canadian Journal of Sociology* 32/1: 1–39.
- Strauss, Anselm, and Juliet Corbin
1994 'Grounded theory methodology: An overview' in *Handbook of qualitative research*. N. Denzin and Y. Lincoln, (eds), 273–285. Thousand Oaks, CA: Sage.

- | | |
|---|--|
| <p>Whitley, Richard
1986 'The transformation of business finance into financial economics: The roles of academic expansion and changes in US capital markets'. <i>Accounting, Organization and Society</i> 11/2: 171–192.</p> <p>Whitley, Richard
2006 'Understanding differences: Searching for the social processes that construct and reproduce variety in science and economic organization'. <i>Organization Studies</i> 27/8: 1153–1178.</p> <p>Whitley, Richard
2008 'Varieties of knowledge and their use'. <i>Organization Studies</i> 29/4: 581–609.</p> <p>Yin, Robert
1989 <i>Case study research: Design and methods</i>. Thousand Oaks, CA: Sage.</p> | <p>Zelizer, Viviana
1979 <i>Morals and markets: The development of life insurance in the United States</i>. New Brunswick, NJ: Transaction.</p> <p>Zelizer, Viviana
1994 <i>The social meaning of money</i>. New York: Basic Books.</p> <p>Zuckerman, Ezra
1999 'The categorical imperative: Securities analysts and the illegitimacy discount'. <i>American Journal of Sociology</i> 104/5: 1398–1438.</p> <p>Zuckerman, Ezra
2004 'Structural incoherence and stock market activity'. <i>American Sociological Review</i> 69/3: 405–432.</p> |
|---|--|

Isabelle Huault

Isabelle Huault is Professor of Organization Theory at the University Paris Dauphine (France). Her research interests are in the sociology of financial markets and institutionalization processes. She is the author/editor of several books and articles. She received her MBA from the EM Lyon Business School (France) and her PhD in management sciences from the University of Lyon 3 (France). She conducts research projects in the field of the social studies of finance and the social construction of markets and organizations.
Address: Isabelle Huault, Université de Paris Dauphine, DRM, Place du Maréchal de Lattre de Tassigny, 75775 Paris cedex 16, France.
Email: isabelle.huault@dauphine.fr

Hélène Rainelli-Le Montagner

Hélène Rainelli-Le Montagner is Professor of Finance at the Sorbonne Institute for Business Administration. Her research interests are in the sociology of financial markets, in the organization of the financial industry and in the epistemology of finance. She received her MBA from the EM Lyon Business School (France), her MSc in Finance from the University of Lancaster Management School (UK) and her PhD in management sciences from the University of Rennes (France). She has written on the pricing of interest rate swaps and, more recently, on the nature of financial theory and the social construction of financial markets.
Address: Hélène Rainelli-Le Montagner, IAE de Paris, Université Paris I Panthéon Sorbonne, 75240 Paris cedex 05, France.
Email: rainelli.iae@univ-paris1.fr

Appendices

Appendix 1: List of interviews

Name	Date	Location
Rodolphe Sahel, trader	May 3, 2004	Paris
Richard Bruyère, expert	June 6, 2004	Paris
Ludovic Plas, trader	October 5, 2004	Paris
Richard Brague, trader	October 5, 2004	Paris
P.J., insurance company	October 6, 2004	Paris
Alain Duchateau, regulator	December 7, 2004	Paris
B.G, regulator	December 7, 2004	Paris
Benoît Sellam, regulator	January 18, 2005	Paris
G.D, hedge fund	January 18, 2005	Paris
Alain Gauvin, expert	April 5, 2005	Paris
Dominique Plihon, expert	April 6, 2005	Paris
Y.D, trader	April, 14, 2005	Paris
C.C, trader	April 14, 2005	Paris
Emmanuel Courant, trader-mutual fund	April 14, 2005	Paris
E.L, trader	April 15, 2005	Paris
R.C, trader	April 15, 2005	Paris
Michel Aglietta, expert	April 15, 2005	Paris
Anne Demartini, regulator	April 19, 2005	Paris
Fabrice Pansard, regulator	April 19, 2005	Paris
Nadine Rigutto, regulator	April 19, 2005	Paris
Gilbert Hibon, regulator	April 20, 2005	Paris
Patrice Aguès, regulator	April 20, 2005	Paris
P.C, insurance company	April 21, 2005	Paris
Pierre-André Julliard	April 21, 2005	Paris
H.T, trader	June 28, 2005	London
L.S, trader	June 28, 2005	London
Regis Copinot, trader	June 29, 2005	London
P.J, trader	June 29, 2005	London
F.P, trader	June 29, 2005	London
Emmanuelle Setbon, ISDA	June 30, 2005	London
Richard Metcalfe, ISDA	June 30, 2005	London
R.T, hedge fund	June 30, 2005	London
Loïc Fery, trader	July 1, 2005	London
Hubert Le Liepvre, trader	July 1, 2005	London
T.F, hedge fund	July 1, 2005	London

Note: Some actors preferred to keep their anonymity.

Appendix 2: List of documents consulted

- Azarchs Tanya, 'Demystifying Banks' Use of Credit Derivatives', *Ratings-Direct*, Standard and Poor's, December 2003
- Bank of England 'Developing a Supervisory Approach to credit Derivatives' *Discussion Paper*, December 1996
- Bank of England, 'Credit Derivatives: Amended Interim Capital Adequacy Treatment', *Supervision and Surveillance Note*, June 1997
- Bank of International Settlements, Basel Committee on Banking Supervision, 'International Convergence of Capital Measurement and Capital Standards', Basel, July 1988
- Bank of International Settlements, Basel Committee on Banking Supervision, 'The New Basel Capital accord', *Consultative Document*, Basel, January 2001
- Bank of International Settlements, '71st Annual Report', Basel, July 2001, pp. 123 and following
- Bank of International Settlements, '72nd Annual Report', Basel, July 2002, pp. 122 and following
- Bank of International Settlements, '73rd Annual Report', Basel, July 2003, pp. 105 and following
- Bank of International Settlements, '75th Annual Report', Basel, July 2005, pp. 113 and following
- Bank of International Settlements, 'The Global OTC Derivatives Market at end-June 2001', Basel, December 2001
- Bank of International Settlements, 'OTC Derivatives Market Activity in the first Half of 2003', Basel, November 2003
- Bank of International Settlements, 'Credit Risk Transfer', Committee on the Global Financial System, January 2003.
- Bank of International Settlements, 'OTC Derivatives Market Activity in the second Half of 2003', Basel, May 2004
- Bank of International Settlements, 'Credit Risk Transfer', The Joint Forum, March 2005
- British Bankers' Association, 'Credit Derivatives Market to hit Global \$740 billion by year 2000', June 1998
- British Bankers' Association, Credit derivatives report, 2004
- British Bankers' Association, Credit derivatives report, 2006
- Bruyère R., 2004, Les produits dérivés de crédit, Economica, Collection AFTE
- Buffet Warren, *Berkshire Hathaway 2002 Annual Report*
- Centre for the Study of Financial Innovation (CSFI), 'Banana Skins 2002: A CSFI Survey of the Risks Facing Banks', CSFI 2002
- Centre for the Study of Financial Innovation (CSFI), 'Banana Skins 2003: A CSFI Survey of the Risks Facing Banks', CSFI 2003
- Commission Bancaire, 'Instruments dérivés de credit, premières orientations en matière de traitement prudentiel', Documents de discussion et d'étude n°1, Juin 1997
- Commission Bancaire, 'Bulletin de la commission bancaire n°1', Avril 1998, pp. 8–14
- Commission Bancaire, 'Introduction au rapport 2002 de la Commission Bancaire', Juillet 2003
- Committee on the Global Financial System (CGFS), 'Credit Risk Transfer', Bank for International Settlements, January 2003
- European Central Bank, 'Credit Risk Transfer by EU Banks: Activities Risks and Risk Management', May 2004
- Federal Reserve Bank, 'Supervisory Guidance for Credit Derivatives', August 1996
- Federal Reserve Bank, 'Application of Market Risk Capital requirements to Credit Derivatives', June 1997
- FitchRatings 'Global Credit Derivatives: Risk Management or Risk?', Special Report, March 2003
- FitchRatings 'Global Credit Derivatives: A Qualified Success', Fitch, September 2003
- FitchRatings 'Credit Derivatives: a Case of Mixed Signals', Fitch, Credit Market Research, December 2003
- FitchRatings 'Synthetic Index-Benchmarking Portfolio Performance', Fitch, June 2003
- FitchRatings, Special report, Global Credit Derivatives Survey, September 2006
- International Swaps and Derivatives Association, 'Developing A Supervisory Approach to Credit Derivatives, Comments of the ISDA' February 1997
- International Swaps and Derivatives Association, 'Credit Risk and Regulatory Capital', March 1998
- International Swaps and Derivatives Association, '2003 Credit Derivatives Definitions', 2003
- JP Morgan Chase, 2003, 2002 and 2001 Annual Reports
- Introduction to counsel, Robin Potts QC, 19th May, 1997
- Commission bancaire, Traitement prudentiel des instruments derives de credit, annexe 15
- Résultats de l'enquête de place française sur les instruments de transfert de risque de crédit, Banque de France, revue de stabilité financière, Juin 2004

Appendix 3: Repartition of articles analysed

Actors	Number	% / Total
Rating agencies	14	7.04
Insurance companies	11	5.53
Other categories	3	1.51
Banks	65	32.66
Stock Exchange	6	3.02
Legal experts	13	6.53
ISDA	22	11.06
Regulators	39	19.60
Hedge and mutual funds	26	13.07
Total	199	100.00

Appendix 4: The most represented words for each category of the actors of the market

A text analysis was conducted on 199 articles dealing with credit derivatives. From this data set, we extracted 8854 different words and proceeded to manually select a set of terms related to the domain studied. Seventy-three 'root' words were then conserved (risk, index, valorization, investor, regulation, AMF, credit risk, diversification, transparency...), integrating some 110 equivalences. For example, we observe that insurance companies are mostly associated to 'loss' or 'uncertainty' whereas hedge funds or mutual funds are associated to 'decree', 'law', 'regulation' or 'transparency'.

Insurance companies	SCOR – loss – technicality – growth – rating – uncertainty – downgrade – bargaining
Banks	Index – JP Morgan – return – liquidity – Enron – signature – credit risk – standardization – risk – diversification – accountable – costumers – risk management – credit risk management – credit default risk
Experts-Legal experts	legal – security – regulation – decree – systemic – default – law – uncertainty – authorities – Enron – hedging – information – technicality – Basel committee
ISDA	Outstanding notional amount – growth – documentation – rules – credit risk management – volume – segment – credit risk
Regulators	Valorization – control – risk transfer – documentation – volatility – credit default risk – norms – risk – regulation – crisis – confidence – innovation
Hedge funds-OPCVM	Decree – law – AMF – legal – regulation – qualification – Performance – volatility – security – arbitrage – rules – AMF approval debate – transparency – protection – return investor – segment

Interpretation: We kept words that have a significant t-test equivalent to a statistically significant difference between the mean frequency score for the class and the sample. Significant to 5%; **significant to 10%**.

Appendix 5: Chronology of main events on the market

1988: Basel 1 agreement (Cooke agreement): core principles for banking regulation and particularly credit risk. International regulation makes it obligatory for banks to cover the risk of their assets by sufficient capital. (The Basel committee on Banking supervision is a committee of banking supervisory authorities which was established by the central bank Governors of a group of ten countries in 1975.)

1992: ISDA first uses the term ‘credit derivatives’ to describe a new, exotic type of over-the-counter contract

1996: Law n°96-597 de ‘modernisation des activités financières’ (financial activities modernization), contains the system applicable to financial instruments in France

1997: Robin Potts opinion: legal decision that mentions that credit default swaps are not insurance contracts but financial products

1997: Development of CreditMetrics model by JP Morgan: a portfolio model destined for the management of credit risk

1999: Gauvin law thesis devoted to the question of the legal qualification of credit derivatives

1999: Joint Forum for Financial Stability

1999: First Credit derivatives definitions issued by ISDA

1999–2003: Wave of crises and defaults: Railtrack, Parmalat, Enron, Consecro, Worldcom, Pacific Gas & Electric, Argentina...

2001: Basel 2 agreement: definition of the part of the regulatory capital for banks

2001: French reinsurance group SCOR discontinues its credit derivatives insurance activities

2002: ISDA Master Agreement: the standard for governing future transactions

2002: French decree on December 10, possibility given to the mutual fund companies to use credit derivatives

2002: Construction of indices by banks

2003: ISDA Credit Definitions: renewal of the documentation relating to credit derivatives, to facilitate exchanges, reinforce transactions and increase market liquidity

2003: Creation of TRAC-X: JP Morgan and Morgan Stanley’s indices join together

2003: Creation of iBOXX, an index launched by Deutsche Bank, ABN Amro, Citigroup, Société Générale

2004: iBOXX and TRAC-X join together to ensure a sufficient quantity of exchanges to guarantee the liquidity of the index

