The Milgram Universe of Credit Derivatives: A Regulatory Proposal – Part One

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I. Introduction

Much work in social psychology suggests that in compressed and interactively complex systems, subjects surrender responsibility for their actions in full faith of the system. The leading experiment on obedience, the Milgram experiment, was originally devised by Stanley Milgram to test the willingness of subjects to comply with acts against their conscience under the instruction of authority. However, his later findings, and further research by other academics have expanded the scope of his previous conception of ‘authority’ to hospital studies, aviation, and business contexts. No research has yet been conducted as to the relation between Milgram’s theory and the financial markets. This is to be regretted, for it is suggested in the course of this article that there are strong parallels.

This article is part of a two-part series intended to introduce a version of Milgram’s theory to synthesise and develop the issues surrounding the credit derivative markets in Europe. The first part of this series utilises a regulatory/psychology lens to examine the structure and characteristics of the credit derivative markets, and begins outlining a framework according to Milgram’s theory to understand and analyse these markets. Preliminary clarifications are also made in this process, to challenge the sustainability and accuracy of this framework. In the second part of this series, this analysis will be continued to test the supposed correlation of credit derivatives with the recent credit crisis, and this article will suggest a regulatory proposal for securities markets ahead under the aegis of the Milgram framework, not limited to credit derivatives.

Credit derivatives are the main credit risk transfer instruments. Financial institutions use them for a variety of functions, including hedging credit risk, trading/market making, and attaining tax relief. According to the International Swaps and Derivatives Association (‘ISDA’), the main private body that regulates derivative contracts, the notional amount outstanding of credit derivatives amounted to USD 54.6 trillion on 24 September 2008. ISDA’s model contracts and definitions are the standard contractual documentation for the majority of financial participants, including over 820 member institutions from 57 countries.

Currently, credit derivatives remain in the ambit of private contracts, and are executed in the over-the-counter (‘OTC’) market, though a move to European Union central clearing will take place in July 2009. This has been pushed through as a confirmed initiative, affirmed

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* This article should not be taken to represent any part of the economic policy or views of the institution of the Monetary Authority of Singapore. The opinions expressed in this article are the author’s alone.
1 S. Milgram, Obedience to Authority (Taylor & Francis, 1974) pp. 140-143. Further studies have been made to see how Milgram’s theory can provide insights in various areas, including: (1) hospital studies – K. Hofling, ‘An Experimental Study in the Nurse-Physician Relationship’, (1996) JNMD 143, 171-180; (2) aviation studies – E. Tarnow, ‘Self-Destructive Obedience in the Airplane Cockpit and the Concept of Obedience Optimisation’, in T. Blass (ed.), Obedience to Authority (Lawrence Erlbaum Associates, 2000) pp. 117-118.
2 S. Milgram, note 1, pp. 140-143 Ch 2. See also T. Blass, note 1, pp. 40-43.
4 E. Tarnow, note 1, pp. 117-118.
5 See generally R. Morck, ‘Behavioural Finance in Corporate Governance’ (2007) <ssrn.com/abstract=979880> which applies Milgram’s theory as an analytical construct to understand agentic subversiveness of directors in corporate contexts. However, this article takes a different approach in emphasising the perception rather than the physical imposition of a specific authority, together with the compressed and interactively complex nature of the credit derivatives environment which explains the high conformity of financial actors.
6 Although a suggestion of this possibility was made in T. Blass, note 1, p. 122.
7 Ibid., note 1, pp. 5-6 I(C).
9 ISDA Mid-Year 2008 Market Survey <secure.webex.com/g2.aspx?id=WZSB01L>.
10 See note 8.
as Point 8 of the recent De Larosière report (published 25 February 2009),13 In addition, the industry has been marked by two recent developments, namely, the introduction of a new single-name US CDS contract (predicted to spark similar developments in the EU)14, and a ‘Big Bang’ Supplement and Protocol from ISDA which takes effect from 8 April 2009,14 the implications of which will be analysed in this article.

This article suggests that there are strong behavioural parallels between Milgram’s experimental subjects and institutional actors in the credit derivatives market, due to the interactively complex nature of financial markets.15 It focuses on credit derivatives markets as they are the credit paradigm of modern financial markets given their structural complexity,16 and as they have been the centre of debate in the recent credit fallout in their role as credit risk transfer instruments.17 In this article, the Milgram model is presented as a constructive ideal of regulation of financial markets,18 and further research should be encouraged to apply Milgram analysis in other cross-sections of financial markets, like financial trading.

Section 2 begins by giving a brief overview of credit derivatives. Following, section 3 sets out the main features of Milgram’s theory, and analyses to what extent Milgramic structures are replicated or rejected across three cross-sections: (1) the structural composition of credit derivatives markets; (2) institutional actors; and (3) lingering systemic threats. In each cross-section, the Milgram construct will be tested to determine its true utility as a descriptive and analytical tool, and the extent to which it can provide lessons about the current regulation of derivatives markets. To demonstrate how the Milgram model would work practically, Section 4 applies the Milgram model to assess the effectiveness of several initiatives generated by the recent De Larosière report,19 and to create a focused ‘credit event’ strategy within firms. Finally, section 5 draws some conclusions.

2. Overview of credit derivatives

2.1. Turning tricks

Credit derivatives arose to meet demand by financial institutions, mainly banks, for a means to allow credit risk20 to be traded, easily and efficiently. They are used for a variety of purposes, including hedging credit risk, trading/market making, and attaining tax relief.21 In theory, credit derivatives disseminate risk through the system, reducing the possibility of systemic crisis.22 There are many variations of the Credit Default Swap (‘CDS’),23 but this article focuses on the elementary structure of the standard single-name CDS (as detailed below), and its role as a building block in a more complex structured product, the Collateralised Debt Obligation (‘CDO’).

2.2. The products

2.2.1. Credit Default Swaps

The main type of credit derivative is the CDS.24 Most other credit derivative products are adapted from its structure, and it takes a slice of 32.9% of the derivatives market.25 The basic premise of a CDS is very simple. Assume that Bank X has bought a portfolio of securities, linked to the returns on an asset, like property (commonly termed ‘asset-backed securities’, or ‘ABS’). Bank X wants to get rid of the credit risk of its investment. Possibly, it calculates that it has too much exposure to a

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12 Point 8 of the De Larosière report: S. Taylor, ‘Single EU Financial Watchdog not Needed’ 25 Feb. 2009 in Appendix 1. The Larosière Report was conducted by a committee of eight financial market experts set up to deal with financial crisis issues in the EU.
15 F. Johnson, P. Jefferies and M. Pak, Financial Markets Complexity (Oxford University Press, 2003) pp. 3-4. See also section 3.3.
17 Ibid., pp. 15-16 II(A)-(B) on the role that credit derivatives have played in the recent sub-prime mortgage crisis.
18 R. Dworkin, Law’s Empire (Belknap Press, 1986) pp. 139-145, the best legal interpretation is one which both fits (adheres with present reality) and justifies (offers the best principled conclusion) of the law.
19 See note 12.
20 Credit risk refers to a compilation of risks associated with the issuer, for example, the risk that the issuer will become bankrupt, or call a moratorium on the debt, termed a ‘credit event’. See generally E. Parker, Credit Derivatives (Globe Business Publishing, 2007) pp. 7-9.
21 See note 1. pp. 5-6 II(C).
23 In particular, credit derivatives include a portion of index trades, basket products, recovery swaps and swapouts. A detailed outline of the various categories is provided in E. Parker, note 20, pp. 25-46.
certain client, or country – this is ‘concentration risk’. Alternatively, Bank X knows of a possible event which could cause them to lose money on their investment. In short, Bank X wishes to sell the credit risk on their investment.

Bank X finds another investor who wants the risk. The investor has reasons to favour the transaction. Possibly, they feel that it is unlikely property prices will collapse, meaning there is a low opportunity of default. They might want to get more exposure to the property industry or country. Whatever the reason, both parties have incentive to enter into a CDS.

The CDS acts as a guarantee, or a re-insuring policy against the any losses of Bank X. In return for a fee, the investor indemnifies Bank X for its losses.

2.2.2. Collaterised Debt Obligations

In this way, the CDS acts to allow banks to push their risk to other parties. A bank which wants to transfer credit risk for an investment to avoid concentration risk buys protection from another. Another bank which wants to increase its exposure in that area is happy to sell protection. This constitutes the ‘push and pull’ of credit markets.

To advance beyond this push and pull, banks had to commodify risk – in short, create a product where risk could be transferred to a wider pool of investors. The answer to this was the Collaterised Debt Obligation (‘CDO’). To enhance the attractiveness of the CDO, banks lured investors with promises of higher returns, and the opportunity to diversify to a new class of assets. This proved popular in the early 2000s, especially since the equity market was suffering record lows in yields.

The origin of the CDO is linked to the market in mortgages. In 1997, six months after the Asian financial crisis, JP Morgan’s credit derivative team had been set with a task to get rid of USD 10 billion of the bank’s credit risk before the end of the year. Driven by this demand, the team created the first ‘synthetic’ structure – the BISTRO (Broad Index Secured Trust Offering). It gave the investor an inroute to a smorgasbord of credit, and alternative investment options by lowering regulatory capital requirement on those assets from 100% to 20%.

CDS, a common form of credit derivatives, are the building blocks of CDOs (structured products). The wiring of a CDO varies and is apt to confuse with its many permutations. The process of linking different credit structures to create one structured product is termed ‘securitisation’. A simplified graph of a CDO is shown below.

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**Notes**

26 See C. Harding, note 24, at pp. 12-14.
28 Ibid. ‘Synthetic’ is a common adjective in credit derivative structures, to stress on the combination of different credit structures to create a ‘structured product’.
29 Ibid.
30 J. Fabozzi and V. Mann note 27, p. 696: Under Basel I, regulators would lower the regulatory capital requirement to 1.6% (20% of the original 8%) if CDOs reference asset-backed securities as their main structure.
31 See generally E. Parker note 20, pp. 44-46. Generally, the most common CDS reference asset-backed securities in their main structure. More complicated CDOs have inbuilt multiple structures which allow for tranches of a range of different asset classes, and higher leverage structures, thus are termed CDO-squared or CDO-tripled.
A special corporatised entity specially created for the transaction, termed a ‘Special Purpose Vehicle’ (‘SPV’), participates as Seller to hedge away credit risk on several loans. To make CDOs a more flexible commodity, the SPV then passes credit risk onto a greater pool of investors through the use of special products called Credit-Linked Notes (‘CLN’). If and when a stipulated credit event\(^{32}\) occurs, investors lose the value of their notes.

### 2.2.2.1. The multiplier effect

In a CDO, the CDS act as a basic building block to indemnify aspects of the transaction, depending on the structure. Leverage\(^{33}\) is a key part in the use of CDOs, and layers of repeated CDS transactions are repeated to achieve a higher multiple effect. Thus, a GBP 10 million investment may be utilised to borrow a further GBP 100 million investment to make an investment in senior or mezzanine CLNs (see Exhibit 2). In short, CDOs enable the leveraging against credit assets.

Further, the CDO market is characterised by an influx of constant innovation. The basic CDO on securities may be mixed with different pools of assets, with some readjusting of structures to give a higher leveraged effect. An example is the CDO-squared, a CDO of existing CDO mezzanine notes, an indulgence in re-securitisation. These attempts are directed at increasing leverage.

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32 See note 20.

33 Leverage refers to ‘the use of various financial instruments or borrowed capital to increase the potential return of an investment – [www.investopedia.com/terms/l/leverage.asp]."
The problem, is that this creates ‘overlap risk’ – there is a lack of agreement on how to model and price the transaction, since the underlying risk of the CDO may change erratically.

2.2.2.2. Ratings inadequacy

Further, structured products were popular among investors given the stellar assurances by Credit Rating Agencies (‘CRA’). However, Partnoy notes that there is a tendency for ratings to lag, and reflect inaccurate values, as visible from the maintenance of excellent ratings on a majority of securities that had already spiraled in default in 2007. Studies by Mukhopadhyay also show that moral hazard tends to lead agencies towards lower evaluation standards. The CDO relies on accuracy in ratings and pricing, but it is suggested the current structure of CRAs is inadequate in plugging this need, as to be further expounded in section 4.1.5.

2.2.3. Summary

In short, any engagement of the risk management implications of credit derivatives will require an understanding of the following characteristics of credit derivatives: (1) the modelling of credit derivatives is highly complex, and valuation is a lengthy and sometimes Herculean process; (2) leverage is an inherent aspect of credit derivatives, but this tips the market towards systemic risk; (3) frequent and complex innovation is a hallmark of credit derivatives; and (4) inadequacy ratings means that the protection in credit derivative contracts may be illusory and dependent on the worth of the CRA.

2.3. The parties

Participants in the credit derivatives market consist of sophisticated institutions which include banks, insurance firms, and hedge funds. Ten counterparties dominate the market, with JP Morgan, Morgan Stanley, Deutsche Bank and Goldman Sachs taking up at least half of the trading volume of credit derivatives.

2.4. The documentation

This section maps briefly the main documentation of the International Swaps and Derivatives Association (‘ISDA’), which is the main private body that regulates credit derivatives contracts.

2.4.1. Credit Default Swaps

In a CDS, the credit risk of the transaction against which the Seller sells credit protection covers only a range of stipulated ‘credit events’, which may or may not include the standard events of bankruptcy, failure to pay, and a repudiation of debts. In return for the Seller assuming this risk, the Buyer (Bank X as in our example in section 2.2.1 pays a premium according to the level of risk taken, usually expressed in basis points.

To document the transaction, parties enter into a standard form Master Agreement and Schedule, which set out the transaction’s terms in a separate series of Confirmations and various Protocols which incorporates the 2003 ISDA Credit Derivatives Definitions, which parties customise to meet their needs.

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35 Ibid., see generally section V.
37 Ratings are based on historic default rates, which may change over time.
38 Partnoy, note 22, p. 1024.
39 P. Mukhopadhyay; note 36, pp. 1-2. CRAs are a unique service provider, as users of information do not pay directly to these agencies. Rather, payment derives from institutions whose products are rated. This gives rise to the situation where CRAs are inclined towards meeting the interests of institutions, as lower ratings might lead to a loss of business to another CRA.
40 Partnoy, note 22, p. 1024.
41 L. Wynkoop, ‘The Unregulables’, 76 FLR 3095, 3105 (as of 2008).
42 See note 8.
43 See note 20.
44 E. Parker, note 20, pp. 28-29.
45 The ‘Confirmation’ is the document which evidences that a credit derivative transaction has taken place. ISDA provides a standard template in Exhibit A of the 2003 Credit Derivatives Definitions.
46 These include the Novation Protocols, the CDS Index Protocols and recently the 2006 Dura CDS Protocols.
47 Ibid.
market practice.\textsuperscript{49} With effect on 8 April 2009, there is now a 60 calendar day limit to trigger settlement, unless the parties have exchanged notices as to another arrangement.\textsuperscript{50}

Prior to 8 April 2009, upon the occurring of a credit event, the Seller was able to ‘trigger’ a credit event, by notifying the other party through the delivery of notices of the Event and the form of settlement, physical or cash.\textsuperscript{31} The ‘hardwiring’ of auction settlement as a settlement method by the introduction of the new ‘Big Bang’ ISDA Supplement and Protocols indicate that auction settlement will now be the default settlement method.\textsuperscript{52} The ISDA had also published, as Annex B to the Supplement, a set of auction settlement terms which will be the standard settlement methodology.\textsuperscript{53} Determination of whether a credit event has occurred, and the obligations to be valued, will now be taken by a newly convened Credit Derivatives Determination Committee in Europe, which will consist of a range of global and regional dealer and non-dealer members.\textsuperscript{54} Both these initiatives are in line with efforts to establish central clearing, for binding decisions on the occurrence of credit events and required for the smooth running of a central settlement procedure.

### 2.4.2. Collaterised Debt Obligations

The documentation is more complex as regards to CDOs.\textsuperscript{55} Generally, the main documentation for a CDO will include: (1) a prospectus; (2) an agency agreement; (3) a trust deed; (4) a note purchase agreement; (5) a placement agreement; (6) an account bank agreement; (7) global notes; and (8) a repo agreement.\textsuperscript{56} In addition, the above mentioned new ISDA ‘Big Bang’ Settlement and Protocol do not apply to CDO transactions.

The scope of this article does not allow for extensive detail, though Parker has delineated several aspects of the transaction where the CDS documentation, involving ISDA standard documentation, is crucial.\textsuperscript{57} Particularly, a corporate entity will be created to manage the transactions, termed a Special Purpose Vehicle ‘SPV’,\textsuperscript{58} which will enter into swap documentation with an ISDA Master agreement. The Protocols and Confirmations structured as detailed in section 2.4.1 will follow. Where the transaction is to be rated and the SPV’s counterparty does not have an appropriately high rating, collateral support agreements may be taken up to support the transaction.

CDS may be utilised in various parts of the transaction (see Exhibit 2), including: (1) in constituting returns on the SPV; (2) in securing collateral support; (3) within asset structures.\textsuperscript{59}

### 2.4.3. Summary

In summary, several points are essential for an understanding of the legal framework of credit derivatives: (1) the credit derivatives industry is self-regulated, under the ambit of the ISDA which has an international coverage of 800 member institutions from 56 countries;\textsuperscript{60} (2) credit derivatives are highly standardised transactions;\textsuperscript{61} (3) ISDA standard form contracts are the main documentation for credit derivatives, which parties customise to meet their specific needs;\textsuperscript{62} (3) technical default terms are included, as defined by ‘credit events’;\textsuperscript{63} (4) CDOs involve more arduous documentation which is complex, lengthy, and yet does not sometimes cover basic pricing issues;\textsuperscript{64} (5) Standard documentation for certain major transactions is provided for major transactions, like Sanitec and Lehman Brothers.\textsuperscript{65}

This legal framework will be further studied in section 3, and sets the basic parameters for our proposal to understand to what extent Milgram’s theory can be applied to financial markets.

### Notes

\textsuperscript{49} E. Parker, note 20, pp. 28-29.
\textsuperscript{50} See note 14.
\textsuperscript{51} E. Parker, note 20, pp. 28-29
\textsuperscript{52} See note 14. The recent reforms take place in the context of calls for greater standardisation and transparency in credit derivative transactions.
\textsuperscript{53} Ibid.
\textsuperscript{54} Ibid.
\textsuperscript{55} See generally E. Parker, note 20, pp. 416-432.
\textsuperscript{56} See in detail E. Parker, ibid.
\textsuperscript{57} Ibid., pp. 416, 418.
\textsuperscript{58} See section 2.2.2.
\textsuperscript{59} See generally E. Parker, note 20, pp. 418-419, 426-427.
\textsuperscript{60} See note 8.
\textsuperscript{61} E. Partnoy, note 22, p. 8: ‘This standardisation decreases the transaction costs of credit default swaps deals, and provides the other familiar benefits of standardisation’
\textsuperscript{62} E. Parker, note 20, pp. 28-29.
\textsuperscript{63} Ibid., pp. 7-9.
\textsuperscript{64} C. Harding, note 24, at pp. 12-14. For instance, CDO documentation cannot capture an accurate estimate of the underlying value of assets at any one time, as these alter in complex ways throughout the transaction, and the pricing involves separate complex elements of modeling.
3. The Milgram universe of markets

3.1. The Milgram experiment

In the Milgram experiment, subjects, termed as ‘teachers’, were asked to administer electric shocks of increasing intensity to ‘learners’ for wrong answers given to a set of questions.66 The ‘teacher’ was not aware that the ‘learner’ was actually an actor, whose pleas were aggravated as the intensity of shocks increased.67 It was found that close to 65% of ‘teachers’ actually administered the full course of shocks, and no subject actually stopped before the halfway point68 – a perversely high level of compliance.

Since then, the Milgram experiment has been replicated in other contexts, including hospital, aviation and business studies.69 A particular area where Milgram’s theory has been useful is accident prevention, where Tarnow conducted studies that demonstrated that individuals, in a context of a crisis situation, tend to follow orders of authority, leading to procedural and monitoring failures (80% of the sample).70

Tarnow applied Milgram’s theory to rationalise the results of a National Transportation Safety Board review on US air accidents, which had found that ‘destructive obedience’ causes up to 25% of plane crashes.71 Tarnow offers several reasons to account for monitoring failures, focusing on the strength of the plane captain’s authority over the first officer, arising from factors of: (1) legitimate authority of legislation (Code of Federal Regulations); (2) lack of experience of first captain; and (3) aviation organisation norms which discourage the challenging of captains’ decisions.72

From the results, Tarnow suggested several methods to reduce monitoring error, derived from an understanding of the roots of failure, including: (1) giving the first officer more responsibility and trainings; (2) using ‘obedience’ scores of first officers as possible error rates; (3) implementing crew debriefings to increase knowledge of participants.73 It is suggested that Milgram’s theory can similarly offer insights on the optimal interpretation of regulation in the credit derivatives markets. Similar factors of legal trappings and constructs of authority and organisational norms are echoed in financial markets. However, this article also focuses heavily on another aspect of Milgram’s theory, environmental factors (section 3.1.1.2), which are key in explaining the behaviour of participants in the credit derivatives markets.

With feedback and extended research, the Milgram experiment has grown to become the foundation of two theories:

3.1.1. Theory of conformism

The first prong of Milgram’s obedience theory posits that a subject who habitually lacks experience and full understanding, will tend towards leaving decision making to the group and its hierarchy.74 In this theory, two indicators in the Milgram experiment are emphasised:

3.1.1.1. Personal gratification

Personal gratification is offered as a reason for obedience. In the experiment, the subjects were ordinary citizens who were probably attracted by small cash rewards.75 Besides a financial obligation, later interviews also revealed they had a sense of participating in important research in a leading university.76

3.1.1.2. Environmental factors

More significant was the environment’s influence on subjects. In a series of variation on the original experiment, Milgram noted that the level of compliance varied according to the location where the experiment was situated.77 Upon moving the setting from a leading university to a decrepit apartment block, the number of people who gave intensive shocks decreased from 65% to 47.5%.78 In another experiment, Milgram gave orders via telephone, and the percentage of compliant subjects promptly dropped to 20.5%.79

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66 S. Milgram, note 1.
67 Ibid. p. 372 para. 1.
68 Ibid. p. 376 para. 1.
69 See note 1.
70 E. Tarnow, note 1, p. 119.
71 Ibid., p. 111.
72 Ibid., pp. 112-113.
73 Ibid.
74 S. Milgram, note 1, p. 371.
75 Ibid., p. 372 ‘Method’.
76 Ibid., pp. 372-373 ‘Method’.
78 Ibid.
79 Ibid.
3.1.2. Agentic state theory

The second theory posits that ‘the essence of obedience consists in the fact that a person comes to view himself as the instrument for carrying out another person’s wishes, and he therefore no longer sees himself as responsible for his actions. Once this critical shift of viewpoint has occurred, all of the essential features of obedience follow.’

Milgram suggested that individuals have the tendency to resort to defence mechanisms in high stress situations—alike an animal in high stress situations, which will curl up in a ball and be closed to external stimuli. Denial was one of the explanations for the behaviour of individuals in the experiment.

A successful analytical model has to both fit and justify the current law, both concurring with present reality, and present a good guiding ideal towards the optimal conception of regulation in the credit derivatives markets. The former will now be examined.

3.2. Does Milgram’s theory fit markets? – some preliminary clarifications

Before engaging in an analysis of whether Milgram’s theory can be applied to credit derivatives markets, it is of worth clarifying some obvious counterpoints.

3.2.1. Diversity of actors

Firstly, it may be argued that there lacks a strong ‘authority’ figure in credit derivatives markets, unlike in the Milgram experiment, where the administrator was posited as authority. There are a range of industry entities involved in the credit derivatives markets—ranging from the regulatory authorities, insurance authorities, to the banks. Even more obvious, some parties have more influence and participation in the creation of products, like the bank traders, and it is difficult to take any one party as bearing a homogenous mindset.

However, it is suggested that the above approach misunderstands the fundamental basis of the Milgram experiment. The significant lesson to take away from the experiment is the creation of a perception of authority, rather than the positing of a specific authority figure itself. It is suggested that the complexity of regulation, together with the layers of hierarchy, actually reinforces the individual subject’s perception in the safety of the credit derivatives system, in the value of products, downplaying or categorising risks. Complexity in layers of management puts distance between data gatherers and senior management, creating information loss. In this same way, each party of the entity sees a different size of the jigsaw, and is unable to put together, with their existing knowledge and understanding, the whole picture.

Though there are many parties involved in the administration of derivatives, it is suggested that the complexity, combined with psychological pressure, actually increases the tendency of subjects to place illusionary trust in the security of the system, in short, a perception of strong and effective authority. This can lead to the tendency to place too much faith in the names and reputations of big banks and institutions who buy and sell these products, and the characterised ratings, because the presence of too much information makes true value difficult to sieve out, given the costs of realising this objective.

3.2.2. Profit incentive

Secondly, it may be argued against this thesis that the incentive structures are phrased differently in credit derivatives markets. The profit incentive is much stronger than the mere financial obligation for payment of participation in the Milgram experiment, and it is this profit incentive which causes parties to disregard risks to pursue big profits. However, it is suggested that this profit incentive actually strengthens Milgram analysis, rather than undermining it. It becomes an incentive for traders to dabble in financial innovation, both for tax reasons, and to ‘isolate’ risk in products. Greater innovation in product structures enhances the complexity of the system, removing the ability of any one actor to effectively control risks. This can be termed the ‘tight coupling dilemma’.

Notes

80 S. Milgram, note 1, p. 371.
81 Ibid. See also M. Jarvis, note 77, p. 16.
83 S. Milgram, note 1, p. 371.
84 Ibid.
85 See generally S. Milgram (1974), note 1, Ch. 10.
87 Ibid.
88 Ibid.
90 E. Parker, note 20, pp. 16-17.
91 F. Johnson, P. Jefferies and M. Pak, note 15, pp. 3-4.
In this first part of this series, we outlined the structure and characteristics of the credit derivatives markets, and how Milgram’s theory can have a role to play in understanding and analysing these markets. The second part of this series will extend this analysis to test whether credit derivatives can be said to have any correlation with the causes and aggravation of the recent credit crisis, and in light of its impact, whether they have a role to play in future securities markets. Utilising the Milgram model introduced, a regulatory framework will be drawn to meet these challenges for the future, particularly with the threat of systemic risk in mind.
The Milgram Universe of Credit Derivatives: A Regulatory Proposal – Part Two

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Much work in social psychology suggests that in compressed and interactively complex systems, subjects surrender responsibility for their actions in full faith of the system. The leading experiment on obedience, the Milgram experiment, was originally devised by Stanley Milgram to test the willingness of subjects to comply with acts against their conscience under the instruction of authority.

This article is Part Two of a two-part series intended to introduce a version of Milgram’s theory to synthesise and develop the issues surrounding the credit derivatives market in Europe. In the earlier first part of this series, the structure and characteristics of the credit derivatives markets were outlined, with a suggestion on how Milgram’s theory can be suitably formulated to understand and analyse these markets. A preliminary start to Milgram’s theory was embarked on, whereby Milgram’s theory was introduced, to demonstrate why tight coupling and complexity of credit derivative markets necessitate a clearer and more systematic approach as to market regulation. In this process, it was suggested that there are strong behavioural parallels between Milgram’s experimental subjects and institutional actors in the credit derivatives market, due to the interactively complex nature of financial markets.

This second part of the series continues to extend Milgram’s analysis to understand the complexity and characteristics of credit derivatives markets. A regulatory proposal under the aegis of Milgram’s theory will be suggested, focusing on securities markets, but not limited to the sphere of credit derivatives regulation. It will be suggested that an effective regulatory structure should be geared towards (1) decoupling the system, by simplifying products and regulation; and (2) empowering participants with greater understanding and information to increase the effectiveness of checks and balances.

3.3. Beginning the analysis – the ‘tight coupling dilemma’

In a tightly coupled system, the active components are interdependent, and are intimately connected with little space for error or recalibration. The credit derivatives marketplace is built on the tentative balancing of risks, accentuated by highly leveraged positions, and leverage can link markets unexpectedly to distant events.

Tight coupling is evident in three aspects of credit derivatives markets: (1) the structural composition of credit derivatives markets; (2) institutional actors; and (3) lingering systemic threats.

3.3.1. Structural composition

Credit derivatives have complex structures. As earlier emphasised in section 2.2 in this article, alike Russian dolls, credit derivatives often utilise leverage to enhance returns, with structural innovation as a key hallmark of the credit derivatives markets. Further, complexity arises as the leverage can link the market unexpectedly to distant events. As Bookstaber notes, a swaps market can ‘spiral out of control simply because there is some group of overextended investors who happen to have positions that for one reason or another they are forced to liquidate. These interrelationships cannot be anticipated in advance and will shift with the fortunes and market interests of the investors and speculators.’

Secondly, pricing problems for structured products, particularly CDOs, are endemic, with an ability to capture accurate pricing, and hence risks, at any one time. This is aggravated by a high reliance on computer models for the calculation of risks, where a

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2 This is illustrated in the way the AIG’s crisis (see section 3.3.3.2) hit international shores.
3 Recall section 2.2, especially the Summary of the complexity of derivatives in section 2.2.3.
4 See note 2.
6 C. Harding note 24, at pp. 12-14.
minute inexactness in pricing calculations might lead to disastrous consequences. Complexity is manageable if there is room for recalibration or readjustment. However, in the case of credit derivatives, high leverage aggravates minute errors to uncontrollable catastrophes. In short, human input is rendered unhelpful and insignificant.

### 3.3.2. Institutional actors

It is within this context that we analyse the institutional framework within credit derivatives markets, to determine whether parallels exist between the Milgram experiment’s subjects and market actors.

Credit derivatives management is characterised by layers of hierarchy, which puts distance between data gatherers and users in senior management. Due to the legal chain of documents required, the actors involved in any one single transaction may involve: (1) Operations (Confirmation requests and technical execution); (2) Trading/Portfolio Management teams (Transaction selection, Counterparty management); (3) Legal (ISDA documentation, novation treatment etc.); (4) Risk Management teams (gauging general levels of credit risk). The increased number of people in the process inevitably means that junior staff, who have less experience and who do not have a bird’s eye view of the specific transaction, are unable to pick up errors which are beyond the reach of the existing reports under their responsibility. The disseminated focus also raises issues of transparency, and whether transactions are adequately recorded holistically and updated in time.

### 3.3.3. Linger ing systemic risks

Further, in tightly coupled systems, there is the tendency for failure to propagate, leading to what Litan terms as ‘systemic crisis’. The pervasive breakdown of financial markets to the extent where it threatens the economy in its entirety. For this reason, regulators have often stepped in to curb systemic risk in the name of public interest, to maximise economic efficiency and reduce social costs of unemployment.

#### 3.3.3.1. Creation of asset bubbles

The sub-prime mortgage crisis, precipitated by the fall in value of home mortgages, is a demonstrative of the first type of systemic risk. Securitisation, with the ability to hedge out risk through CDSs, drove up house prices above their ‘fundamental’ value, fostering an asset bubble in the housing market in the US, which burst in 2007. With the collapse in value of CDOs, banks were forced to make writedowns on balance sheets, affecting a wide list of institutions, including Bear Stearns, Fannie Mae, Freddie Mac, Citigroup and Merrill Lynch. The drying up of liquidity disrupted bank lending and production, pushing the economy into a deep recession throughout Europe.

#### 3.3.3.2. Institution breakdown

The second of these risks came into the forefront recently, when international insurance giant American International Group (‘AIG’) was nationalised. Though financial breakdown was evaded, the event disrupted market liquidity, shattered investors’ confidence, and called into question the sustainability of product insurance as an economic model.

### Notes

7 See e.g. the account of Salomon Tokyo’s pricing model systems, where a pricing error was aggravated to cost the portfolio in discussion USD 30 million: R. Bookstaber, note 5, p. 60.
8 F. Johnson, P. Jeffries and M. Pak, note 1, pp. 3-4.
9 R. Bookstaber, note 5, p. 126
10 Ibid. See also E.Parker, Credit Derivatives (Globe Business Publishing, 2007) pp. 53-75. Department functions vary according to the institution and transaction. However, this is the standard division of duties as outlined from the legal documentation required.
11 R. Bookstaber, note 5, p. 156.
16 Ibid.
17 Ibid., para. 3.
In yet another case study, the Lehman Brothers bankruptcy was a "waiting systemic crisis that never happened." Though the crisis spiraled and had a damaging effect on financial markets, the CDS market emerged intact. The bankruptcy constituted a Credit Event which triggered all CDS tied to USD 400bn Lehman debt, but the Depository Trust & Clearing Corp ("DTCC") resolved automated settlement of related CDS smoothly, and there have been no reports of institutions defaulting. CDS counterparties of Lehman were also able to legally foreclose on collateral that Lehman had posted, and Barclays 16 September acquisition of Lehman assets also guaranteed an interim credit facility to fund their ongoing operations. Institutions were forced to act on their deteriorating positions on a day to day basis, preventing sudden meltdown of positions.

3.3.3.3. Remaining threats of crisis

Though systemic crisis was prevented in this instance, this event illustrates the danger if credit support had not been available. As Heyde and Neyer note: ‘CDS create a possible channel of contagion because they imply that banks have contingent claims on each other. If these claims materialise, and if one bank fails, another bank will realise a loss it may not be able to absorb.’ Even though Lehman was a ‘non-event’, it remains the fact that it weakened the capacity of the financial system to stand sudden shock.

3.3.4. Enabling decoupling

Therein lies the root of designing suitable regulation for the credit derivatives markets – Neither decentralisation, nor codification will work, if the system remains highly compressed. It is possible to add many layers of different styles of regulation, as has been termed ‘swiss cheese’ regulation, but Milgram’s theory, together with tight coupling, instructs us that ‘financial cheese’, if so termed, has more holes (risks), and the holes mysteriously move location and align. Any one change in regulation, produces feedback that is often unpredictable in nature.

This analysis, seen in light of the Milgram construct, suggests that the optimal way to tackle systemic risk in the system is to effect loose coupling, so that there may be a greater possibility of rectifying and preventing the potential propagation of problems. The objective, is to streamline and simplify formal processes, reduce the possibility of human error, in the direction of creating a more robust and survivable system. Instead of a finely tuned system, an omniscient planner would instead look towards creating a system which will be able to handle the interactively complex nature of risks.

Secondly, there is a need to empower individuals and institutions with knowledge by simplifying the system and instilling transparency. This latter approach was similarly emphasised in Tarnow’s aviation experiments, as earlier delineated in section 3.1 where several methods were instilled to empower first officers to take greater responsibility and reduce monitoring errors on flights, including giving the first officer more responsibility and training, and implementing crew debriefings.

To illustrate how this will be effected, we will now look at the detailed aspects of regulation in the credit derivatives marketplace.

4. Developing a regulatory framework

As emphasised in the previous section, regardless of whether the CDS market has been an actual source of systemic risk, its size and interactively complex nature leads to a serious risk of it becoming a source of systemic risk, and for that reason regulatory intervention is justified.

However, we have to be careful not to fall into the ‘regulation trap’, to increase the volume but not effectiveness of regulation after every crisis. Additionally, it has been argued that extensive governmental regulation would be costly and pointless. Professor Davidoff opines, ‘creative financial professionals will simply offer substitute financial products that mimic the prohibited investment’.

The key then, is to regulate, not falling into the regulation trap, but rather by following the guiding ideal of
the Milgram model: (1) to decouple and simplify products and regulation, in order to create a robust and survivable market; (2) to empower participants with greater understanding and information.

Currently, the credit derivatives market remains an unregulated dealer-driven OTC market. However, the systemic risk involved, and the way CDS can now be structured to play the part of many other financial instruments, means that we can no longer ignore this sector.

The recent De Larosière report has pushed for several initiatives to enforce ‘stronger, co-ordinated supervision’ towards the establishment of ‘equivalent standards’ for all financial market actors. Two of the major initiatives will now be analysed:

4.1. Putting the eggs in one basket

Point 8 of the De Larosière report pushes for the creation of a European Central Counter-Party (‘CCP’) which will backstop and monitor credit derivative trades on a central electronic system, to address the major concern of counterparty risk. Nine dealers, including ICE Trust Europe and Liffe, have committed to clearing credit derivatives trades through a European CCP. Seen from the lens of the Milgram construct, a CCP would aid in reducing systemic risk. First, a CCP acts to reduce complexity, by reducing the interacting agents within the system, and decreasing the potential for exogenous feedback to cause system failure. Thus, there is now less counterparty risk, since failures would have the cushion of a joint cash reserve. Secondly, parties are empowered with increased knowledge and ability to exercise control over trades, since collateral standards are now equalised. This model has worked well for energy swaps.

4.1.1. Simplifying product structures

However, a CCP is equipped to handle only standard credit derivatives, and might not address bespoke products, which make up 40% of the market. Professor Baird asserts: ‘our understanding of capital structures is simply too primitive for us to do much more than enforce the contracts as they are written as optimal we can. Imposing [rules] that are too rigid or too mechanical may limit the ability of investors to create capital structures that are beyond the ken of those writing the rules.’

The Milgram model’s answer to this complication is simpler, more fungible credit derivatives, which will minimise systemic risk, an objective which has been highlighted in Point 8 of the De Larosière report. It reasons that complicated products build up interactional complexity, disallowing space for recalibration. The more complex a product, like a CDO-squared product, or multiple options pegged onto a normal swap, the stronger the profit incentive for a bank to provide them, simply for the reason that they will be able to price them with a higher premium as investors will not be able to readily discern its fair value. By creating a unique product, the bank can also charge a higher spread in the trading of the product.

However, these incentives are skewed towards the interests of the banks, increasing model risk and valuation costs, and create further uncertainty. It is difficult to see why the interests of banks should outweigh the systemic risks of complicated products aggravated by leverage. Addressing the issue through the Milgram construct, the optimal regulatory structure is one which allows for proper feedback and magnification, for the simplification of formal processes. Thus, the simplification of products, which would enable the indexation of a greater list of products on a CCP, would be an effective first step to this goal of cloaking the credit derivatives marketplace with transparency and legitimacy. It is suggested that the recent US advancements of implementing fixed coupons, which an EU Working Group is now considering, goes in line with this goal. The reported relatively smooth implementation standardisation of coupon dates, and the hardwired auction settlement brought about by the ISDA ‘Big Bang’ Supplement and Protocol also demonstrate that...

Notes
31 See note 1.
33 Counterparty risk is the risk that counterparties will be unable to meet their contractual obligations.
35 Economics of Contempt (2009), ‘Regulating the CDS Market’, available at <economicsofcontempt.blogspot.com/2009/01/regulating-cds-market_11.html>
36 Ibid.
39 See note 32. Although it is notable that this proposal does not include CDS on CDO products.
41 Ibid.
42 Ibid., p. 2
43 See section 3.3.4.
such standardisation can be brought about effectively and go in line with preparing the industry for further standardisation initiatives.45

4.1.2. Tragedy of the commons

One argument against the CCP is that it may crowd risk in one entity. A lack of risk controls may allow a situation of ‘tragedy of the commons’, whereby individuals would pursue their own self-interests, ultimately destroying a common resource.46 The worry is that risk tolerances of parties will increase, given the failsafe option of the common collateral pool. This is closely linked with another risk that stronger participants may have to carry on the potential failures of weaker members.47

4.1.3. Exposure limitations

In response, it is suggested that the ‘tragedy of the commons’ situation can be tackled directly by pushing for exposure limitations, which are not currently implemented. Exposure limitations restrict the size of any one position that an institution may make in an investment, and can be adjusted according to different bands according to institutions.

A periodic review can be taken whereby institutions will submit reports to the regulatory authority of whether they breached the exposure level, and account for the breach. The level of breaches can be documented to determine whether it was accidental exposure (due to market events, which could be adjusted): minor exposure (exceeding by not more than 0.5%); and deliberate exposure (where repercussions will follow, or the institution will be forced to unwind from the positions at the next trading opportunity, and pay a fine). This suggestion introduces a ‘flexible’ limitation which gives institutions more leeway to justify their positions, which can be enforced by penalties. Since position reports are already being compiled by risk management functions in most institutions, and published in the Depository Trust & Clearing Corp (‘DTCC’) online releases,48 enforcement is likely to be made easier by simply monitoring levels of exposure, possibly through automated capturing of an ‘Overall Exposure’ field.

4.1.4. Capital adequacy requirements

Further, it is suggested that capital requirements should be updated with the objective of effectively tracking systemic risk. This proposal follows the lead of Nijskens and Wagner, who have conducted research on the current gap in the financial market towards the regulation of institutions’ contribution to systemic risk.49 By charging capital requirements only on risks which are correlated with the ones of other banks, bank sector systemic risk can be picked up as a market-based proposal in cushioning the financial industry. Adrian and Brunnermeier have also recently suggested another method of measuring systemic risk, by measuring the covariance of an institution conditional on another institution failing.50

Though these approaches are relatively new, it is suggested more consideration should be given to these proposals to include a systemic risk based exposure as a factor to include in capital reserve requirements. Such proposals may also come under the ambit of the new European Systemic Risk Council which has been proposed, which will have the responsibility of looking into ‘pool(ing) and analys(ing) all information relevant for financial stability’.51

Practically, it could be implemented in banks by imposing tougher capital adequacy requirements on banks with higher beta (volatility).52 Another approach has been suggested by Lehar to include multivariate conditional distribution into the risk models utilised by the regulator.53 These proposals go towards a greater consideration of systemic risk in the financial system, but a worry remains on how to adequately or accurately capture systemic risk, and varying mathematical models might still contribute to give a false security of the system, as the Milgram model reminds.54 This is a reinforcing method, rather than a holistic solution.

Notes

45 Ibid. Reports from market makers showed that there were no significant problems and the move reflected better than expected trading volumes.
47 Ibid.
48 The Committee of European Securities Regulators has also called for the establishment of a new over-the-counter trade repository in Europe to be finalised in June 2009—See Teran, 26/02/2009 ‘CESR calls for European trade information warehouse’ <www.efinancialnews.com/archive/keyword/clearing+derivatives/1/content/1053457917>.
52 Nijskens and Wagner, note 49, p. 2.
54 Recall the ‘regulation trap’—section 4, Introduction.
4.1.5. Credit ratings game

Another preoccupation of relying on the CCP derives from the reliance on credit ratings agencies’ (‘CRA’) ratings as a determinant to decide the credit risk of parties. Recall section 2.2.2.2, that the oligopoly held by the ‘Big Three’ - Standard & Poors, Moody’s and Fitch leads to moral hazard, as CRAs are paid by the same institutions whose products are rated, and as a corollary are driven towards meeting the interests of institutions.

Milgram’s theory can provide insight on the implications of moral hazard. Reliance on the oligopoly of CRAs is habitual, and the authority of CRAs has had a strongly established influence in the market. As a result, there lacks substitutions to challenge, or check these rating decisions, and neither do external parties have the experience to give input. There is strong reliance on a perception of authority, which creates a tendency to rely on these valuations solely for input.

This may have been justifiable, if the banks input proved a useful monitoring function on the activities of the CRA, or the CRA valuation model proved effective without interference. However, as demonstrated earlier in section 2.2.2.2, moral hazard has led to incentive problems, as CRAs have little economic incentive to monitor ratings post-issuance, leading to ratings lag, and lower evaluation standards. Thus, moral hazard is demonstrative of a lack of accountability and control in the system.

An effective proposal must address the root of the problem itself – moral hazard. Care must be taken not to resort to the hasty alternative of merely adding to the list of accredited CRAs in response to the criticism. Bolton and Shapiro have found that duopoly may be less efficient in CRAs in regards to provision of extant benefits. Studies by Faure-Grimaud, Peyrace and Quesada show that a duopoly may provide greater diversity, but is open to exploitation through resort to shopping of market strategies. Further, Milgram analysis suggests it is not the number of institutional actors which is significant, but the empowering of their understanding. Thus, adding to the number of CRAs may only increase complexity and still retain moral hazard problems of its own.

A better proposal might be to switch to an investor-pay model, but it must be borne in mind that this will come with its own regulatory costs. Mukhopadhyay has also suggested to alter the CRA model, by utilising incentive contracts based on expected returns on debt, which will remove the moral hazard conundrum.

On an operational level, the simplification of products, especially CDOs, as highlighted in section 4.1.1, can play a part in making valuation simpler and more accessible for institutions. The key is to simplify, and to empower actors and share responsibility – instead of merely increasing institutional actors, a possible avenue might be to release information to allow outside experts to verify and offer alternatives. However, more research, which is currently not available, needs to be conducted on the possible costs and parties which will be involved in such a process.

It will also be of worth to improve on rating technology, to reduce reliance on historic rates, eg. information generated by credit default swaps can help predict potential defaults and systemic risk in a forward looking context. Similarly, more attention should be provided for the development of procedures to provide investors with information on systemic risk correlations to protect against the different concentrations of risk inherent within derivatives portfolios. As mentioned in section 4.1.4, further testing to include systemic risk into risk evaluation models might help to plug this current gap. The key, is to perhaps avoid over-reliance on ratings as an end-all, but to introduce other checks and balances and options in the system.

4.2. Strengthening best practices

To illustrate the application of Milgram’s theory to internal firm strategy, this section suggests the creation of a focused firm ‘Credit Event’ strategy (see Appendix 2) to empower participants and instill greater clarity.

Currently, management of CDS trades and record-keeping often is bifurcated in finance institutions, a

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Notes

56 Carnell defines moral hazard as ‘the tendency to maximise one’s own utility to the detriment of others.’ Carnell, ‘A Partial Antidote to Perverse Incentives’ (1993) 12 Ann. Rev. of Bank L. 371.
58 Ibid.
59 See section 2.2.2.2.
60 Bolton and Shapiro, note 57 p. 1.
62 Bolton and Shapiro, note 57 p. 1.
64 See note 10.
split responsibility between the Capital Markets/ Fund Management function, and the Operations function. The split in paperwork and responsibility, with Legal straddling both ends, creates confusion. The layers of hierarchy and time disintermediation in recording and posting of trades leaves a gap for possible mismanagement of Credit Events, which can be fatal, especially in the current financial environment.

It is suggested that a robust Credit Event structure should be implemented, encouraged by the Financial Services Authority or other regulatory authorities’ Best Practices, to prepare for the storm. With this strategy, upon the happenstance of a Credit Event, the institution will be able to effectively spot which transactions to bring up to the Credit Derivatives Determination Committee for Europe, and sum up the steps towards netting any transactions. This will prevent lengthy delays due to administrative error; and capture as far as possible the appropriate transactional costs in the profit and loss account. This is also a crucial step in light of the new 60 limitation period for highlighting Credit Events in light of the 2009 ISDA ‘Big Bang’ Protocol. The breakdown of the strategy is as follows:

4.2.1. Credit event committee

The foundation of any such Credit Event strategy will be a Credit Event committee (see Appendix 2), which may or may not take over record-keeping responsibilities from Operations and Capital Markets functions. This Credit Event committee will implement infrastructure to prepare for Credit Events, through daily tracking of news events and regulatory updates.

Depending on the nature and culture of the institution, and the complexity of its portfolio, a Credit Event team should include key personnel from: (1) legal, with credit derivatives experience, to sieve through the complex terms and regulatory requirements; (2) risk, who will be able to direct the team in an overall strategy; (3) institution relations, to negotiate terms and act as a middlemen between the institution and the other market participant involved. The team will be connected to key individuals in other departments who will be able to execute the strategy as and when the event occurs, to ensure all documentation and valuation processes are smoothly carried out.

The team should aspire to have a bird’s eye view of ongoing transactions, and constantly maintain a holistic spreadsheet with details of transactions, counterparties, contact details, and progress of documentation. To minimise documentation and hefty paperwork, electronic systems like Microsoft Sharepoint, which creates a common database (subject to certain security access restrictions depending on individuals) of documents which can be shared across departments. This prevents a clash and confusion of filing systems (see Appendix 2).

4.2.1.1. Battleplan

An analogy will now be drawn to illustrate the effectiveness of this strategy. Thus, a political coup has occurred in a small Middle East nation and widely traded sovereign reference entity, Riskplenty Republic. Riots are aplenty and the central bank has collapsed, and the value of the Riskplenty currency is now in doubt. The new military general declares a moratorium on Riskplenty’s loans and bonds.

Stage 1: Occurring of event

Institution X has instilled a Credit Event committee, and has been keeping watch on news of the political uprising in Riskplenty Republic for some time. Press cuttings from Bloomberg and Financial Times have been accumulated for this purpose, and it has been reviewed by the experienced lawyer in the team, who concludes that a repudiation event has occurred pursuant to Section 4.6(c) of the 2003 ISDA Definitions. The team is also anticipating a failure to pay Credit Event pursuant to the announcement of the moratorium in regards to the interest payments on its bonds with Riskplenty.

Stage 2: Mobilisation of execution team

In the second stage, the Credit Event team mobilises the members in the institution responsible for execution. A joint meeting is organised to clarify the various aspects of contracts which have been triggered, in reference to the universal spreadsheet which has been kept up to date up to the occurring of the event. It is discovered that 16 single-name CDS, 23 CDOs, and 4 CDO³ transactions had Riskplenty as a reference entity. In 60% of these transactions, Institution X had bought credit protection. Plans are made, and arrangements to draft extension notices and other letters are discussed.

Stage 3: Event determination

Prior to the event, template notices have already been prepared by the team, including final price notifications, valuation dates and physical settlement notices. In the third stage with the occurrence of a failure to pay, these are prepared and checked by the team, and

Notes

66 Ibid.
sent/managed by the relationship officer and his team on the selected event determination date, 1 December 2009. These information is passed on to the Credit Derivatives Determination Committee to confirm that a credit event has occurred and reference to the auction procedure to take place.

**Stage 4: Settlement**

In the fourth stage, the committee concentrates on settlement issues. A calendar of events has been prepared to guide the execution of settlement procedures, and every member of the team is clear about their ambit of responsibility. Much of these will utilise the new administrative procedures of the CCP, which is now quicker and more efficient, utilising electronic delivery of valuation date notices and other valuations.

**Stage 5: Review**

In the last stage, the committee carries out a last diligence review to ensure that any loose ends in this procedure have been smoothly measured and tied up. It also ensures that correspondences and transactions have been wholly recorded, and any mistakes/problems occurred troubleshooting so that it will serve as a learning experience for the next Credit Event. Institution X has managed this particular Credit Event of the collapse of Riskplenty Republic remarkably well, and is now better and more experienced to deal with like events. Should personnel in the team change, the records and spreadsheets have also been diligently updated so that any new members of the team will be able to quickly familiarise themselves on the existing transactions and the calendar process of which events are on watch.

**4.2.1.2. Lessons learnt**

In this way, it is suggested that the instilling of a Credit Event committee as part of an institution’s procedures will tidy the regulatory procedure, in focusing on organisation and transparency in record keeping, to give actors within the institution greater clarity and responsibility according to the guidelines of the Milgram model.

**5. Going forward**

Credit derivatives are currently in the eye of the storm. Although cataclysmic fallout was fortuitously avoided in the recent Lehman Brothers bankruptcy and AIG debacle, the size and interactional complexity of the market means that it is a very real source of systemic risk.

This article applied Milgram’s theory to synthesise and develop the issues surrounding the regulation of credit derivatives, and suggested that the credit derivatives marketplace is both tightly coupled and interactively complex, leading to illusionary habitual trust of actors and conformist behaviour. Utilising the Milgram construct, it was suggested that an effective regulatory structure should be geared towards (1) decoupling the system, by simplifying products and regulation; and (2) empowering participants with greater understanding and information to increase the effectiveness of checks and balances. Looking beyond the current crisis, this article argues for regulatory reforms in pursuit of a more robust and survivable economy.

This approach was then applied to analyse the issues surrounding recent initiatives pushed by the De Larosière report, including the creation of a CCP and the reform of CRAs. Milgram’s theory was also utilised as a guide to lay out the framework of an internal ‘Credit Event’ strategy to empower participants and increase clarity. In this way, it is meant to highlight that the optimal regulatory structure is shown to be one which allows for proper feedback and magnification, for the simplification of formal processes. A package of both public and private regulatory initiatives, rather than the current status quo of self-regulation, might be the best combination to prevent future contagion of financial markets.

It is suggested that the Milgram construct can also be extended to other cross-sections of the credit derivatives markets, particularly (1) transparency and disclosure requirements; (2) dispute resolution; and (3) settlement mechanisms. A move towards consistent international standards should be advocated in this field, and greater communication between regulators in different jurisdictions.

The 2008-09 credit crunch has rightly highlighted the adequacy of financial regulation in the EU. However, such an examination cannot be carried out meaningfully without considering the performance of the regulators themselves within the current structure.

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**Notes**

68 See note 12 and Appendix 1.
69 There is a current debate on whether DTCC public disclosure is appropriate. Schwarz has suggested that this newfound information may create market instability, and destroy proprietary trading strategies. See Schwarz, ‘Systemic Risk’, (2008) 97 Geo. LJ 193 p. 204.
70 Ibid.
Milgram’s theory (using the Credit Event committee as a guide), may help to provide useful insights as a counterpoint to a ‘light touch’ regime,\textsuperscript{71} for greater empowerment of actors and the improvement of evaluation tools with an objective of curbing systemic risk.

In addition to addressing the specific weaknesses in credit derivatives regulation, Milgram’s theory can also have a part to play in considering the holistic design of the EU regulatory system itself, focusing on the need for co-ordinated action to maintain financial stability, effectively deal with financial crisis, enhance financial competitiveness and preserve market integrity.\textsuperscript{72}

Specifically, the Milgram construct highlights the need to decrease gaps and inconsistencies, simplify regulation and empower actors – an objective which is not merely fulfilled by any subsidiarity approach of the setting up of new house committees\textsuperscript{73} or the mere addition of more sophisticated systemic risk modeling systems.\textsuperscript{74} The financial crisis should be seen as an impetus for positive and much needed change, to enable the crisis to be utilised as an opportunity. Looking forward, it is suggested that blunting the Damoclean sword of systemic collapse should be the foremost objective of any reform of the credit derivatives marketplace.

\textbf{Notes}

\textsuperscript{71} ‘Light touch’ has typically characterised the UK Financial Services Authority regime in their preference for a principles based approach, prioritising discussion over enforcement. See \textit{Risk}, 2005 University of Michigan p. 46.
\textsuperscript{72} See note \textsuperscript{32}.
\textsuperscript{73} Points 16, 17, 21, 23 and 24 focus on new bodies to be created under the De Larosière report. See note \textsuperscript{32}, and Appendix 1.
\textsuperscript{74} Section 4.1.4, such financial modelling systems are not an end-all in themselves, and are more a reinforcing method than a holistic solution.
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