School of Business,
Economics and Law
GÖTEBORG UNIVERSITY

Collateralized Debt Obligations

- A Study on the Informational Transaction Transparency -

Keywords: Collateralized Debt Obligations, subprime crisis, investment prospectus, information exchange, securitization

Author: Social Security No:

Karl-Erik Dexner 870227

Master Thesis in Industrial and Financial Management
School of Business, Economics and Law
Göteborg University
Fall 2008
Professor: Stefan Sjögren

Author: Social Security No:

John Zerihoun 750409

Intentionally blank

ACKNOWLEDGEMENT

We would like to thank all who agreed to be interviewed despite these troubling times. We would also like to express our gratitude to the staff of the compliance departments with which we had frequent contact. Furthermore, we greatly appreciate all given assistance from the United States Securities and Exchange Commission in navigating the regulatory framework.

Closer to home, we would like to express our thankfulness to our professor Stefan Sjögren who has been a great mentor and coach during the process of writing this thesis. Finally, we greatly appreciate those who have peer-reviewed and given us valuable input during the writing process.

Karl-Erik Dexner John Zerihoun

Gothenburg, 090109

ABSTRACT

Authors: Karl-Erik Dexner & John Zerihoun

Professor: Stefan Sjögren

Title: Collateralized Debt Obligations – A study on the Informational Transaction Transparency

Background & Problem discussion:

The relative low interest rate in the first part of the new millennium spurred on demand for mortgage financing and by extension also fueled the housing market, primarily in the United States. Subprime loans were incorporated into and repackaged into various ABS. As the house prices declined and the subprime mortgages resetting at increasingly higher rates of interest, borrower defaults. Many equity and mezzanine tranches of MBSs and by extension CDOs were wiped out. The problem of not knowing which securitization investments were good and which were bad led to a halt in investment altogether.

Aim and purpose:

The main purpose of this study is to qualitatively explore the information exchange between originator and investor of a CDO security. A further purpose of this study is to complement the existing research in the mapping of a CDO transaction.

Methodology:

This paper examines the human factor in the originator-investor environment of a CDO transaction. Thus, a qualitative approach to the problem is used. Interviews with people at some of the largest financial institutions of the market, actively involved in the investment decision on both originator and investor side has been conducted.

Results:

The study shows that there exists a mismatch in the information supplied by the participating originators and what is actually demanded by the investors, for purposes of investing in CDOs. The informational demand from the investors reaches beyond the current disclosure requirements enforced by the SEC, and encompasses such intangible aspects that could never be fully conveyed through an investment prospectus such originator brand name. It appears that the *perceived* success or failure of a CDO relies to a great extent on the *individuals* involved, and not so much on the *structure* of the CDO or its underlying assets. In that sense, the human factor, intangible values and the issue of trust surfaces as more incorporated into the decision making processes. In that sense, the term *"conveyed information"* should encompass a broader definition than the just the investment prospectus. However, if this will be sufficient enough for an investor to make an informed investment decision warrants further studies from the standpoints of the findings of this paper.

GLOSSARY

Abnormal yield: A term used to describe the returns generated by a given security or portfolio over a period of time that is different from the expected rate of return. The expected rate of return is the estimated return based on an asset pricing model, using a long run historical average or multiple valuation.

Behavioral finance: A field of study that attempts to identify market inefficiencies arising out of investor psychology.

(Charitable) trust: A fiduciary relationship in which a trustor gives a trustee the right to hold title to property or assets for the benefit of a third party, the beneficiary.

Correlation: Correlation is computed into what is known as the correlation coefficient, which ranges between -1 and +1. Perfect positive correlation (a correlation co-efficient of +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction.

Credit risk: Sometimes used interchangeably with *default risk.* The risk that the promised cash flows from loans and securities held by FIs may not be paid in full.

Default risk: The risk that a security issuer will default on that security by being late/missing an interest or principal payment.

Illiquid: The state of a security or other asset that cannot easily be sold or exchanged for cash without a substantial loss in value. Illiquid assets also cannot be sold quickly because of a lack of ready and willing investors or speculators to purchase the asset.

Indenture: A contract between an issuer of bonds and the bondholder stating the time period before repayment, amount of interest paid, if the bond is convertible (and if so, at what price or what ratio), if the bond is callable and the amount of money that is to be repaid. The indenture is another name for the bond contract terms, which are also referred to the deed of trust.

Investment bank: A bank specialized in underwriting, issuing, and distributing securities.

Investment prospectus: A formal legal document, which is required by and filed with the Securities and Exchange Commission, that provides details about an investment offering for sale to the public. A prospectus should contain the facts that an investor needs to make an informed investment decision. Also known as an "offer document".

Investment-grade: Often an asset and/or security with a BBB or above.

LIBOR: An interest rate at which banks can borrow funds, in marketable size, from other banks in the London interbank market. The LIBOR is fixed on a daily basis by the British Bankers' Association

Mezzanine: A general term describing a situation where a hybrid debt issue is subordinated to another debt issue.

Monte Carlo simulation: Problem solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables.

Red herring: A preliminary registration statement that must be filed with the SEC describing a new issue of stock and the prospects of the issuing company. It is known as a red herring because it contains a passage in red that states the company is not attempting to sell its shares before the SEC approves the registration.

Securitization: The process through which an issuer creates a financial instrument by combining other financial assets and then marketing different tiers of the repackaged instruments to investors. The process can encompass any type of financial asset and promotes liquidity in the marketplace.

Structured finance: A service offered by many large financial institutions for companies with very unique financing needs. These financing needs usually don't match conventional financial products such as a loan. Structured finance generally involves highly complex financial transactions.

Subprime: A classification of borrowers with a tarnished or limited credit history. Subprime loans carry more credit risk, and as such, will carry higher interest rates as well.

Tranche: A piece, portion or slice of a deal or structured financing. This portion is one of several related securities that are offered at the same time but have different risks, rewards and/or maturities. "Tranche" is the French word for "slice".

Underwriter: A company or other entity that administers the public issuance and distribution of securities from a corporation or other issuing body.

TABLE OF CONTENTS

Acknowledgement ... iii
Abstract ... iv
Glossary ... v
List of Exhibits ... viii

1 Introduction ... 1
1.1 Background and Overview ... 1
1.2 Problem discussion ... 3
1.3 Questions ... 6
1.4 Purpose of study ... 6
1.5 Target Audience ... 6
2 Methodolgy ... 7
2.1 Type of study ... 7
2.2 Framework of the study ... 7
2.3 The Interview Process ... 9
2.4 Collection of data ... 10
2.4.1 Primary data ... 10
2.4.2 Secondary data ... 10
2.5 Criticism of sources ... 11
2.4.1 Validity ... 11
2.4.2 Reliability ... 12
3 The CDO Transaction Process ... 13
3.1 Description of a CDO ... 13
3.1.1 Credit enhancement ... 15
3.1.2 Classification of CDOs ... 16
3.1.3 Participants and working mechanism of a CDO transaction ... 17
3.2 The CDO Rating Process ... 19
3.3 The Prospectus ... 22
4 Formulation of Interview Questions ... 25
5 Empirical Results ... 30
5.1 Originators ... 30
5.2 Investors ... 32
6 Analysis ... 35

7 Conclusions and Suggestions for Further Research 45
7.1 Conclusions 45
7.2 Suggestions for further research 46
7.3 Suggestions for further reading 47

References I

APPENDIX I: CDO Issuance by Primary Collateral Type VI
APPENDIX II: CDO Managers since 2001 VII
APPENDIX III: Trustees for Worldwide CDOs in the First Half VIII
APPENDIX IV: Example Table of Contents for CDO Prospectus IX
APPENDIX V: Required Information in Registration Statement X
APPENDIX VI: Interview Guide Originator XII
APPENDIX VII: Interview Guide Investor XIII

LIST OF EXHIBITS

Exhibit 1.1 Common Types of Asset-Backed Securities 2
Exhibit 1.2 Generic Model of the CDO Transaction 4
Exhibit 2.1 Empirical & Analytical Scope of Study 8
Exhibit 3.1 CDO Issuance by Primary Collateral Type 13
Exhibit 3.2 Return Distribution of Tranches 14
Exhibit 3.3 Example of a Capital Structure of a CDO....15
Exhibit 3.4 Classifications of CDOs 16
Exhibit 3.5 Generic CDO Organizational Structure 17
Exhibit 3.6 Typical Investor Profile 18
Exhibit 3.7 Managerial Performance 22
Exhibit 5.1 Respondent ranking of important risk descriptors 30

1 INTRODUCTION

In this chapter, the authors initially present a background and overview of the financial market crisis and illustrate the point of departure of this paper. In doing so, the purpose of the paper is stated as well as to whom the study is primarily aimed.

1.1 Background and Overview

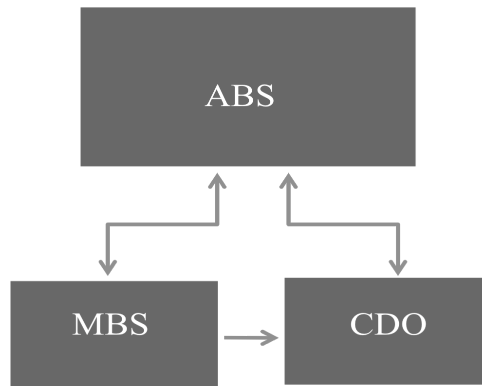
The world is currently in the midst of a financial crisis unparalleled in history. Prestigious investment banks and large financial institutions have been forced into bankruptcy. Central banks all over the world are forced to pull rabbits out of the hat to seize control of the situation and media coverage is crammed with words unknown to the general public such as "*subprime*", "*Mortgage Backed Securities (MBS)"* and "*Collateral Debt Obligation (CDO)*". As the hunt for someone or something to place the blame on, the derivative instrument known as CDO have been put under special scrutiny by legislators worldwide. What is the connection between CDOs and the financial market crisis? What is really meant by a CDO and why, not to mention how, did it rise to such a star-spangled fame in recent years?

In the most basic of definition, a CDO can be said to collateralize and securitize assets not normally traded in the form of securities. Did that explanation make it any easier? Probably not. In order to thoroughly understand the concept of a CDO, the abovementioned definition warrants further deconstruction. Cameron (2003) defines securitization (see glossary) as the creation and issuance of debt securities, or bonds, whose payments of principal and interest is derived from cash flow generated by separate pools of assets. In Vink & Thibeault (2008), a historical background to securitization is presented as the authors describe the introduction of the instrument in the early 70s in the United States. Asset securitization of the U.S. mortgage market set to rise in the midst of the government agencies endorsing these securities. Still in the mid 80s, securitization techniques were applied to a class of non-mortgage assets, namely car loans. In the light of early success, securitization issues expanded and diverged into numerous of assets. Bayoumi & Kodres (2007), describes the evolvement from the late 80s and onwards as a time where securitization facilitated market growth by dispersing risk and providing investors with highly-rated securities by means of enhanced yield.

As a lender extends a loan or acquires another revenue-producing asset for instance a lease, they are creating assets that can be securitized. In the case of balances due on credit card accounts or a corporation's accounts receivable it can also be securitized. The initiator of the security is called originators and in the vast majority of securitizations, it is critical that the transfer of assets from the originator to the SPV is legally viewed as a sale, more specifically referred to as a "true sale". If, for any reason, the asset is not considered a true sale, investors are vulnerable to claims against the originator of the assets (Cameron, 2003).

Deepening the discussion, Prince (2005) untangles the relation between asset-backed securities (ABS), MBS and CDO in which the latter two are part of the first one. He argues that CDOs constitutes approximately 14 percent of outstanding debt in the ABS market (In a later part of this paper, a more in-depth analysis of the fundamentals surrounding CDOs will be provided). The exhibit below highlights the relation between the various securitization types.

EXHIBIT 1.1: Common Types of Asset-Backed Securities



Source: By authors

MBS spawned from the secondary mortgage market in the 1970s. The loan market, i.e. the buying and selling of mortgages, was considered to be relatively illiquid and trading entire loans was seen as both costly and unpractical. Lenders were exposed to the risk of not finding buyers to sell their loan portfolios quickly and at an acceptable price. Consequently the risk of holding loans added the risk of rising interest rates that by extension could lead to a higher interest expense than interest income. One solution to the problem was the development of Mortgage Backed Securities, later abbreviated MBS. By combining similar loans into pools, the lender was able to pass the mortgage payment through to the certificate holders or investors (Cameron, 2003).

The first asset-backed security (ABS) is said to have been created by Sperry Lease Finance Corporation in 1985. A vast variety of assets could be included, for instance: auto loans, credit card receivables, home equity loans, student loans and even entertainment royalties. However, credit card receivables, auto and home-equity loans make up about 60 percent of all ABS (Cameron, 2003).

1.2 Problem discussion

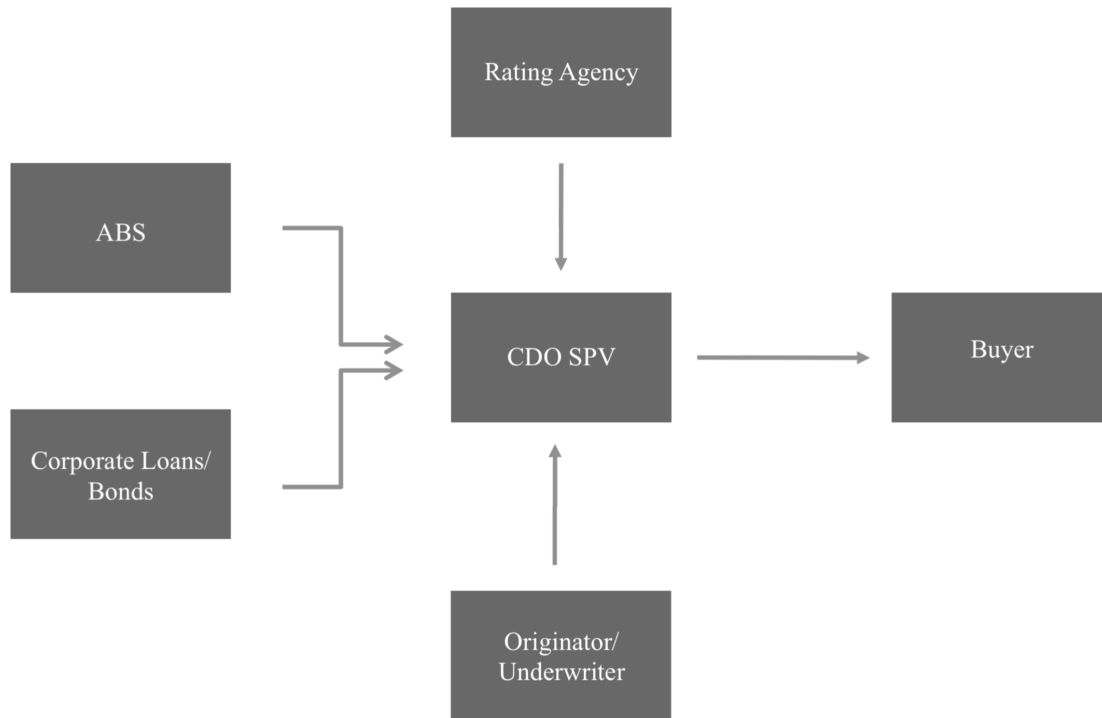
The relatively low interest rates in the first part of the new millennium spurred on demand for mortgage financing and by extension also fueled the housing market, primarily in the United States. Investors were not late to capitalize on this development in constructing structured finance products that offered a yield enhancement through securitizing subprime mortgages, i.e. non-investment grade mortgages. Subprime borrower typically pay 200-300 basis points above prevailing prime mortgage rates. From the vantage point of the borrower subprime loans were being marketed with low teaser rates over the first few years and often did not include principal repayments. These subprime loans were subsequently incorporated and repackaged into various types of asset-backed securities (ABS), including MBS and CDOs (Crouhy et al, 2007). The liquidity of the mortgage market was significantly enhanced while investors received an abnormal yield on investments, thus creating an appearing win-win situation for the involved parties.

> *"In an era of low interest rates, CDOs offered a juicy yield. With default at historic lows, the risk of something going drastically wrong seemed remote. Why buy a corporate bond yielding five percent when you can invest in a CDO with the same credit rating and the promise of a return twice as high?" (Bloomberg, 2008)*

The combination of declining house prices and subprime mortgages resetting at increasingly higher rates of interest led to increased borrower defaults, much more so than previously anticipated. This impaired, and in some cases wiped out, many equity and mezzanine tranches of MBSs and by extension CDOs. Investors were no longer sure which securitization investments or counterparties were good and which were bad, so they stopped investing in the securitized products altogether (Schwarcz, 2008).

Prior to the globalization and interconnectivity of the global financial markets, a problem like this could have been contained within the U.S. market. The problem as argued by Muromachi (2007) was that approximately 60 percent of the home mortgages had been securitized as residential mortgage backed securities (RMBS), pooled into CDOs and sold to investors *all over the world*. Consequently, when the U.S. subprime borrower defaulted, it impacted not only the original mortgage lenders but also the (inter)national CDO investors such as hedge funds and financial institutions. The ongoing crisis provided a fertile ground for a number of publications and research aimed at straightening out whether the turmoil was a result of human error or a structural issue with the financial products themselves, or a combination of both (Guseva, 2008).

EXHIBIT 1.2: Generic Model of the CDO Transaction



Source: *Adopted from Duffie & Gârleanu (2003).*

One line of studies hypothesize that the underlying issues are to be found in the fundamental concept of securitization, i.e. whether or not the risk was really diversified by collateralizing assets. One example of such a study was conducted by Gibson (2004), where he states that the correlations of innovative credit products, such as CDOs, are sensitive to defaults amongst the credit in the reference/underlying portfolio. His study examines the underlying assets as they are added into respective tranches. Mason & Rosner (2007b) embark upon the problem discussion at an earlier stage. In their paper they discuss the relaxation of lending standards for mortgages and the implementation of loan mitigation practices. They found that even investment-grade rated CDOs will experience significant losses in the case of depreciation of home prices.

The second line of studies is instead focused on the role played by the rating agencies in determining the credit worthiness of these securitized products. It has been long known that certain conflicts of interest exist in the credit rating business for many years. A study by the SEC Commission (2003) identified two of the most significant potential conflicts as being 1) issuers pay for the ratings and 2) the development of ancillary businesses. Arguably, being dependent on revenues from the companies they rate might induce more liberal ratings. Also, the ratings agencies have begun developing ancillary businesses to complement their core ratings business. These businesses include, for an additional fee, presenting how hypothetical scenarios

would affect ratings. Some argue that clients may be pressured into buying these services out of fear for adverse repercussions on the credit rating (SEC, 2003). Other studies, amongst them by Mason & Rosner (2007b), argue that there exists a set of fundamental differences in rating structured finance products compared to corporate securities, and that the big three rating agencies are often confronted with an array of conflicting incentives. Effectively, they argue, the rating agencies become part of the underwriting team leading to risks and even more conflicts. (A brief listing of further studies within these areas can be found in section *7.3 Suggestions for Further Reading*.

The covered aspects and angles of these studies are certainly important in adding to the comprehension of the CDO process and they all point towards a transparency problem because of the products fundamental complexity. However, the authors of this paper are of the opinion that one aspect that has yet to be fully examined is the information transparency between the originator and the investor of the CDO notes/securities (see Exhibit 1.2 above). In line with Guseva's (2008) aforementioned statement, the question to ask, with respect to originator and investor, is 1) whether an error was made and 2) whether this error was human or structural to its nature. As previously mentioned, there are few published studies within this area. However, a study conducted by Schwarcz (2008) touches upon the subject as he poses the question: "*If disclosure provides investors with all the information needed to assess investments, why did so many investors make poor decisions?*". Schwarcz then proceeds by examining whether there exists some structural flaws in structured finance as a concept and the responsibility of the rating agencies. Schwarcz, however, only poses hypotheses and does not make any form of empirical study with respect to the participants involved, which is the outset of this study.

The information exchange will be examined from the basis of the investment prospectus, written by the originator and utilized by the investor. The investment prospectus is chosen as the informational vehicle for reasons explained further on. More specifically, this paper will examine the matter from the point of *sufficiency*, i.e. is the information contained and conveyed through the investment prospectus comprehensive enough in order for an investor to make an informed investment decision based on it? By *informed* decision the authors refer to an investor who is deemed to have sufficient information to weigh the risks and merits of an investment opportunity. Formally stated, the question becomes:

1.3 Questions

To what degree is the conveyed information from the originator sufficient for the investor to make an informed investment decision?

In order to investigate and compare the information that is transferred against the information that is demanded by investors, the following sub-questions needs to be examined:

From the point of view of the originator, what information do they include/exclude in the prospectus?

From the point of view of the investor, what information is included in the investment decision?

1.4 Purpose of study

The main purpose of this study is to qualitatively explore the information exchange between originator and investor of a CDO security. A further purpose of this study is to complement the existing research in the mapping of a CDO transaction.

1.5 Target Audience

The target audience of this paper is primarily the discussed, and surveyed, participants of this study; namely the originators and investors of CDOs. It is the belief of the authors that both parties will benefit from a deepened understanding of the construction/investment process of the counteracting party. From a broader perspective, the study can be read by anyone wishing to add to his/hers understanding of the recent market developments.

2 METHODOLGY

In this chapter, the authors present the overall framework of the study and the tools utilized in the research process. Concluding the chapter, criticism to these sources of information is also provided.

2.1 Type of study

Previous work covering the CDO structure has by and large been conducted in various quantitative studies that either search for correlations between variables or by examining various mathematical models with regards to CDOs and securitization. Even though Holme & Solvang (1997) argue that there is no reason to address one specific method as the correct one, the authors have carefully examined various approaches to the aforementioned problem and concluded that a qualitative approach will be most beneficial, for reasons discussed below.

McCall & Simmons (1969) state that a qualitative method can be viewed as a generic term for proceedings that to a larger and lesser extent combines the following five techniques: direct observation, participant observation, information- and respondent interviews and finally analysis of sources.

This paper sets out to, amongst others, examine the human factor in the originator-investor environment of a CDO transaction. A strengthening standpoint to the matter is made as Holme & Solvang (1997) describe the qualitative method as an attempt to bridge the subject-object relationship that denotes science. Rather than to observe and measure reality, the focus in placed on how the human factor perceive and interpret the encompassing reality. In other words, the qualitative study investigates the phenomenon in its realistic context where borders between phenomenon and context are not given. This implies that the qualitative research process is not as standardized and sequential as the quantitative research process, which is what is needed when attempting to comprehend the human mind and its way of thinking. More often than not, us human beings are *not* as standardized and sequential as we sometimes hope to be.

2.2 Framework of the study

In order to properly address this study's stated problem and subsequent questions, a thorough description of the CDO process is warranted. Chapter 3 *Description of the CDO transaction process* examines what a CDO is, how it is structured, the participants of the transaction and the various stages of the offering process. It is by means of this mapping procedure that many of the posed interview questions were initially derived. Without an understanding of the transaction itself, it would have been impossible to infer questions with regards to the subject. It would also have been impossible for the *reader* to comprehend the questions themselves without that same understanding.

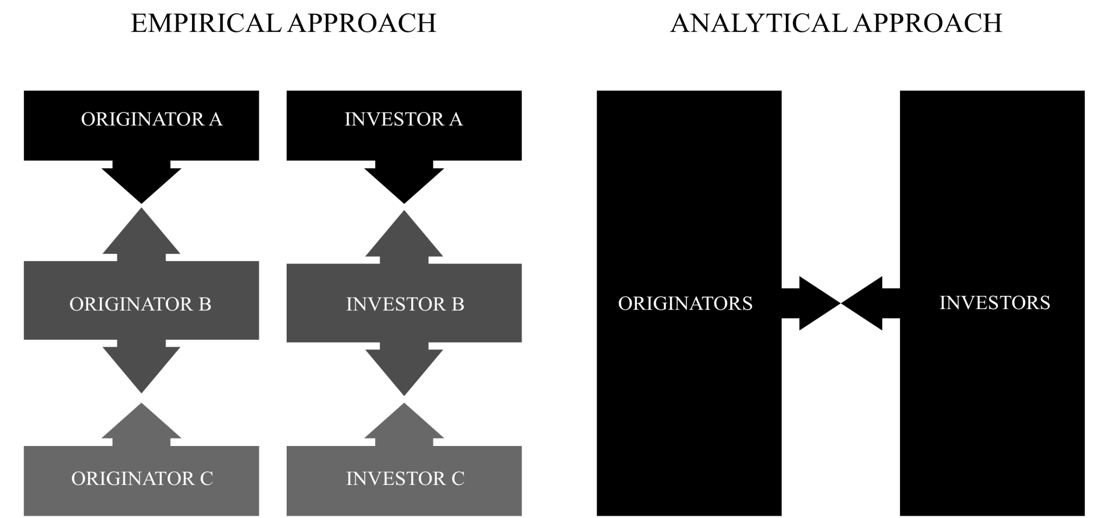
With knowledge of the transaction now in place, Chapter 4 *Earlier studies* shift the focus to the relationship and interaction between the *originator* and the *investor*. The informational exchange between these two parties is a function of both parties' knowledge of the technicalities of the CDO process (as covered in chapter 3) and the effects this has on the interaction between originator and investor. Up until this point, the interpretation has been quite technical, and by extension quantifiable. Going forward, however, the informational exchange is subjected to many *qualitative* variables, often interpreted through various psychological phenomenons. In the realm of finance, this is often referred to as *behavioral finance*. Consequently, the formulation of interview questions draws upon earlier studies within this field, adjusted to the point of view of the respondent. Naturally, the questions will pertain to the technical framework presented in chapter 3.

Chapter 5 *Empirical Study*, account for the findings obtained through the interviews. The chapter presents the interview findings from originators and investors separately from one another. The chapter does not set out to subjectively judge the individual responses, but rather to outline the homogenous opinion to each question with respect to each party. A graphical illustration of the empirical scope and approach is shown in Exhibit 2.1 below.

Chapter 6 *Analysis* makes a lateral, i.e. cross-sectional, analysis *between* the response from originator and investor with respect to each area/subject having been outlined in chapter four. In doing so, the authors aim to highlight any similarities and/or dissimilarities in the responses, thus inferring an analysis from the basis of this. The analysis draws upon the theory and earlier studies as presented in chapters three and four. A graphical illustration of the analytical scope is shown in Exhibit 2.1 below.

Finally, chapter 7 *Conclusion* discusses the findings presented in chapter six and the major conclusions that can be drawn from it. In addition, suggestions for further studies and additional readings are presented accordingly.

EXHIBIT 2.1: Empirical & Analytical Scope of Study



Source: *By authors.*

2.3 The Interview Process

The authors have opted for an interview-based approach. Halvorsen (1992) argues that the significance of such an approach is that the researcher puts her into the situation and observes it out of the respondent's viewpoint. In doing so, the researcher attempts to create a deeper and more complete view of the phenomenon being studied. The conducted interviews can be classified as being *semi-standardized*. This means that they build upon a structure of formulated questions that allow for answers outside the scope and frame of multiple-choice questionnaires. Conducting interviews in this manner brings forth several advantages according to Eriksson & Wiedersheim-Paul (2006), amongst them enabling the interviewer to ask follow-up questions that are of particular interest to the study, but that was not previously articulated in the set of defined questions. According to Holme & Solvang (1997), the strength in a qualitative interview lays in that the researcher does not preside over the development of the interview. In line with a so-called *free interview*, defined by Lundahl & Skärvad (1999) as where answers are not bounded by predefined choices, the authors have mined, when possible, certain areas in an attempt to stimulate the interviewee to develop theirs thoughts and answers further. During the interviews, the subsequent interview guide was not necessarily followed from point to point as long as the interviewee covered the formulated problem(s) of the study. Other ideas and opinions developed by the interview subject were taken into consideration to the extent possible and applicable within the framework and articulated purpose.

The contact information to these individuals has been collected through the database provided by *Asset-Backed Alert* on the top-tier CDO market makers (further described in section 2.4.1). The most up-to-date listing available contains 20 different financial institutions that deal with CDOs and other asset-backed securities. All of the listed banks were contacted, although many declined an interview mainly due to the prevailing market uncertainties. Five of the banks, however, chose to participate, thus yielding an effective participation ratio of 25 percent (five banks out of 20). On the origination side, four individuals from the different banks were interviewed. On the investor side, three individuals were interviewed. All respondents, except for one, held a managerial position for either origination or investing in CDOs. For security and confidentiality purposes, the interview guide occasionally required scrutiny by the compliance department of the banks. In addition, neither the names of these banks nor the individuals that were interviewed will be presented in this study.

Furthermore, because of the implemented security measures, the authors had no possibility of recording the interviews as initially intended. Instead, the interviews were documented in written form. It should also be noted that many interview subjects refrained from a telephone interview for various reasons. In such a case, the questions were sent, and answered, via e-mail instead. Out of the seven respondents, two interviews were conducted through telephone while five chose to answer via e-mail. Consequently, the length of each individual's reply varied with respect to the interview instrument used and the schedule of the respondent.

2.4 Collection of data

2.4.1 Primary data

According to Halvorsen (1992), primary data is defined as information that has been collected by the authors for the specific purpose of the study. In this paper, the primary data is predominantly qualitative to its nature, collected through various interviews and dialogues of both CDO market makers and CDO traders. Because of the ongoing financial market turmoil and the issues of lacking trust in the market, all respondents have been kept anonymous for the purpose of this study. It has also been of great importance not to place blame or lead the interviewees by means of subjective questions. To ensure the accuracy of the information obtained, it has been of the outmost importance for the authors to come in contact with the real market actors that trade with CDO products on a daily basis, in contrast to receiving the information third-hand. In doing so, the reliability of the informational integrity is hopefully maintained.

The interviewees can be divided into two sections; one being the head CDO bankers, referring to those that oversee deal origination, structuring and other areas unrelated to trading operations; the other being CDO traders, that are in charge of buying and selling the securities for their employers and clients. As previously mentioned, the contact information to these individuals have been collected through the database provided by *Asset-Backed Alert*, which in fact provides the only comprehensive listing of public and private asset-backed and mortgage-backed securitizations, including collateralized debt obligations. The responsible firm, Harrison Scott Publications, also publishes *Real Estate Alert, Hedge Fund Alert, Commercial Mortgage Alert* and *Private Equity Insider*.

The coverage over the active CDO market makers is regularly updated and it should be noted that the financial crisis has accelerated the personnel overhaul. By mid-2008, many familiar names had disappeared from the listing. Excluded from the listing are bankrupt Lehman Brothers, whose banking division was taken over by Barclays, and Merrill Lynch, which has been bought by Bank of America. Notwithstanding the bankruptcy, Lehman Brothers would have been the world's most active CDO underwriter this year (Asset-Backed Alert, 2008). Nevertheless, the listing includes the *current* major market makers of CDOs.

2.4.2 Secondary data

Information that is available to the public and which is searchable is defined as secondary data. *Process data* includes newspaper articles, government debates and private letters. *Accounting data* includes corporate annual reports and public records. *Research data* is comprised of data that have been collected by other scientists and researchers. Thirdly, research- and literature-based secondary data includes relevant academic literature, journals and articles as well as Internet-based sources (Halvorsen, 1992). The interested reader is directed to the reference list at the end of the paper for a comprehensive account of utilized sources. It should, however, be noted that because of the fact that the subprime crisis and the subsequent liquidity

crunch are still in effect, not much published literature exists in the particular field. In addition, the informational exchange between the originator and investor in a CDO transaction has long been viewed as somewhat of a "black box" in the sense that it has not been clearly described nor mapped how the process really works (hence the aim of this paper). Consequently, literature covering this topic is also scarce in that regard. In light of this, the authors have, to a greater extent, relied upon the most up-to-date articles and journals regarding CDO transaction structure and the involved participants. This has been made to ensure the relevance of the information excerpted. Because several of these referenced articles originate from the participants themselves, and unavoidably so, this might open up for a certain amount of subjectivity.

2.5 Criticism of sources

2.4.1 Validity

Erikson & Wiedersheim-Paul (2006) define *validity* as an instrument's capability to measure that which was initially intended to be measured. Another definition of the term is provided by Lundahl & Skärvad (1999) as the absence of systematic measurement errors. The distinction between *internal* and *external* validity is often made, and Eriksson & Wiedersheim-Paul (2006) define internal validity as when an instrument of measurement, e.g. a questionnaire, actually measures what the researcher intended to. Because certain individuals chose to answer via e-mail, the risk arises of misinterpreting a question, without the authors being able to orally clarify. The term *external validity*, however, refers to the accordance between the actual measurement value and the operational definition, i.e. the operationally used definition of validity. One should be cautious as to define the operational validity too narrowly or too wide (Halvorsen, 1992). Consequently, the interview questions have to be formulated as to avoid "leading the subjects" as well as from being too comprehensive to its nature. One factor that might skew the external validity of this study is the sample of investment banks included. As previously mentioned, the listing conducted by Asset-Backed Alert only includes banks are still active within repackaging asset- and mortgage-backed securities into new deals. Consequently, the firms that are forced to close down, for whatever underlying reason, are not included here. This is referred to as *survivorship bias*, defined by Carpenter & Lynch (1998) as:

> *"Survivorship bias is a property of the sample selection method. It results when the sample includes only funds that survive until the end of the sample period"*
>
> *(Carpenter & Lynch, 1999, p. 339)*

As a result, the authors must be aware of this fact when interpreting and analyzing the obtained answers from the interview subjects.

2.4.2 Reliability

Halvorsen (1992) defines the term by how reliable the measurements are. In contrast, Eriksson & Wiedersheim-Paul (2006) phrase it as the measuring instrument yielding reliable and stable outputs. In addition, Lundahl & Skärvad (1999) argue that a study with a respectable level of reliability is one characterized by not being affected by the circumstances surrounding it or who performs the study, i.e. the absence of sampling errors. Consequently, in order for the collected data to attain high validity, both reliability as well as the defined validity must be high (Halvorsen, 1992).

However, in an expounding study, i.e. one in which qualitative data is interpreted and analyzed thoroughly, Eriksson & Wiedersheim-Paul (2006) mention that the reliability could undoubtedly be questioned. They do, nevertheless, also argue that quantitative data can every so often give a stronger sense of precision than reality. The responses of the interviewed individuals should not be assumed as being representative of the bank in which they work, nor the CDO market in its entirety. As previously mentioned, because the data is based on interviews with the investment banks (IB) themselves, the reliability and objectivity of the answers can be questioned. Finally, the authors are aware that not being able to record the interviews conducted over the telephone, leaves room for certain misinterpretations.

3 THE CDO TRANSACTION PROCESS

This section will attempt to clarify what a Collaterized Debt Obligation (henceforth referred to as simply a CDO) is, and how the transaction of this security works in a financial market context.

3.1 Description of a CDO

Perhaps the easiest way to think of a CDO is that of a small company with both assets and liabilities. This company, or in financial terms, Special Purpose Vehicle (SPV), uses the funds that have been raised from issuance of notes to purchase collateral, e.g. other loans and bonds. The repayment to investors is subsequently linked to the performance of the underlying securities that serve as collateral for the CDO liabilities.

Various assets can be collateralized, e.g. high-yield bonds and leveraged bonds, including Commercial Mortgage Backed Securities (CMBS), which have lately been put to shame in light of the initial subprime mortgage crisis and the subsequent financial market turmoil. Nevertheless, a wide variety of assets could be included, but the two dominating the arena are collateralized loan obligations (CLOs) that are CDOs backed by leveraged bonds, and the second major transaction is structured finance CDOs, which are CDOs backed by other asset-backed securities (Prince, 2005). Exhibit 3.1 illustrates, by type of collateral, the most prominent underlying asset type during the first half of 2008. A comparison of the same figures against 2007 can be found in *Appendix I: CDO Issuance by Primary Collateral Type*.

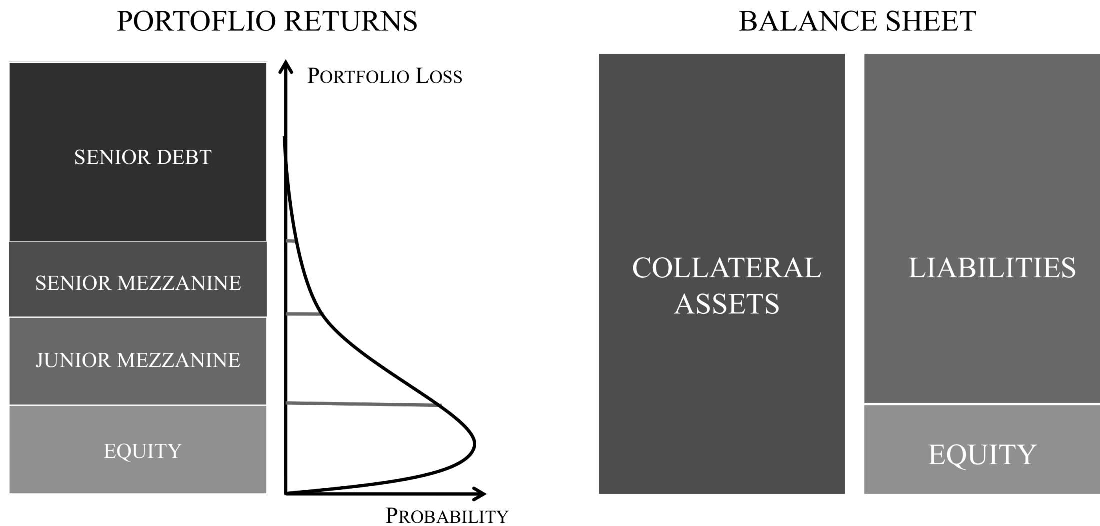
EXHIBIT 3.1: CDO Issuance by primary collateral type

	1H-08 Issuance ($ Mil.)	No of Deals	Market Share (%)
Corporate loans (arbitrage)	28 642.4	48	57.1
Structured products	15 107.4	35	30.1
Small business/SME loans	3 582.3	6	7.1
Investment-grade corp. Bonds	2 186.4	9	4.4
Preferred stock/trust-preferred securities	631.7	1	1.3
Hedge funds/private equity funds	46.5	1	0.1
Corporate loans (balance sheet)	0	0	0
High-yield corporate bonds	0	0	0
REIT unsecured debt	0	0	0
Sovereign debt	0	0	0
Total	50 196.7	100	100.0

Source: *Asset-Backed Alert, 30/06/08*

The liabilities of a CDO, i.e. the obligations to the investors, however, are not uniform. Rather, they consist of various classes of investment-grade and non-investment grade notes, as well as an equity component, such as preferred shares (see illustration below). This kind of brake-down is often referred to as *tranches* that all carry varying degrees of risk (Prince, 2005). And as with all financial instruments, risk is highly correlated with rewards, hence the uneven distribution of potential returns as shown in Exhibit 3.2 below. Consequently, tranching refers to the priority of interest in the cash flows that the collateral are expected to generate.

EXHIBIT 3.2: Return Distribution of Tranches



Source: *Adopted from "Investing in Collateralized Debt Obligations", CFA Institute Conference Proceedings 2005.*

As argued by Franke et al (2007), by way of tranching the default risk of a portfolio of assets, investors confident in their risk management abilities can buy into the high-risk tranches and vice versa for low-risk tranches. Barclays (2002) state that the *senior notes* of the CDO are typically rated between AAA and A and subsequently have the highest priority on receiving cash flows. The next level is called the *mezzanine* class, and is typically rated BBB to B. With regards to subordination, the investors of the mezzanine class tranches are prioritized below the more senior tranche. The *equity* part of the CDO is in most cases unrated and only receives what remains of the residual cash flow after payments have been made to the more senior tranches (Barclays, 2002) (see Exhibit 3.3 below). Prince (2005) states that the payment to this equity tranche may be deferred or eliminated depending upon available cash flow and in that sense, this position are the first who stand to lose. In addition, Chen (2007) refers to the equity positions as the "first-loss" position in the collateral portfolio because it is exposed to the risk of the first dollar loss in the portfolio.

Any further losses to the collateral are absorbed by the next tranche in the capital structure. Nevertheless, the driving force behind the CDO structure is to raise funds at the lowest possible cost. This is done so that the CDOs equity holder, who is at the bottom of the cash flow waterfall, can get the most residual cash flow (Fabozzi et al,

2007). Because of the cascading effect between classes, this arrangement is often referred to as a *cash flow waterfall*. This procedure makes the senior tranche significantly *less* risky than the collateral assets themselves (Mititica, 2003). This introduces one to a major issue on the subject of CDOs, namely what is referred to as *credit enhancement*. This is the topic of the next section.

EXHIBIT 3.3: Example of a capital structure of a CDO

Classes	Rating	Coupon	Percentage of Capital Structure
A	Aaa/AAA	LIBOR+45bp	70 %
B	A2/A	LIBOR+145bp	15 %
C	Baa2/BBB-	LIBOR+245bp	7 %
D	Ba3/NR	LIBOR+645bp	4 %
Equity	Not Rated	Expected return 25-30%	4 %

Source: *Adopted from Mititica (2003)*

3.1.1 Credit enhancement

One of the key points about a CDO, and applicable to most other asset-backed securities for that matter, is that the ratings on the issued securities can be higher than those of the corporations originating the underlying collateral, unlike conventional corporate bonds which are unsecured. This higher rating is referred to as *credit enhancement* (Vink & Thibeault, 2008). Higher ratings can be achieved if 1) the credit quality of the collateral exceeds that of the originator and/or 2) if other credit enhancements ensure promised cash flows to the same extent as promises of a higher credit quality corporations. Essentially, the credit rating is enhanced because the investors are more likely to receive their promised cash flows, hence making the investment safer. The capital structure, as previously discussed, and its subordinate waterfall structure is one form of credit enhancer in itself. For instance, Mititica (2003) argues that the risk in the senior most tranche is significantly lower than the risk of the collateral because of its position.

In addition, other forms of enhancement include, but are not limited to, *spread or reserve accounts, cash collateral accounts*, *third party insurance* and *overcollateralization*. In a reserve account, funds remaining after expenses have been paid-off are accumulated and can be used if and when expenses exceed income. By cash collateral accounts one typically refers to short-term, highly rated investments, which can be used to make up for shortfalls in the promised stream of cash flows. Third party insurance means that an external part stands as guarantee of principal and interest payments on the securities (Sabarwal, 2002). These third-party insurance companies are typically *monoline*[1] firms that are rated A or better. Overcollateralization, as defined by Barclays (2002, p.25), refers to the excess of the par amount of collateral available to secure one or more note classes over the par amount of those classes.

[1] These firms are called "*monoline*" because credit insurance is their only line of insurance business, unlike regular multiline insurers known as general insurers.

Sabarwal (2002) also states that in order to achieve a particular rating for a security, CDOs must maintain some minimum credit enhancement level, e.g. minimum spread, minimum third-party insurance or minimum overcollateralization. Violations of these levels will trigger an *early amortization event* in which repayments begin with the readily available assets of the SPV.

3.1.2 Classification of CDOs

A CDO is generally defined through the following four classifications; asset class, structure, purpose and management as illustrated in Exhibit 3.4 below. According to Chen (2007), most CDOs can be categorized into either of two main groups or issuer purposes: arbitrage and balance sheet transactions. In the former, the equity investor is capturing the spread between the high-yield collateral and the highly rated notes. This kind of CDO represents the majority of issuance today and extracts value between relatively illiquid assets and the relatively cheap funding that can be gained through selling CDO securities. Contrary, a balance sheet CDO is intended to remove the loans of a financial institution in order to achieve capital relief, thereby improving the liquidity of the firm. Prince (2005) adds that banks often issue CDOs as balance sheet transactions for the purpose of regulatory relief. By shifting out assets risk is shifted to the capital markets and this lowers the capital reserve requirements and frees up capital for additional lending. Furthermore, by retaining only a small portion of the equity, the issuer is able to increase its return on equity.

EXHIBIT 3.4: Classifications of CDOs

Asset Class	Structure	Purpose	Management
High-yield Bonds	Cash Flow	Arbitrage	Managed
Investment-grade bonds	Market Value	Balance Sheet	Unmanaged
Leveraged Loans	Synthetic		Lightly Managed
Middle-market loans	Continuously offered		
Pro rata loans			
Trust preferred securities			
ABS			
REIT/CMBS			
CDOs			

Source: *Adopted from Barclays Capital's "Guide to Cash Flow Collateralized Debt Obligations" (2002)*

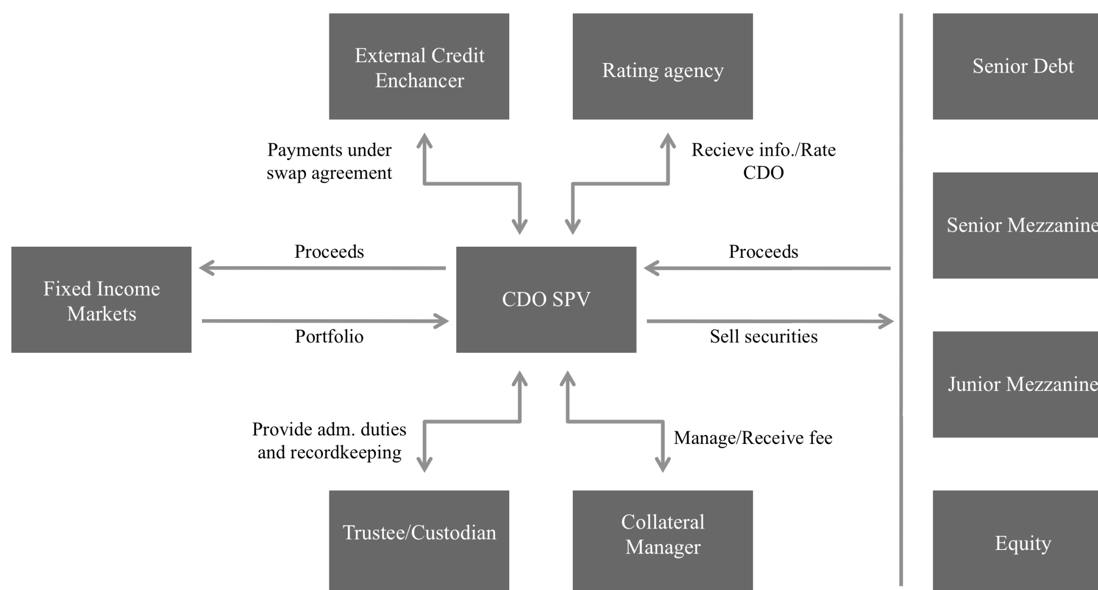
Balance sheet deals are all *cash flow transactions* that are based on the ability to pay interest and principal on the rated classes of securities having been issued. The cash flows generated by the assets are used to pay back investors in sequential order (Standard & Poor's, 2002). The cash flow credit structure is the most common type of CDO structure used today. It does not rely upon the sale of assets to satisfy the payments due (Fabozzi et al, 2007). *Market value* deals, in contrast, depend upon the ability of the collateral manager to maintain a market value, often through active trading, in order to generate sufficient funds when the collateral is sold. It should also

be noted that a CDO transaction could be *synthetic*. Franke et al (2007) gives a sound explanation a synthetic transaction as one where the originator retains ownership of the loans/bonds and transfers part of the default risk through a credit default swap (CDS) to the SPV (Franke et al, 2007, p.4).

3.1.3 Participants and working mechanism of a CDO transaction

There are many participants involved in a CDO transaction that need to be mapped in order to comprehend and grasp the fundamentals. A typical organizational structure of a CDO can be described as in Exhibit 3.6 beneath.

EXHIBIT 3.5: Generic CDO Organizational Structure



Source: *Adopted from Duffie & Gârleanu (2003).*

At one end of the spectrum is of course the investor. As previously mentioned, the reasons for investing in CDOs depend on each investor's individual profile. An investor looking for a lower yield with less risk will look at the more senior tranches, and vice versa. From the investor's viewpoint, CDOs have traditionally offered an attractive yield opportunity to those seeking a yield premium over more traditional investment alternatives. CDOs also allow for the investor to participate indirectly in a diversified high-yield or investment-grade portfolio with a collateral manager of their choice. For those who invest in the equity tranche of a CDO, the structure provides a leveraged return without some of the severe adverse consequences of borrowing via repurchase agreements from a bank. Essentially, CDO equity investors own stock in a company and are not liable for the losses of that company. Contrary to short-term

bank financing, financing via the CDO is locked in for the long term at fixed spreads to the London Interbank Offered Rate (LIBOR) (Fabozzi et al, 2007). Exhibit 3.5 highlights a generic sub categorization of different investor profiles to different tranches.

EXHIBIT 3.6: Typical Investor Profile

Senior/Subordinate (AAA/AA/A/BBB) securities	Mezzanine (BBB/BB) securities	Equity (nonrated) securities
Banks	Insurance Companies	Insurance Companies
Insurance Companies	Banks (specialized funds)	Banks
Conduits	Hedge funds	High-net-worth individuals
Fund managers	Fund managers	Alternative investment groups/special investment groups

Source: *Adopted from "Investing in Collateralized Debt Obligations", CFA Institute Conference Proceedings 2005.*

Duffie & Gˆarleanu (2003) argue that the *collateral manager* determines which assets to purchase and include in the CDO. Picone (2002) also mentions that the underwriter is responsible for the creating of the special purpose vehicle (SPV) that will purchase the collateral assets. This SPV is often registered as charitable trusts in a tax-free jurisdiction e.g. Cayman Islands, Jersey, Guemsey and Netherlands Antilles. Fabozzi et al (2007) argue that offshore incorporation enables the CDO to more easily sell its obligations and escape taxation at the corporate entity level.

The CDO itself is often operationally run by what is called a *collateral manager* who extracts a fee to manage which loans and bonds should be purchased. In *arbitrage* transactions, it is argued by Barclays Capital (2002) that the manager is by far the most important participant in any CDO transaction and she enjoys tremendous discretion in managing assets within the transaction guidelines. It is argued, however, that in *balance sheet* transactions, the issuing bank plays a more limited role, which mostly consists of administering and servicing assets transferred from its balance sheet (Barclays Capital, 2002, p.22). Today, successful CDO management franchises are found in a variety of asset management organizations including mutual fund groups, insurance companies, banks, private equity firms and hedge funds.

Picone (2002) notes that different managers stress different strategies to generate high risk-adjusted returns. For instance, an insurance company might rely on its portfolio risk management system whereas a private equity sponsor can rely on its knowledge of leveraged companies. A listing of the most prominent CDO managers since 2001 can be found in *Appendix II: CDO Managers Since 2001*. In addition, a *trustee/custodian* provides administration and recordkeeping. The trustee assumes complete control of the release of any cash and/or securities of the transaction, and pre-approves all trading decisions. In short, the trustee is responsible for ensuring compliance with the CDOs requirements. A listing of CDO trustees during 2007 and 2008 can be found in *Appendix III: Trustees for Worldwide CDOs in the First Half*.

In some CDO transactions, the SPV enters into an insurance agreement with a *bond insurer*, also called an *external credit enhancer*, having been covered previously. If

such is the case, the bond insurer is often highly rated itself providing the necessary credit enhancement. In recent years, however, Barclays Capital (2002) notes that a high rating is no longer a prerequisite of sorts for bond insurers. The purpose of an external credit enhancer is essentially to cover the expected gross default amount for a particular tranche. However, the majority of transactions rely on recoveries and on excess spread to cover for losses incurred (Standard & Poor's, 2002).

The terms for explaining the process of a typical CDO transaction varies from one article to another although a generic CDO transaction can be said to consist of a *pre-closing period*, during which the manager warehouses the assets (Barclays Capital, 2002); a *ramp-up period*, during which the collateral portfolio is constructed; a *reinvestment period*, during which the portfolio is actively managed; and an *amortization period*, during which the liabilities are repaid with the principal proceeds in order of seniority (Picone, 2002).

The *pre-closing period* refers to when the collateral manager begins to acquire the assets with the intention of transferring them to the newly created SPV (also known as *warehousing*). However, because no notes have been issued to fund the acquisitions a *bridge facility* (or *warehouse facility*) is often used for funding at this stage. On the closing date, or as in most cases during the *ramp-up period* of 60 to 180 days following the closing date, the manager issues two or more tranches of debt and equity to the investors and uses the proceeds to purchase the assets. Following this, the *reinvestment period* lasts approximately three to five years during which the cash flows from principal repayments flow to the investors. The collateral manager has leeway to invest these proceeds in short-term, liquid assets until she decides to reinvest it in accordance with the predetermined investment guidelines (Barclays Capital, 2002, p.21).

The final stage, referred to by Mititica (2003) as the *amortization period*, is when the principal proceeds that flows from the underlying assets are used to pay back the investors. The order of the payback follows the subordination structure of the CDO. Barclays Capital (2002) note that the amortization period from start to finish can range anywhere between five to thirty years.

3.2 The CDO Rating Process

This section of the paper will attempt to deconstruct the rating methodology of CDOs as seen from the viewpoint of the three dominating rating firms; Fitch, Moody's and Standard & Poor's. Other, smaller rating firms might of course utilize a different approach. These firms, however, are clearly shadowed by the "big three" in number of outstanding ratings. Evidently, the transaction of a CDO is a complex procedure and the rating process of the same is just as challenging. Standard & Poor's (2002) argue that rating agencies have always played an important role in the development of the CDO market in view of the fact that they were able to develop criteria to size default risk based on ratings of the underlying obligors.

For the purposes of this study, the aim will not be to deconstruct the *mathematical* mechanics of the rating process but rather to give an overview of both the qualitative as well as quantitative rating methodology issues. Typically, SEC (2008) argues, the rating process is fairly similar between agencies even though they often reach the same conclusions. Certain steps are common to all whereas other steps are individually taken. In July of 2008 the United States Securities and Exchange Commission conducted an extensive examination of the abovementioned rating firms in light of the financial turmoil and critique that was directed towards the rating firms' actions. In the report, an overview of the rating process is offered in a broad manner, encompassing the common denominators of the three firms' respective methods. The following paragraphs primarily draw upon excerpts from this SEC report.

With regards to CDOs, market participants need to have a thorough understanding of not only the default risks embodied in the underlying pool of assets, but also the "non-default" risks arising from the capital structure of the SPV itself. Therefore, the reliability of a CDO rating will depend on the rating agencies' ability to assess the credit risk of both the underlying asset pool as well as the distribution of cash flows to the note holders (Fender & Kiff, 2004).

The first step in the process of creating and ultimately selling a CDO is by issuing credit ratings for each of the various tranches of the product. This excludes the equity tranche that remains unrated. Each rating indicates the credit rating agency's view as to the credit worthiness of the debt instrument from the likelihood of the issuer (i.e. the investment bank) will default on its obligations to make payments. The originator of the CDO initiates the ratings process by sending the credit rating agency a range of data describing in detail the proposed CDO transaction. Upon the receipt of the information the rating agency assigns a lead analyst who is henceforth responsible for analyzing the data and for formulating a ratings recommendation for a rating committee composed analysts and/or senior-level analytic personnel. The next step for the analyst is to develop predictions, based on both quantitative models as well as qualitative judgment, as to the likelihood of the first-dollar-of-loss based on the stated interest and maturity terms. Through the use of various mathematical models often based on Monte Carlo simulation, the rating agency and the originator will come up with the default rate expected for the asset pool at each rating level. An example of this is a default rate of 30 percent at the 'AAA' level and 18 percent at the 'BBB' level. Essentially, this means that in order to place a 'AAA' rating, the structure must be able to withstand defaults equal to 30 percent of the original dollar amount of the asset pool (Standard & Poor's, 2002).

Standard & Poor's argue that:

> *"The goal of the CDO structure is to allow an assignment of a rating higher than those of the sponsor (collateral manager or seller/servicer) and higher than the average rating of the underlying assets. This is not alchemy or turning straw into gold, but rather the implementation of structured finance to create different investment risk profiles, based on the structuring of credit support" (Standard & Poor's, 2002, p.13)*

In addition, the rating analysis incorporates extensive stress testing under various scenarios to determine how much credit enhancement is needed to achieve a given level of risk and the appropriate rating. The analyst uses the CDOs indenture guidelines to run worst-case scenarios based on the collateral that is permitted under the indenture. For instance, the severest stress test, i.e. the one that would result in the greatest number of defaults among the underlying assets, is run to determine the amount of credit enhancement that is required for a particular CDO tranche to receive the highest rating. In that sense, the higher the credit rating, the higher, and stricter are the requirements for credit enhancement. As noted previously, however, the Standard & Poor's note that the majority of transactions today rely on recoveries and excess spread to cover default losses. Consequently, the credit support for a particular tranche is often established via running cash flows (SEC, 2008, p.8).

The next step of the ratings process is to analyze the proposed capital structure of the CDO against the requirements for a particular rating. If the analysts find any discrepancies she will convey this preliminary conclusion to the originator/underwriter, who can choose to either accept a lower rating or make the necessary adjustments for the senior tranche to receive the desired highest rating. Typically, originators aim for the senior tranche to be as large as possible because this pays the lowest coupon rate and, consequently, costs the originator the least to fund (SEC, 2008, p.8).

The subsequent step involves conducting cash flow analyses on the payments expected from the collateral of underlying assets and determine whether it will be sufficient to pay the cash flows due on each tranche of the CDO. The administrative costs of the CDO will also have to be covered by these cash flows. In addition, the analyst reviews the legal documentation of the CDO to evaluate whether it is bankruptcy remote, i.e. isolated from a potential bankruptcy or insolvency of the originator (SEC, 2008, pp.8-9).

The ratings process often also encompasses a qualitative analysis. This includes examining the governing documents and legal structure of the CDO to ensure that there are no hidden risks or detrimental incentives incorporated into the transaction. For CDOs that are actively managed the rating agency also conducts an operations review to assess the advisor's capacity and ability to successfully manage the CDO (Moody's, 2003, p.11). The manner in which each rating agency makes this management evaluation varies, but the common denominators are to examine the collateral manager and his track record, the operational systems and infrastructure as well as compliance and trading guidelines for the management team. The quality of the manager is most likely the most important and difficult to predict. As evident from Exhibit 3.7 below, manager performance within an asset class can vary dramatically.

EXHIBIT 3.7: Managerial Performance

Measure	Top 10	Bottom 10
Defaulted Securities Held (% of collateral)	0.10 %	13.91 %
Total Sales Net Losses (% of collateral)	0.02 %	1.29 %
Recoveries (% of par, for deals with recoveries)	49.49 %	2.55 %

Source: *Standard & Poor's CBO Index Deals, 1999 High-Yield Cohort, six-month average: October 2000-March 2001*

Following these steps, the analyst drafts a preliminary rating recommendation for each tranche and presents this to a rating committee, who ultimately votes on the rating for each tranche and communicates this decision to the originator. The originator has the option to appeal any decisions, although the appeal will not always be granted. The final decisions are published and subsequently monitored through surveillance processes. Often, the rating agency is paid only if the credit rating is issued. It can also receive a breakup fee for the analytic work undertaken even if the credit rating is not used (SEC, 2008, p.9).

After the tranches of a CDO deal have been assigned ratings, the rating agencies will monitor the collateral manager in order to prevent the composition of the portfolio from being drastically altered. This monitoring is made possible via *tests* that deal with maturity restrictions, the degree of diversification, and credit ratings of the underlying asset pool (Fabozzi et al, 2007).

3.3 The Prospectus

When an investment bank is to issue a security, be it a CDO note or a common corporate security, it is required by the Securities Act of 1933 to file a disclosure document called a *prospectus* to the SEC. The prospectus, which is subsequently approved by the Securities and Exchange Commission (SEC) for material accuracy, is by default a legal document that protects the originator/underwriter (e.g. an investment bank) since it is written proof that the investor was provided with all of the material facts related to the offering (Bhabra & Pettway, 2003). The prospectus is both an offering and a protective document. A typical prospectus provides information about the offering itself, a brief history of the firm's business, information related to past financial performance, ownership detail, and the risks associated with the investment. An example of what the table of contents could look like for a CDO prospectus is found in *Appendix IV: Example Table of Contents for CDO Prospectus*.

> *"[The prospectus] is believed to be a superior source of IPO firm information regarding the quality and potential for the firm, as it contains information for which IPO firm owners/managers can be held legally accountable with regard to the accuracy of the information" (Daily et al, 2005, p. 96)*

The purpose of the registration and disclosure requirements is to ensure that the public has adequate and reliable information regarding securities that are offered for

sale. Ellis et al (1999) also makes note of the fact that The Securities Act makes it illegal to offer or sell securities to the public unless they have first been registered. It should, however, be duly noted that the SEC has no authority to prevent a public offering based on the quality of the securities involved. Once the registration is filed with the SEC it is referred to as the preliminary prospectus or red herring[2] and it is one of the primary marketing tools of the issue. Subsequent to the SEC declaring the issue effective[3] the red herring is transformed into an official prospectus, which is considered the official offering document. At this point in time, the real marketing of the issue begins (Ellis et al, 1999, p. 5).

The information that is legally required by the SEC to be included in the prospectus is governed by the Securities Act of 1933, Chapter 2A *Securities and Trust Indentures*, Subchapter I *Domestic Securities*, section *77j.* This section does not explicitly list the specific requirements, but instead states that "*…a prospectus…shall contain the information contained in the registration statement, but it need not include the documents referred to in paragraphs (28) to (32), inclusive, of schedule A of section 77aa of this title*". Consequently, the prospectus should essentially include all points included in the *registration statement*, except for paragraphs 28 to 32. In *Appendix V: Schedule of required information in registration statement,* a brief listing of the paragraphs of *Schedule A* are illustrated.

On May 3, 2004, the SEC issued a proposal to address the registration, disclosure and reporting requirements for asset-backed securities (ABS) under the Securities Act and Exchange Act. This was due to the inherent difference between the structured products and the more common corporate securities, for which the prospectus requirements had been initially required and subsequently drafted. The SEC stated the following:

> *"Asset-backed securities and ABS issuers differ from corporate securities and operating companies. In offering ABS, there is generally no business or management to describe. Instead, information about the transaction structure and the characteristics and quality of the asset pool and servicing is often what is most important to investors. Many of the Commission's existing disclosures and reporting requirements, which are designed primarily for corporate issuers and their securities, do not elicit relevant information for most asset-backed securities transactions. Over time, Commission staff, through no-action letters and the filing review process, have developed a framework to address the different nature of asset-backed securities while being cognizant of developments in market practice. With few exceptions, our proposals were designed to consolidate and codify current staff positions and industry. After carefully evaluating the public comment received, we are adopting new rules and amendments to address the four primary regulatory areas affecting asset-backed securities that were the subject of the proposal: Securities Act registration; disclosure, communications during the offering process, and ongoing reporting under the Exchange Act" (SEC, 2005, p.1508)*

---

[2] A preliminary registration statement that must be filed with the SEC describing a new issue of stock and the prospects of the issuing company. It is known as a red herring because it contains a passage in red that states the company is not attempting to sell its shares before the registration is approved by the SEC.

[3] Section 8 of the Securities Act of 1933 details the process by which the registration statement becomes effective.

In addition, the SEC argues that it would not be practical or effective to draft detailed disclosure guides for each asset type that may be securitized. Instead, the aim is to identify the disclosure *concept* required and emphasize that the particular concept must be tailored to the particular transaction and asset type involved. The major changes, as of 2004, include enhanced requirements with regards to information that may be more material to an asset-backed security, such as the background, experience, performance and roles of various transaction parties, including the sponsor, the servicing entity that administers or services of the financial assets and the trustee. Furthermore, information regarding certain statistical information should be included if/when material to the transaction. This decision is effectively left to the originator of the security to make. For a complete disclosure on the findings and ruling made by the SEC in accordance with the aforementioned, the reader is referred to *"Asset-Backed Securities, Final rule Part II"* as listed in the reference list of this paper.

4 FORMULATION OF INTERVIEW QUESTIONS

This section will set forth a discussion around the behavioral aspects and influence on the decision-making process that concerns the origination and investment process in CDOs. Following each relevant topic as discussed, the interview questions for this study have been drafted.

Valuation of a CDO is to say the least a convoluted task. As previously mentioned, a CDO can consist of various underlying collateralized assets, often second stage of securitization, and sometimes even third stage securitization. Making matters worse is that the overall goal is to assign a higher rating to the CDO than the average rating of the underlying assets. This is something that Mason & Rosner (2007a) discuss at length. Their findings point to the fact that the risk of default increases as the credit spread widens. For an investor, transparency of the underlying assets is all but clear. Carol (1989) presents a valid argument as he states that the existence of substantial uncertainty about the true value of a security does not necessarily imply that it is overvalued or undervalued. It is more likely, he argues, that the expectations of rational investors be unbiased. His endnote to that argument is that the accessibility of quality information will, however, affect the riskiness of the purchase. As such, the effects of legislation aimed at increasing investor information should be reflected in changes in the dispersion of market-adjusted returns. It is apparent that the risk involved in such an enterprise has to be clearly stated. Mason & Rosner (2007a) shed light to this fact where they conclude that even though such risk is more complicated to see due to the opacity of the process, it is risk just the same. As they discuss the matter further, there are reasons to believe that the amount of risk in the marketplace today has increased while opacity has made it seem otherwise. Thus a potential investor in a CDO has every reason to fully examine the information at hand in order to make a sophisticated investment decision. The following questions fall naturally as vital, and will be asked to originators:

Q1: Which factors are the most important in describing risk?

Given the fact that a CDO consist of multiple generations of securitizations the more specific question of the underlying assets needs to be answered:

Q2: In the prospectus, to what extent is there information concerning the underlying securitizations in the SPV?

Relationship banking focuses on the issue of resolving problems in asymmetric information, with respect to the banking environment. Within that subject, relevant to the problem set up of this paper, is the opacity of the CDO process that sets forth a need to clarify what information is given in the prospectus and what, if any, is missing. The importance of this is highlighted by Morrison (2005), as he clarifies that there might be a risk of second-best behavior from the issuer, in this case the originator. Further elaborations in the subject is presented by Boot (2000) as he

argues that, with confidential information in possession of the originating bank, the market requires assurance that the bank will not exaggerate the quality of the assets it seeks to sell. This relation is however built on trust on behalf of the investors' that all vital information is communicated. The exchange of information between the participants is in theory two-folded; information demanded by the investor and information supplied by the originator, as required by law. One cannot exclude the question if the supply is always in line with demand. To address this issue, the following question is asked to both parties in order to examine if they experience that there is an issue of asymmetric information:

Q3: Are there any pieces of information that you feel are missing from a typical prospectus?

Bhabra & Pettway (2003) study how a firm's subsequent performance relates to the IPO prospectus information. They argue that the prospectus is often regarded as one of the most important pieces of documents for the investor, but note that very little is known about how useful the prospectus information is to investors in their decision to invest in an individual IPO. Moreover, they state that due to the fact that a number of issuers (i.e. originators) lack a history of past revenues or earnings, investors are likely to be quite skeptical about the value of prospectus information. They also note that earlier studies have shown that the certification provided by investment bankers (i.e. the originator/underwriter), as a result of their due diligence in the offering process, reduces the perceived uncertainty of an offering. By the same token, because investment banks are concerned about protecting their own reputation capital, prestigious investment banks often select clients (to underwrite) that are perceived as being less risky.

In light of that, it could be argued that a prospective client of an IPO offering, i.e. an investor in the issued securities, infer conclusions about the originator(s) to the underlying risk of the security they are effectively buying into. For the purposes of this study, it is therefore pertinent to examine whether or not this same phenomenon occurs with regards to a CDO transaction. It is all the more interesting because of the fact that the originator is often said to have little responsibility and/or effect on the risk of the SPV since it is a (legally) separate entity, as was covered in the preceding chapter on the CDO transaction process. More specifically, the following two questions are formulated:

Q4a: To what degree is the investor concerned with who the originator is?

Q4b: To what extent is the originator aware of its effect on the perceived risk of the CDO?

With regards to the questions above, it is also interesting to examine whether the offering process is driven primarily from the needs of the originator or from the investment objectives of the individual investor. Posing such a question assists in gaining an understanding of the role of the prospectus, i.e. if it is to be considered primarily as a "pitch document" or rather as an informational, and objective,

document. In the preceding chapter describing the role and purpose of the prospectus, it is not fully apparent whether the CDO transaction is supply- or demand-driven. Naturally, from an analytical point of view it will certainly be interesting if the answers differ between originator and investor. Hence, the subsequently formulated question (asked to both the investor and the originator) becomes:

Q5: What is most common, the investor approaching the originator, or the opposite?

Another area of interest is how an investor in a CDO note examines the information provided to her in the prospectus. A typical prospectus (for which a table of contents is exemplified in *Appendix IV: Example Table of Contents for CDO Prospectus*) can range anywhere from 200-500 pages long, making it a very time-consuming task to read trough. It can be hypothesized that an investor might, over time, grow comfortable with the information contained. This might lead the investor to base the investment decision on a fewer number of variables, and increasingly relying on previous experience. As early as 1989, Eisenhardt noted that people in charge of making a business decision sought advice from more experienced executives, referred to as *counselors*, thereby allowing for a more rapid decision being made on the basis of their collective experience. In contrast, those who made slow decisions either had no counselor, or had a less experienced one. Eisenhardt formulated his findings into a proposition stating: *"The greater the use of experienced counselors, the greater the speed of the strategic decisions process"*. Seeing that a typical prospectus can nearly run the length of a novel, and recalling that investment bankers are certainly not known for having excess amounts of time on their hands on any given day, a hasty decision-making process might impede what could otherwise had been an informational and sound investment decision. The meticulous reader has perhaps already noted that this is the missing piece from the preceding chapter, and often so in earlier studies as well, i.e. an insight into the investment decision-making process as seen from the investor. It is the belief of the authors of this paper that a heightened insight, if yet but a glance, into the thought process of the investor will add to the full comprehension. Thus, two succeeding questions to the investor are formulated accordingly:

Q6a: Typically, within what timeframe must the investment decision be made?

Q6b: Is this investment decision taken by a single individual, or as part of a team?

In line with the aforementioned discussion this paper aims to examine whether there are other factors than time-constraints that affects the information extracted from a prospectus by an investor. Psychological studies show that individuals are often miscalibrated in the way that their probability distributions, or confidence intervals for uncertain outcomes, are too narrow. Stated differently, people overestimate the precision of their knowledge (Glaser et al, 2004). With this in mind, investing in a CDO, which is effectively a statistical slight of hand to tweak a bell-curved outcome for each investor individually, can clearly have detrimental effects if overconfidence is present in both the construction- as well as the investment-phase.

> *"Most of those who buy and sell financial assets try to choose assets that will have higher returns than similar assets. This is a difficult task and it is precisely in such difficult tasks that people exhibit the greatest overconfidence" (Odean, 1998, p.1896)*

This phenomenon is by no means isolated to just the financial markets and investors, but has rather been observed in many professional fields over the years according to Odean (1998), e.g. physicians and nurses (Christensen-Szalanski & Bushyhead, 1981), engineers (Kidd, 1970), entrepreneurs (Cooper et al, 1988), lawyers (Wagenaar & Keren, 1986) and negotiators (Neale & Bazerman, 1992). In a famous study by Svenson (1981), a sample of U.S. students was asked to assess their own driving safety. In the group, with an average age of 22, 82 percent judged themselves to be in the top 30 percent of the sample. This is not statistically feasible. On the contrary, it should be noted that other studies argue that overconfident investors might in fact earn a *higher* profit than otherwise possible. Kyle & Wang (1997) show that overconfidence in a trader may not only generate higher expected profit and utility than his rational opponent, but also higher than if he were rational. They argue that this occurs because overconfidence acts like a commitment device for the traders.

Taleb (2007) describes what he calls *naïve empiricism*, i.e. that we have a natural tendency to look for instances that confirm our story and our vision of the world. For instance, a mathematician will attempt to convince you that their science is useful to society by proving its strengths, not much so its weaknesses. In light of this, an investor might focus and/or select a certain amount of information from a prospectus on the basis of either subjectivity or past experience (as previously discussed), thereby putting less focus on other variables that are in fact equally important to incorporate into the investment decision. Due to the fact that a CDO attracts investors with very different investment goals and restrictions, e.g. investing in AAA-rated, low yielding security or investing in a below-investment-grade-rated, high yield security, the informational needs of these investors might differ depending on the pertinent tranche. Having that said, the following question is posed to the investors:

Q7a: Do you typically read the whole prospectus or do you extract certain information?

The question above subsequently derives two questions, as follows:

Q7b: If so, what information do you extract?

Q7c: Does this depend on which CDO tranche you are seeking to invest in?

Putting all of the abovementioned questions into perspective, one capstone question to ask both investor and originator is the extent to which they feel that the sale/investment of CDOs is/was an important part of their business. If the perception is that CDOs was indeed a very important part of the business, one should expect a fair amount of energy and diligence going into it. Conversely, if the perception is the opposite, i.e. that CDOs was a peripheral line of business, a lax decision making process might not be as surprising. Subsequently, the question becomes:

Q8: Do you regard CDOs as being an important line of business to your firm?

An interview guide with each party's questions separately stated can be found in *Appendix VI: Interview Guide Originator* and in *Appendix VII: Interview Guide Investor*.

5 EMPIRICAL RESULTS

In this section, the replies from each party to the posed questions are illustrated. The authors have attempted to clearly illustrate any common denominators as well as points of difference in the replies from e.g. the originators included in the study.

5.1 Originators

Q1: Which factors are the most important in describing risk?

During the interviews, the respondents ranked the most important factors as illustrated below. Noteworthy, is that they were not explicitly asked to rank the items, but did so by choice. Two respondents, as evident, noted only one or perhaps two items that were considered of great importance, whereas others appeared to consider several factors as being important, albeit in a certain order. A common denominator (*noted by * in the table below*) in the responses is that the *structure* of the CDO, i.e. the tranching system, is considered an important factor in describing the inherent risk.

EXHIBIT 5.1 Respondent ranking of important risk descriptors

Ranking[1]	Respondent A	Respondent B	Respondent C	Respondent D
1	Cash Flow	Correlation	The waterfall*	Portfolio of assets
2	Subordination*	Downgrade risk	-	Buying a leverage risk of someone, i.e. brand name
3	-	Default risk	-	Structure* of the CDO
4	-	Modeling* and documentation	-	The manager

1 Where *1* is referred to as the *most* important and *4* being the *least* important item in describing risk
* *Terms referring to the structure of the CDO*

Q2: In the prospectus, to what extent is there information concerning the underlying securitizations in the SPV?

The responses varied between stating that the CDO prospectus itself contained very little information describing the underlying assets, whereas other respondents made it clear that there is indeed sufficient information for the investor to identify the underlying assets. However, those who replied the latter added that the investor would only find information sufficient enough to *identify* the underlying assets. If the investor, however, would like further information regarding the *risk* of these underlying assets, she would be required to make separate enquires about this. On

that note, they stated that the investment prospectuses for e.g. RMBSs, CMBSs or SMEs contain *very* detailed information of the underlying assets.

Q3: Are there any pieces of information that you feel are missing from a typical prospectus?

Given the relatively straightforward nature of this question, the reply from the respondents were more often than not a simple "*no*". However, one banker in particular stood out with his answer in stating that he felt that details of interest rate and foreign exchange rate hedging, as well as cures in the CDO, should be included in a prospectus. This statement contrasted quite clearly with another banker who argued that it would be highly unlikely if an originator "confessed" of failing to include certain aspects in the investment prospectus. If such were the case, he argued, it would certainly not be commented upon.

Q4b: To what extent is the originator aware of its effect on the perceived risk of the CDO?

The consensus of the respondents is that the originators are indeed aware of its effect on the perceived risk of the CDO. However, it was argued by two respondents that the *manager* of the CDO and not the underwriter, i.e. the investment bank, of the issue was/is more prevalent in affecting the perceived risk of the CDO. One respondent added that: "*the market for CDOs has been around for 15 years, thus giving transacting parties plenty of time to appreciate the importance of the appointed manager*". Another banker added that "*people…*" referring to the market participants of CDOs and related structured products "*…keep track on who's making money or not*". With regards to the effect imposed by the brand name of the investment bank, it was not emphasized to same extent as the CDO manager.

Q5: What is most common, the investor approaching the originator, or the opposite?

The respondents were unified in stating that the *originator* is the one who approaches the investor, and not the other way around. One banker explained: "*he who wants money approaches him that has money*", arguing that it is the originator who is looking to sell/issue securities and make a profit, hence also being the one actively seeking investors. In one of the interviews, a follow-up question surfaced asking *at what stage of the process do the originator approach the investor?* The banker explained that investors are approached on a continual basis as the CDO transaction is constructed, meaning that the future/potential mezzanine-class client is involved even before the final capital structure, and perhaps more importantly the investment prospectus, has been finalized. In further describing the construction and sales process of the CDO, the same banker stated that as much of the equity tranche as

possible is sold before the marketing of the debt tranches begin. In fact, the equity tranche is sold even before the SPV itself is constructed.

Q8: Do you regard CDOs as being an important line of business to your firm?

The respondents all agree that CDO had been an important line of their bank's business, but that the market has deteriorated tremendously due to the worsening length and impact of the financial market meltdown we are currently witnessing. The respondents, however, did not appear discouraged going forward, arguing that the market for CDOs (and similar products as well) may very well return after the crisis has deescalated. In their opinion, the single dominating factor for such a comeback would be in the hands of market demand and the institutional investors.

5.2 Investors

Q3: Are there any pieces of information that you feel are missing from a typical prospectus?

The initial response was perhaps not that any particular information is missing. One respondent felt that *more detailed* information on items such as the characteristics of the underlying assets and its long-run historical performance could beneficially be presented. Furthermore, more detailed information of the *CDO manager's* historical track record was asked for. On the contrary, one respondent commented that *all* information is in fact presented if you only look closely enough. However, he added that the *way*, i.e. the layout structure of the presented information leaves much to desire. On that notion, one respondent also argued that nothing was missing form the prospectus.

Q4a: To what degree is the investor concerned with who the originator (IB or Manager) is?

In this question, the terms *originator* incorporates both the underwriting investment bank as well as the CDO manager. The respondents were free to interpret the term *originator* with respect to which party they felt more concerned with. All respondents agreed that the originators had at least *some* influence. One respondent argued that the brand name of the originators was important to a certain degree, but that the CDO, as an investment vehicle, was (or at least should) always reviewed on its own merits in any case. At the other end of the spectrum, another banker expressed *great* concern over the identity of the originators. For instance, one banker commented that the identity of the CDO manager, being one of the originators, speaks volumes about his professional class and way of conducting business. The same banker also made

note of only working with top-tier investment banks, which are, in his opinion, often characterized as being highly conservative with a good business history historically.

Q5: What is most common, the investor approaching the originator, or the opposite?

Two respondents replied that it is the originator who approaches the investor. One respondent, however, argued the opposite, i.e. the investors being the ones who approach the originators.

Q6a: Typically, within what timeframe must the investment decision be made?

One respondent noted that the timeframe within which an investment decision must be made all depends on the type, structure, size and other characteristics of the deal. Another banker stated that typically, investors have around three days to make a decision to proceed or not. If a decision to invest is agreed upon, the decision is forwarded to the CDO trading desk, i.e. those who oversee and execute the actual trading of the CDO securities, which subsequently execute the appropriate orders. This refers to the trading of the securities in the secondary market, i.e. after the primary issuance has taken place. During the process, the authors were fortunate to speak with a former investor, currently in the position of a CDO trader, and enquire about how his investment process differed from that of the CDO investor. He stated the most obvious difference lies in the decision making process. As a trader, he argued, his only key question is: "*Can I sell to a higher price?*"

Q6b: Is this investment decision taken by a single individual, or as part of a team?

The respondents all replied that the investment decision was indeed taken as a team. One respondent replied that this team often consisted of around three people.

Q7a: Do you typically read the whole prospectus or do you extract certain information?

All respondents stated that they did *not* read the prospectus in its entirety, but replied that they instead extracted certain key parts of the document and read this excerpt to some depth.

Q7b: If so, what information do you extract?

Following the replies above, the question naturally arose what such extracted key parts/aspects encompassed more to the point. One respondent argued that details of this appeared to vary greatly with the type of issue and its inherent characteristics. One banker, however, made note that the capital structure and the waterfall structure of the issue was extracted. He also stated that all information in with respect of the originator was extracted and read thoroughly. Additionally, one of the respondents argued that, regardless of which information was extracted or not, the investment prospectus should be referred to *throughout* the deal's life. In his opinion, this was especially important seeing that the terms of the transaction are potentially going to change.

Q7c: Does this depend on which CDO tranche you are seeking to invest in?

All of the respondents answered that the extraction of information, and the degree to which this occurred, had *no* relationship or correlation to which tranche they sought to invest in. One banker made note that the choice of tranche should really have no effect seeing that: "*all investors should understand fully the terms of their investment – especially in light of what has happened in the past 18 months with the ABS CDO asset class*".

Q8: Do you regard CDOs as being an important line of business to your firm?

The replies for this question seemed to have somewhat of a larger range between each interviewed banker. One banker argued that CDOs had indeed *been* highly important to the firm, but that the credit crisis had effectively cut off demand for the time being. Another banker simply responded that the CDO business was not at all an important line of business as compared to the total operations of the bank. The third banker argued that CDOs were, and still are, extremely important parts of the business because of the instrument being "*the only way to slice up risk*". The same banker added that there, in his opinion, was nothing fundamentally wrong with the concept of CDOs, i.e. securitization and tranching concept, as such but that CDOs themselves were only as good as its underlying assets.

6 ANALYSIS

In the following section, major findings in the empirical data are combined with the theoretical framework into an analysis.

IS THE RISK OF THE UNDERLYING COLLATERALIZED ASSETS (UN) IMPORTANT?

As having been argued in Chapter 4 *Earlier Studies*, studies carried out by e.g. Mason & Rosner (2007a) have shown that the overall risk in the financial marketplace has increased, whereas the opacity, i.e. the ability to completely know what one is actually investing in, has made it seem otherwise. From the interviews with the originators, the common denominator in their replies was that the structure of the CDO was of the outmost important item in correctly describing the risk of the product. As discussed in *Chapter 3 Theoretical Framework*, the tranching system of the CDO is essentially what makes a CDO differ from a normal securitization product, i.e. the ability of an investor to invest in a product where the cash flows and ratings exactly match his/her investment criteria.

One interesting notation is that essentially *no* originator spoke about the underlying characteristics of the collateralized assets as being an important descriptor or risk. Amongst the interviewed originators, only one referred to *"the portfolio of assets"* as being important. This is of course an interesting reply, seeing that one investor included in the study stated: "*the CDO is never better than the underlying assets"*. Indeed, collateralizing assets into a CDO product will never eliminate the risk of the assets – it will simply be repackaged and shared unevenly amongst the investors. When enquired about the existence, or rather non-existence of information regarding the underlying assets of the CDO, the originators appeared unison in the sense that the investor had to look *beyond* the CDO investment prospectus to find any such information. One of the investors expressed a demand for more detailed information regarding the underlying assets and the CDO manager, thus confirming what the originators had replied.

Interestingly enough, another investor argued that the information is indeed presented in the investment prospectus in its entirety, but that they layout and magnitude of the document is overwhelmingly difficult to read through. This has been a notoriously discussed issue and the SEC has even issued a report titled "*A Plain English Handbook – How to create clear SEC disclosure documents"*, illustrating how originators can write more clear and informative disclosure documents. The report argues that a common problem is that a well-intentioned and informed writer fails to get the message across to an intelligent, interested reader. In such a case, it is argued; stilted jargon and complex constructions are usually the villains.

Having said that, to one extent the problem appear to lie in correctly and efficiently getting the message across to the investor without making things more difficult than they need to be. The other issue revolves around the opacity of the investment becoming increasingly blurry for each step of securitization, essentially meaning that it becomes gradually harder to see what one is investing in because of all types of repackaging techniques.

This was confirmed by the originators, who all argued that the investor could find bundles of information regarding the underlying assets if she were only to read the separate prospectuses for the assets, e.g. the investment prospectus of a mortgage backed security (MBS). Such information would include direct information regarding the various types of loans and characteristics of borrowers, thus painting a complete picture of what an investor is really buying into. Evidently, for a CDO, the resulting cash flow (referred to as the waterfall structure in chapter three) from the CDO appears to be of greater importance from the point of view of the originators. Whether or not this is in line with what the investors perceive, will be discussed momentarily. Nevertheless, as argued by Morrison (2005) and Boot (2000), and discussed in Chapter 4, banking is faced with a constant situation of asymmetric information to the benefit of the originating party. This warrants a high level of trust between the participants in the fact that the originator does not exaggerate the quality of the assets.

Adding to the discussion above, both originators and investors appeared to agree that the originator was the approaching party in attempting to sell the CDO notes. This strengthens the notion that the CDO is essentially being *marketed* to the investors, just like any other investment product. In light of that, it comes as no surprise that two of the originators explicitly replied that *no* additional information should be included in the prospectus. In other words, they essentially argue that the current level of information should be enough to make a sound investment decision. In realizing that the prospectus is part of marketing process, if the originator were to know of any information that would be detrimental to the marketability of his product, would he disclose of such? Most likely the answer will be *no*, thus emphasizing the asymmetric informational situation as illustrated by several earlier studies as having been previously mentioned. In summary, can one argue that further information about the underlying assets is unimportant? The answer is unfortunately both yes and no. No, because the more informed the investor is, the better a decision she can make and the less severe any unforeseen surprises. The reason for answering *yes* will be addressed shortly.

If The Collateralized Assets Are Not Important, What Is?

From the interviews with the investors, it became evident that one factor/descriptor of the CDO was considered almost as important, if not more, than the cash flow and risk of the investment itself. This descriptor was the originator. Recall from the previously discussed topic, the originators considered the CDO structure and the subsequent cash flows to be of the outmost importance. First off, it should be mentioned that the respondents (the investors) were free to interpret the term "*originator*" as being either the underwriter (i.e., the investment bank) or the CDO manager. Of course, no investor would argue that he/she is *only* assessing who the originator is in determining the investment feasibility of the CDO. In light of that, diplomatic answers such as "*the CDO is always reviewed on its own merits*" were of course expected. Nevertheless, as argued by Bhabra & Pettway (2003) (discussed in Chapter 4), it has been shown, and in this paper confirmed at least with respect to the participants, that the characteristics of the underwriting investment bank reduce a number of uncertainties held by the investor. Stated differently, the interviewed investors infer conclusions about the underlying risk of the investment based on who has constructed the investment vehicle.

Interestingly enough, two of the investors stated that the *CDO manager* was of great concern in assessing the investment. It was argued, that the characteristics of that particular person and his personal track record had a tremendous impact on the perceived risk. With regards to information missing in a typical prospectus, one investor stated that he would like to see more detailed information regarding the manager. The investor apparently argued that a manager, who had historically been successful in managing certain investments, also had a good probability of doing so going forward. This fact is corroborated by *Exhibit 3.7: Managerial Performance* in chapter three, in which successful managers show significantly less defaulted securities and a much greater proportion of recoveries than the bottom ten managers. On that note, putting focus on the manager in assessing the risk of the CDO appears to be rational. However, it is certainly an interesting finding in the sense that one of the major attraction points about the CDO turned out to be who was in charge of managing it and *not* necessarily the subordination structure of the CDO. Evident from Appendix I: *CDO Issuance by primary collateral type,* arbitrage-type CDO transactions constituted 57.1 percent in the first half of 2008. As opposed to 0 percent of balance sheet-type transactions. Looking a year in hindsight (1H-07) the relationship between arbitrage and balance sheet-type transactions, the former one triumphs the latter. Recalling from chapter 3 that the CDO manager enjoys greater leeway in arbitrage transactions, this validates some the expressed concerns from the investors. Furthermore, the argument made by Bhabra & Pettway (2003) was confirmed as the investors also acknowledged a concern about the investment bank, i.e. the underwriter, in the decision making process. As previously mentioned, one banker said to only work with top-tier investment banks because they, in his opinion, were often characterized as being highly conservative with a good business track record historically.

This *directly* contradicts the fundamental concept of the CDO, as discussed in chapter three, where it is argued that the originating bank should have *little* influence on the risk of the CDO because it constructs a separate corporate entity, i.e. the Special Purpose Vehicle (SPV), that subsequently becomes the CDO. Going back to the fundamentals, one of the reasons for an investment bank to construct a CDO from the beginning, is the ability to create a product with a *higher* rating than the investment bank carries. In that sense, the investors appear to be draped by a false sense of safety in including the e.g. brand name of the investment bank in its investment decision for two reasons. The first reason being that they have already stated that the CDO manager is the one who has the most influence in actually controlling and managing what assets to invest in and how these are best managed over the life of the CDO. The investment bank has little influential power over those daily operational decisions. The second reason is that the brand name of the investment bank is built from being active within many fields of the financial industry, e.g. debt capital markets, equity capital markets, structured products, M&A advisory etcetera. Consequently, its strongest side may not be in specifically constructing CDOs, but the investors still use the IB's brand name value in assessing its ability in doing so. Of course, the investors might assess the only part of an investment bank's brand that is concerned with the structured product division of the bank. The chances of this being the case, however, are slim. Nevertheless, the *potential* for being blinded by the brand constitutes a risk. Such a risk, unfortunately, is inherently difficult to somehow legislate and/or regulate in e.g. disclosure requirements by the SEC.

Seeing that information concerning these aforementioned factors are not currently described sufficiently in the prospectus (according to the interviewed investors), one might expect that this is due to the originators not perceiving themselves to have that same level of influence. To the contrary, and much to the authors' surprise, the surveyed originators were very much aware of their effect on the perceived risk. One originator even expressed an acute awareness of the CDO manager being highly influential, arguing that "*people keep track on who's making money and who's not*". On that note, it appears somewhat odd as to why more information is not included on the appointed manager. Perhaps the answer lays in the citation above, i.e. that some of the originators *assume* that the market as a whole keeps close tabs on who has been successful and who has not. If such is the case, devoting space to this in the prospectus might feel unnecessary. However, it appears somewhat contradictory to being hesitant in adding a page or two to a document that is already several hundred pages long.

Making such assumptions about the respondents as insinuated by the quote above, however, can certainly be a risky thing to do, to say the least. Nevertheless, regardless of including more information about the manager or not, is the manager really responsible for the default of the underlying assets? What this goes to show is that, regardless of how skillful the manager and/or the underwriting investment bank are, and regardless of how prestigious its brand name may be, repackaging the risk does not take away the fact that it is till "*risk all the same*" in the words of Mason &

Rosner (2007a). Thus, it seems as if the structure of the CDO, and the subsequent opacity of the same, on the one end facilitates market completeness, i.e. a payoff structure that was not previously possible. At the same time, however, it seems to make it harder to really assess the true risk.

TRUST IS AT THE HEART OF SUCCESS, OR IS IT?

Putting these facts into perspective, both parties seem to agree that it is the originator who approaches the investor(s). This line of thought was captured through a statement by one of the originators: "*he who wants money approaches him that has money*". This is perhaps not a surprising result initially. What is interesting, however, is what surfaced during one of the interviews with an originator who argued that one of the primary goals in the sales process is to sell of as much as possible of the equity tranche(s) before issuing the other debt tranches and the CDO in its entirety. From the theoretical aspect and descriptions, it is stated that the underwriter often maintains a portion of the equity to facilitate a sense of security in being in "the same boat" as the investors. Evident, however, from the banker's statement is that the bank makes every effort in actually *not* taking a position if possible. One should of course not state that this way of thinking is applicable to *all* underwriters, but it shows that the issue cannot be completely written off as a possibility.

The other interesting notion from the banker's statement is that much of the CDOs construction appears to rely on *who* is involved in the structure; who the underwriter is, the manager, the rating firm, the equity investor etcetera. Yet again, *trust* comes off as being a highly important factor, at least as seen from the interviewed investors. It appears that the perceived success or failure of a CDO relies to a great extent on the *individuals* involved, and not so much on the *structure* of the CDO or its underlying assets. In that sense, it is strange that so little focus seems to have been put on the underlying assets themselves and the individuals behind them. If anything has the power to affect the generation of cash flows from the CDO, it is the underlying assets themselves. Simply put, a CDO is a *distributor* of cash flows – not a *generator*.

Furthermore, something of a circular reasoning develops in terms of the construction because the ratings agencies take into consideration the capital structure and credit default swaps of each tranche in determining the CDO rating. The credit default swaps and the spread, in turn, depends on who is investing in each one. Finally, the rating of the CDO and the subsequent cash flows all affect who the final investors will be. Therefore, much of the aspects describing the CDO appear to depend not only on the underlying assets, but equally so on who is investing in it. Therefore, a sort of mutual stand off, if you will, is in place until everyone agrees to enter the CDO. Undoubtedly, this construction is only as strong as its weakest link and functions so long as all participants agree on the terms. In that sense, not only is a CDO not any stronger than its underlying assets. Adding to that, one might also argue that the structure is not stronger than its weakest participant either.

REGULATORY DEVELOPMENTS BY THE SEC – E HOM DOES IT BENEFIT?

As previously discussed in Chapter 3, the SEC has made recent advancements in attempting to better align the disclosure requirements with the nature of asset-backed securities and the information asymmetry that has just been discussed. As argued by the SEC, the aim is to develop more of a *concept* rather than taking a rule-based approach. The interesting point to be noticed here is that the SEC essentially provides the *originator* with a fair amount of leeway in determining which factors are material to include, and which are not. In other words, the salesman (i.e. originator) of the product is left to decide which factors are to be handed to the buyer (i.e. the investor) for use in the investment decision. Thus, the future contents and layout of the investment prospectus will to a great extent be decided upon by not the informational demand from investors, but rather from what the originators decide to include. This warrants a series of questions. Is the prospectus not written on the behalf of the prospective investors? Indeed it is. If such is the case, should the investor not be the one who has a say in what is to be included in the prospectus? Absolutely. As evident from the conducted interviews, the investors currently acknowledge that certain information is missing from the prospectus today. However, if the investors are not given the forum and/or the power to influence the drafting of the prospectus framework, this informational gap will most likely persists going forward.

INVESTMENT DECISION MAKING

The information transaction process between investors and originators is now becoming increasingly complete. So far, it has become clear that the perceived risk and correlating success (at least pertaining to the interviewed bankers) relies to a great extent on subjective, often human factors. Having been stated in the beginning of this study, us humans are rarely as objective and calculative as we would like to be. To continue the analysis, the questions now turn to how, and on what grounds, the interviewed investors base their investment decision. As evident from the interview process it became clear that the bankers (both originators and investors) are people with seemingly very little time on their hands. Going into this study, the implicit notion of the authors was that investors did not have the time to read through all the pages of an investment prospectus. Rather, it was conjectured, that certain information was extracted that the investor from experience would believe painted a complete picture of the risk and returns of the investment.

Evident from the interviews is that the investors, as initially presumed, did *not* read the complete investment prospectus, but rather made excerpts of certain items. The investors noted that the capital structure was indeed important to look at, but also extracting *all* available information with regards to the origination team. However, as having been discussed previously, if the originators base their decision on what to include and exclude on the notion that: "*people keep track on who's making money and who's not"* and *"the market for CDOs has been around for 15 years, thus giving transacting parties plenty of time to appreciate the importance of the appointed manager"*, these statements all imply that market participants *should already know*

about the characteristics of the investment bank and/or CDO manager. As such, investors are assumed to either feel comfortable with their existing knowledge of the originator(s), or seeking further information in other places. Making assumptions is very much in line with the previously discussed studies by Glaser et al (2004) who argues that individuals often overestimate their precision of knowledge. If market participants on the one hand overestimate their own knowledge about a certain topic, they might very well make overestimations about the knowledge and expertise of *other* individuals as well. Clearly, this could have detrimental ramifications. On that same notion, if the originators in this study admit to assuming investors have knowledge about the origination team, the question becomes: *What other areas of the CDO is the investor* <u>*assumed*</u> *to have knowledge about?* The inherent danger of a prospectus is that it is considered being as much a legal document that protects the originator, as it is a basis for an investment decision. As argued by Bhabra & Pettway (2003), the prospectus is *written proof* that the investor has been provided with all of the material facts related to the offering. This has two implications, one of them being that the prospectus increasingly contains more *legal disclaimers* than it does *descriptions* of the actual underlying asset(s). The second implication is that the originator distances itself further away from accepting any liability or responsibility for the investment. This clearly goes against what became evident during the interviews, namely that the investors infer conclusions about the risk from assessing that of the originator(s). If the aim is to align the interest of investors and originators, the investment prospectus appear to be equally supportive as it is destructive to that purpose.

Of course, the fault might as well be carried in part by the investor in becoming increasingly comfortable with the type of asset he/she is investing in and what information is necessitated in order to make a sound investment decision. One fact that contradicted previous thoughts by the authors was that the extracted information was *not* dependent upon which tranche the investor(s) sought to invest in. One could perhaps expect that an investor who was investing in a lower, more risky, tranche would be more attentive to the *expected return*, whereas a AAA-tranche investor would be more concerned in wanting to ensure a preservation of capital. A logical explanation for the case not being so might of course be that the investors were all investing in tranches characterized with the familiar rating system (AAA, BBB, etcetera), thus (seemingly) taking care of the part of the investment concerning risk. Of course, there is much debate regarding the efficiency of these common rating systems as applied to structured products, having been previously highlighted. Seeing that at least surveyed investors include information/assumptions about so many intangible variables such as the CDO manager's characteristics and brand name, the rating agencies could face a true challenge in incorporating and synthesizing these into the letter-based rating system currently in place.

With regards to the investment decision timeline, one investor replied that three days was said to represent an average of the time lot given to make a decision to proceed or not. In addition to this, another investor argued that such an investment decision

was often also made in a team of three people. These team members can often be arranged in order of seniority, and it can be hypothesized that the more senior the rank, the more weight behind his/her opinion. Certainly, a more experienced individual will have a more individually adapted decision making- and information selection- process. Certainly, a window of opportunity of only three days warrants a fast decision to be made. In light of that, it is also somewhat understandable that focus is put on the resulting cash flows from the CDO and not so much the underlying assets that have been collateralized. In essence, the investor is really not buying into the true underlying assets per se. As has been described previously, the CDO often invests in assets that have already *been* securitized once, sometimes even twice (as is the case with CDO-squared constructions).

Another interesting capstone question that puts many aspects into perspective is how the interviewed investors view/viewed CDOs as a tool for investment. If a majority had replied that CDOs was considered as being a large part of the particular bank's business, supposing that this reply reflects the market view, it would have been more surprising that the situation could have escalated to this point. From the point of view of the originators, it appears that the underwriting of CDOs constituted an important part of the business. From the point of view of the investors, however, the replies were more scattered suggesting that the investors had a more lighthearted relationship to CDOs. In other words, the investors appeared to utilize the investment tool when/if the market was favorable, and vice versa. The reason for this could on the one hand be explained by an inherently more opportunistic behavior of the investors. However, another fully plausible answer might be that an investor's position is much more liquid than of the originator. Investors can enter/exit a position fairly quickly by utilizing the liquid secondary markets for CDOs, whereas the originator clearly cannot, to the same extent. With regards to the *future* prospects of CDOs, both the originators and the investors seem to agree that it is really a question of supply and demand. The interviewed originators are by and large waiting for market demand and institutional investors to come back. The investors, however, appear more hesitant as to where to go from this point onwards.

WHERE DID THE RISK GO?

In assessing the replies from the conducted interviews and the inner workings of the characteristic tranching system of a CDO security, it has become all to clear that it functions on the basis of insurance. The investors of more senior tranches rest assured that the tranches beneath it would suffer any first-dollar losses. Furthermore, the CDO in its entirety and each tranche separately is enhanced through a credit enhancement process (recall from chapter three). The credit enhancement, in turn, could utilize a third party insurer through a credit default swap (CDS) agreement that essentially promises to pay any payments that default from the CDO. These CDS insurers can of course reinsure its obligations with yet another participant. Additionally, recall from chapter three that the originator of the CDO creates an SPV which is, at least legally, completely separate from the e.g. investment bank itself. Making matters worse, one of the surveyed originators acknowledged the desire to

quickly sell of the equity positions of the CDO early on. It quickly becomes clear that risk is the fireball that no one in particular wishes to hold. The problem, however, is that no matter how financial engineers structure this type of investment, someone ultimately has to bear the residual risk of e.g. default. In other words, not *everyone* can be insured against the same risk. If such were the case, who would reimburse the losses?

Recently, banks and regulators have discussed the introduction of a clearinghouse system for the, currently, unregulated credit derivatives markets, more specifically for CDS contracts (Seeking Alpha, 2008). A group representing nearly 90 percent[4] of the total market activity for CDSs has been working with the New York Federal Reserve on the issue (Reuters, 2008). The discussion is currently ongoing and the arguments are strong for either being for or against a clearinghouse for CDSs. Certainly, the counterparty risk would be mitigated with such a setup and the margin and lending requirements would be set by a third party instead of by the dealers themselves. Also, the liquidity and price discovery abilities of the markets would/could be improved. On the other hand, one could argue that profits would diminish in line with narrowing spreads, hence actually causing trading volume to move to less regulated markets. (FierceFInanceIT, 2008). The arguments are all strong and it is too early to predict what the effects would be. Of course, a natural question becomes whether or not the same type of system should be set up for the trading of CDO securities as well? The same arguments as for the CDS clearinghouse holds true of course and market participants and regulators have to decide whether the government should step in and cover any potential losses or if this burden should fall on those acting on the market. It has been argued all throughout this financial meltdown that one issue with the current regulation has been that gains have been retained by dealers/traders while losses have been put to regulatory organizations, thus creating clear conflicts of interest. On that notion, the introduction of a clearinghouse would only serve to reinforce the already existing problems. Clearly, the answer is not obvious. In the words of Donald Kohn:

> "*If the risk management systems don't work it's [the market's] incentive to make them work. I think our job as regulators is to make sure that they are moving in the right direction"*
>
> *– Donald Kohn, Vice Chairman of the Federal Reserve*

[4] Those involved reportedly include: Goldman Sachs, Citigroup, Deutsche Bank, JP Morgan & Chase, UBS, Credit Suisse, Merrill Lynch and Bank of America.

CONCLUDING REMARKS

To conclude the analysis, the informational exchange becomes increasingly less transparent for every step of securitization and fortified belief that one is only "*investing in a stream of cash flows*". Cash flows originate from some point, in this case from real and tangible assets – hence the name asset-backed securities. However, the participants of this study appear to lose sight of this at times. Evidence of such thought tendencies was clearly evident in the discussion with the previously mentioned CDO trader. His way of arguing truly embodies the underlying discussion of this paper. From his perspective of being a trader on the secondary market for CDOs, he focused on one question and one question alone: *Can I sell this to a higher price?* In doing so, all notions of underlying assets, characteristics, tranches, risk-adjusted return etcetera have seemingly been put aside.

Early on in the analysis, the question was posed if information regarding the underlying assets could be considered as being unimportant. It was said that the answer is both yes and no. If an investor invests in a CDO security with a short investment horizon, and with every insurance scheme imaginable to protect any expected losses, the investment decision might very well boil down to the quote by the trader above. In other words, as the investment decision comes increasingly closer to the market, judging whether or not a security is cheap or not becomes more a *relative* comparison to other tradable securities and *less so* to its individual characteristics. If such trains of thought are widespread throughout those who are responsible of making the crucial investment decisions, it is not surprising that the sudden failure of the inherent underlying assets (e.g. subprime mortgage loans) caught much of the market off-guard.

7 CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

In this section, conclusions are drawn upon the analysis with respect to previously formulated problem. In addition, suggestions for further research and readings are provided.

7.1 Conclusions

This study set of with the aim *"to qualitatively explore the information exchange between originator and investor of a CDO security. A further purpose of this study is to complement the existing research in the mapping of a CDO transaction"*. Essentially, the first part of the explicit aim and purpose is answered by the two initially formulated sub-questions:

From the point of view of the originator, what information do they include/exclude in the prospectus?

&

From the point of view of the investor, what information is included in the investment decision?

This study has shown that there exists a mismatch in the information supplied by the participating originators and demanded by the investors for purposes of investing in CDOs. It has been shown that the SEC has begun to realize that ABSs differ in many ways from ordinary securities, hence the need for information included in a prospectus to be adjusted accordingly, e.g. by including more information about the underlying assets. The recent changes imposed on the regulatory framework by SEC have taken the first steps towards this. One conclusion drawn from this study shows that the investors of this study indeed have a demand for such information, although not to the extent initially presumed. In light of that fact, the complete comprehension is answered through the formulated main problem:

To what degree is the conveyed information from the originator sufficient for the investor to make an informed investment decision?

The informational demand from the investors reaches *beyond* the current requirements by the SEC and encompasses such intangible aspects that could never be fully conveyed through an investment prospectus. This study has unveiled such factors to be e.g. the brand name of the underwriter and CDO manager, as well as the managerial characteristics and nature of the manager. These factors have shown to have a deep influence on the final investment decision. Having that said, however, this stands in contrast to the originators who expressed a greater concern over the CDO structure and waterfall cash flow. It appears that the *perceived* success or failure of a CDO relies to a great extent on the *individuals* involved, and not so much on the

structure of the CDO or its underlying assets. In that sense, the human factor, intangible values and the issue of trust surfaces as more incorporated into the decision making processes. More so than what the mechanical description of the CDO transaction implies. Consequently, the term "*conveyed information*" should really encompass a *broader* definition than the investment prospectus and include additional informational channels such as described above.

Whether or not this broader defined term of conveyed information is *sufficient enough* to make an informed investment decision warrants an evaluation if such factors as brand name can empirically be proven to correlate with the risk of an investment. In order to fully answer the formulated main problem, further studies, with a standpoint from the findings presented herein, should empirically explore if such a relationship exists. As such, this study has provided further academic research with relevant variables to investigate.

As formulated by the latter part of the purpose, the authors have also aimed to add to the completeness in the description of the CDO process. This has been facilitated not only by the major findings of the study itself, but also by the theoretical framework presented to support it. The findings have shed light on the inner workings behind origination and investments in CDOs, from the point of view of the individuals and institutions that constitute the market. Furthermore, it has been shown that the theoretical literature on CDOs and the surrounding process does not always correlate with how market participants act in reality.

7.2 Suggestions for further research

As previously mentioned, the authors of this paper would encourage further research. One such study would entail the aforementioned empirical study in measuring a potential correlation between the impact of the brand name and a successful investment. In other words, would an investor make a more "informed decision" if he were to take notice of the originator(s) brand name/value in making the investment decision? This type of study could beneficially explore several other intangible aspects aside from brand name such as the characteristics of the CDO manager etcetera.

A second suggestion would be to examine e.g. the investment decision-making process as seen from the point of view of the secondary market trader of CDOs. Is the arbitrage theory inherent in trading more prevalent than a fundamentally based investment decision? What are the key driving factors of active traders? A study like this could be conducted both within the CDO market, but equally so on a broader scale.

A third suggestion for further research would be to explore whether or not the same phenomenon as the one observed by this study on the CDO market, can be witnessed in other part of the financial market and/or products as well. For instance, do investors of common stock and/or bonds make similar judgment on certain intangible

aspects? If this phenomenon appears to be common to several markets/products, what are the implications of this?

Furthermore, we encourage interdisciplinary usage of the empirical research evident of this paper, as well as future studies. Regardless of what type of phenomenon future studies aim to examine, we strongly encourages those studies to make the connection between academically valid theory and prevailing market practices. In doing so, both researches as well as the research subjects will benefit from a greater understanding. Academic theory should continuously be measured against what the *actually* practiced methods are in order to further the collective knowledge and understanding.

7.3 Suggestions for further reading

As mentioned throughout this paper, this study should be read in conjunction with the previous studies that have already been made concerning other areas of the intricate CDO transaction. Much of this work consists of various journals and academic papers, and not so much in published literature. Below, the authors present a list of relevant studies within different areas of interest that will benefit the reader of this paper.

Studies relating to the subprime market and its recent developments

Bayoumi, T., Kodres, K., (2007)
Grouhy, M.G., Jarrow, R.A., Turnbull, S.M., (2007)
Schwarcz, S.L., (2008)

Studies concerning the role of rating agencies and the potential conflicts of interest

Chen, Y., (2006)
United States Securities and Exchange Commission (SEC), (January 2003)

Studies on the theory of securitization in structured finance

Mason, J.R., Rosner, J., (2007a)
Mason, J.R., Rosner, J., (2007b)
Morrison, D., A., (2005)

Studies of human behavior with respect to decision-making and investment

Boot, A.W., (2000)
Eisenhardt, K.M., (1989)

REFERENCES

Barclays Capital, (2002) The Barclays Capital Guide to Cash Flow Collateralized Debt Obligations, *CDO and Structured Funds Group*.

Bayoumi, T., Kodres, K., (2007) *Money for Nothing and Checks for Free: Recent Development in U.S. Subprime Mortgage Markets*, International Monetary Fund.

Bhabra, H.S., Pettway, R.H., (2003) IPO Prospectus Information and Subsequent Performance, *The Financial Review,* Vol. 38, pp. 369-397.

Boot, A.W., (2000) Relationship Banking: What Do We Know?, *Journal of Financial Intermediation,* Vol. 9, pp. 7-25.

Cameron, L. (November 2003) Securitization: The Financial Instrument of the Future, *Hearing on protecting homeowners: Preventing Abusive Lending While Preserving Access to Credit,* American Securitization Forum.

Carol, J., S., (1989) The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues*, The American Economic review*, Vol. 79, No. 3, pp. 295-318

Carpenter, J.N., Lynch, A.W., (1999) Survivorship bias and attrition effects in measures of performance persistence, Department of Finance, Stern School of Business, New York University, *Journal of Financial Economics*, Vol. 54, pp. 337-374.

CDS Market Solutions Ramping Up, FierceFinanceIT, October 31 2008, Accessed: December 29, 2008, 16.05; Link: http://www.fiercefinanceit.com/story/cds-market-solutions-ramping/2008-10-31

Central CDS Clearinghouse, Seeking Alpha, June 12 2008, Accessed: December 29, 2008, 16.00; Link: http://seekingalpha.com/article/80984-central-cds-clearinghouse

Chen, Y., (2006) *An Investigation of Collateralized Debt Obligation Rating Methodologies – High Premium Portfolio vs. Low Premium Portfolio*, National Central University, Taiwan.

Choudhry, M., Fabozzi, F.J. (2004) *The Handbook of European Structured Financial Products,* Wiley Finance, New Jersey.

Christensen-Szalanski, J.J., Bushyhead, J.B. (1981) Physicians' use of probalistic information in a real clinical setting, *Journal of Experimental Psychology, Human perception and performance*, Vol.7, No.4, p.928.

Cooper, A.C., (1988) Entrepreneurs' perceived chances for success, *Journal of Business Venturing*, Vol. 2, p.97.

Daily, C.M., Dalton, D.R., Certo, S.T., (2005) Investment bankers and IPO pricing: does prospectus information matter?, *Journal of Business Venturing, Vol. 20*, pp. 93-111.

Duffie, D., Gârleanu, N. (2003) *Risk and Valuation of Collateralized Debt Obligations*, Graduate School of Business, Stanford University.

Eisenhardt, K.M., (1989) Making Fast Strategic Decisions in High-Velocity Environments, *Academy of Management Journal*, Vol. 32, No. 3, pp. 543-576.

Ellis, K., Michaely, R., O'Hara, M., (1999) *A Guide to the Initial Public Offering Process*, Johnson Graduate School of Management, Cornell University.

Eriksson, L.T., Wiedersheim-Paul, Finn., (2006) *Att utreda, forska och rapportera*, Liber Ekonomi, Malmö.

Fabozzi, F.J., Lucas, D.J., Goodman, L.S., (2007) *Collateralized Debt Obligations and Credit Risk Transfer*, Yale ICF Working Paper No. 07-06 SSRN (997276).

Fed's Kohn sees CDS Clearinghouse Risks, Benefits, Reuters, June 19 2008, Accessed December 29, 2008, 16.05; Link: http://www.reuters.com/article/gc06/idUSN1962224820080619

Fender, I., Kiff, J., (2004) CDO rating methodolgy: Some thoughts on model risk and its implications, Monetary and Economic Department, Bank for International Settlements, *BIS Working Papers* No. 163.

Fiske, S.T., Taylor, S.E., (1991) *Social Cognition*, McGraw-Hill, Inc., New York.

Franke, G., Herrmann, M., Weber, T., (Preliminary draft 2007) *On the Design of Collateralized Debt Obligation-Transactions*, HSBC Bank & University of Konstanz.

Gibson, S, M. (2004) Understanding the Risk of Synthetic CDOs*, Trading Risk Analysis Section*, Division of Research and Statistics, Federal Reserve Board.

Glaser, M., Nöth, M., Weber, M., (2004) Behavioral Finance, To appear in Koehler, Derek J. and Harvey, Nigel. (eds) *Blackwell Handbook of Judgment and Decision Making,* Chapter 26, Universität Mannheim.

Gluck, J., Remeza, H., (2000) Moody's Approach to Rating Multisector CDO's, *Moody's Structured Finance Special Report*, Moody's Investors Service.

Grouhy, M.G., Jarrow, R.A., Turnbull, S.M., (2007) The Subprime Credit Crisis of '07, *SSRN* (1112467).

Halvorsen, K., (1992) *Samhällsvetenskaplig metod*, Studentlitteratur, Malmö.

Keren, G.B., Wagenaar, W.A., (1986) The seat belt paradox: Effect of adopted roles on information seeking, *Organizational Behavior and Human Decision Processes*, Vol. 38, p.1.

Kidd, J.B., (1970) The utilization of subjective probabilities in production planning *Acta Psychologica*, Vol. 34, No. 2/3, p.338.

Kyle, A.S., Wang, F.A., (1997) Speculations Duopoly with Agreement to Disagree: Can Overconfidence Surivive the Market Test?, *The Journal of Finance,* Vol. LII, No. 5.

Lundahl, U., Skärvad, P-H., (1992) *Utredningsmetodik för samhällsvetare och ekonomer*, Studentlitteratur, Lund.

Magne Holme, I., Krohn Solvang, B., (1997) *Forskningsmetodik – Om kvalitativa och kvantitativa metoder*, Studentlitteratur, Lund.

Mason, J.R., Rosner, J., (2007a) Where did the risk go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligation Market Disruptions, *SSRN* 1027475.

Mason, J.R., Rosner, J., (2007b) How Resilient Are Mortgage Backed Securities to Collateralized Debt Obligation Market Disruptions?, Preliminary draft, *SSRN* 1027472.

McCall, G., Simmons, J.L., (1969) *Issues in Participant Observation,* Addison-Wesley, Reading, Massachusetts.

Mititica, G.E., (2003) *Introduction to Collateralized Debt Obligations*, The University of British Columbia.

Morrison, D., A., (2005) Credit Derivatives, Disintermediation, and Investment Decisions, *Journal of Business*, 2005, Vol. 78, No. 2.

Neale, M.A., Bazerman, M.H., (1992) *Negotiating rationally,* New York Free Press, New York.

Odean, T., (1998) Volume, Volatility, Price, and Profit When All Traders Are Above Average, *The Journal of Finance*, Vol. LIII, No 6.

Picone, D., (2002) *Collateralized Debt Obligations*, City University Business School London & Royal Bank of Scotland.

Prince, J.T., (2005) Investing in Collateralized Debt Obligations, *CFA Institute Conference Proceedings.*

Sabarwal, T., (2006) Common Structures of Asset-Backed Securities and Their Risks, Washington University in St.Louis, Department of Economics (2005), Forthcoming in *Corporate Ownership and Control*, Vol 2, No 4.

Schwarcz, S.L., (2008) Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown, *American Law & Economics Association Annual Meetings*, Duke University School of Law.

Standard & Poor's, (March 2002) Global Cash Flow and Synthetic CDO Criteria, *Structured Finance*.

Standard & Poor's, (September 2003) Criteria for Rating Synthetic CDO Transactions, *Structured Finance Ratings*.

Svenson, O., (1981) Are we all less risky and more skillful than our fellow drivers*?, Acta Psychologica, Vol.47, pp. 143-148.*

Taleb, N.N., (2007) *The Black Swan: The Impact of the Highly Improbable,* Random House Publishing Group ISBN-13: 9781400063512, New York.

United States Securities and Exchange Commission (SEC), (2005) Asset-Backed Securities, Final rule Part II*, Federal Register*, Vol.70, No.5, Rules and Regulations 17 CFR Parts 210, et al.

United States Securities and Exchange Commission (SEC), (July 2008) Summary Report of Issues Identified in the Commission Staff's Examinations of Select Credit Rating Agencies, by the staff of the *Office of Compliance Inspections and Examinations Division of Trading and Markets and Office of Economic Analysis.*

United States Securities and Exchange Commission (SEC), (January 2003) Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets, as required by *Section 702(b) of the Sarbanes-Oxley Act* of 2002.

United States Securities and Exchange Commission (SEC), *Schedule A, 15 USC Chapter 2A – Securities and Trust Indentures* (01/03/07) of the *Securities Act of 1933, Weblink: http://uscode.house.gov/download/pls/15C2A.txt, Accessed: 14.16 PM 26/11/08*

Vink, D., Thibeault, A., (2008) ABS, MBS and CDO Compared: An Empirical Analysis*, The Journal of Structured Finance,* Vol. 14, No. 2, pp. 27-45.

APPENDIX I: CDO ISSUANCE BY PRIMARY COLLATERAL TYPE

	1H-08 Issuance ($Mil.)	No of Deals	Market Share (%)	1H-07 Issuance ($Mil.)	No. Of deals	Market Share	07-'08 Change (%)
Corporate loans (arbitrage)	28 642.4	48	57.1	82 336.5	162	27.4	-65.2
Structured products	15 107.4	35	30.1	15 2511.1	233	50.7	-90.1
Small business/SME loans	3 582.3	6	7.1	22 677.8	14	7.5	-84.2
Investment-grade corp. Bonds	21 86.4	9	4.4	10 126.9	49	3.4	-78.4
Preferred stock/trust-preferred securities	631.7	1	1.3	5 613.9	10	1.9	-88.7
Hedge funds/private equity funds	46.5	1	0.1	0	0	0	
Corporate loans (balance sheet)	0	0	0	20 819.2	14	6.9	-100
High-yield corporate bonds	0	0	0	3 730.1	6	1.2	-100
REIT unsecured debt	0	0	0	2 293.5	3	0.8	-100
Sovereign debt	0	0	0	600	1	0.2	-100
Total	50 196.7	100	100	300 709.1	492	100	-83.3

Source: *Asset-Backed Alert 2008*

APPENDIX II: CDO MANAGERS SINCE 2001

	Company name	Amount ($Mil.)	No. of Deals
1	TCW	24 556.3	54
2	Cohen Brothers	17 385.8	28
3	Ellington Management	16 855.1	15
4	Deutsche Bank	14 896.5	38
5	Credit Suisse	13 868.6	38
6	Vanderbilt Capital	13 412.8	15
7	First Tennessee	12 574.5	21
8	Deerfield Capital	11 189.2	25
9	PIMCO	9 513.7	55
10	WestLB	9 317.9	11
11	Aladdin Capital	9 188.1	16
12	Highland Capital	8 626.0	12
13	Fortress Investments	8 446.1	16
14	Bear Stearns	8 361.2	25
15	Resource America	8 199.6	21
16	Citigroup	8 154.3	15
17	MassMutual	7 755.8	16
18	Merrill Lynch	7 642.6	13
19	Invesco	7 385.7	27
20	Rabobank	7 373.5	32

Source: *Asset-Backed Alert 2008*

APPENDIX III: TRUSTEES FOR WORLDWIDE CDOS IN THE FIRST HALF

	1H-08 Issuance ($Mil.)	No. of Deals	Market Share (%)	1H-07 Issuance ($Mil.)	No. of Deals	Market Share (%)	'07-'08 Change (%)
Bank of New York	15 493.6	25	30.1	76 077.9	126	25.0	-79.6
Deutsche Bank	7 801.1	27	15.1	45 738.2	79	15.0	-82.9
LaSalle Bank	7 516.5	6	15.0	52 173.0	78	17.0	-85.6
State Street	3 162.0	6	6.0	0.0	0	0.0	-
Ahorro y Titulizacion	2 493.8	1	5.0	0.0	0	0.0	-
Citibank	2 041.5	4	4.1	6 622.3	11	~ 0.0	-69.2
Stichting Security	1 895.1	3	3.8	0.0	0	0.0	-
Titulizacion de Activos	1 577.9	1	3.0	1 063.6	1	~ 0.0	48.0
Mizuho Trust	941.0	1	1.1	139.1	1	~ 0.0	572.1
Fortis Bank	752.0	1	1.1	0.0	0	0.0	-
Virtus Partners	731.0	1	1.1	0.0	0	0.0	-
HSBC Bank	716.0	4	1.0	3 526.3	23	1.0	-79.7
BNP Paribas	602.0	1	1.0	2 701.6	7	0.1	-77.7
Deloitte & Touche	413.0	2	0.1	771.0	1	~ 0.0	-46.4
U.S. Bank	296.0	2	0.1	12 360.6	28	4.0	-97.6
OTHERS	3 762.6	15	7.1	99 534.5	137	33.0	-96.2
TOTAL	**50 196.7**	**100**	**100.0**	**300 709.1**	**492**	**100.0**	**-83.3**

Source: *Asset-Backed Alert 2008*

APPENDIX IV: EXAMPLE TABLE OF CONTENTS FOR CDO PROSPECTUS

SUMMARY OF TERMS....21
RISK FACTORS 23
DESCRIPTION OF THE SECURED NOTES……....56
Status and Security....56
Interest 57
Principal 61
Mandatory Redemption....62
Auction Call Redemption 63
Optional Redemption and Tax Redemption....64
Special Amortization 66
Redemption Procedures 66
Redemption Price 68
Cancellation 68
Payments....68
Priority of Payments....69
Certain Definitions....77
The Coverage Tests 89
Form, Denomination, Registration and Transfer....92
No Gross-Up....98
The Indenture....98
DESCRIPTION OF THE SUBORDINATED NOTES 107
Status....107
Distributions 107
Optional Redemption 108
Petitions for Bankruptcy....109
Governing Law....109
Certain Definitions....109
Form, Registration and Transfer 109
Additional Issuance....115
No Gross-Up....116
USE OF PROCEEDS 116
RATINGS OF THE NOTES 116
MATURITY, PREPAYMENT AND YIELD CONSIDERATIONS....117
THE CO-ISSUERS 119
General 119
Capitalization and Indebtedness of the Issuer 120
Activities....120
SECURITY FOR THE SECURED NOTES 122
General 122
Collateral Debt Securities 122
Eligibility Criteria 124
Asset-Backed Securities 137
REIT Debt Securities 145
Synthetic Securities 147
The Collateral Quality Tests....149
Standard & Poor's CDO Monitor Notification Test 156
Dispositions of Collateral Debt Securities 158
The Hedge Agreements....163
The Accounts 170
THE COLLATERAL MANAGER 187
General 187
RWT Holdings, Inc. 189
Performance Guarantee of Collateral Manager's Obligations....89
Redwood Trust, Inc....189
Investment Strategy 190
Personnel....190
THE MANAGEMENT AGREEMENT 194
INCOME TAX CONSIDERATIONS 206
Taxation of the Issuer 206
Taxation of the Holders....207
ERISA CONSIDERATIONS....212
PLAN OF DISTRIBUTION 218
TRANSFER RESTRICTIONS....222
LISTING AND GENERAL INFORMATION 236
LEGAL MATTERS 238

APPENDIX V: REQUIRED INFORMATION IN REGISTRATION STATEMENT

Note: *For practical reasons, the following paragraphs may have been shortened or not included in full. The engrossed reader is referred to the Securities Act of 1933, in its entirety, for further reading.*

(1) The name under which the issuer is doing or intends to do business;
(2) The name of the State or other sovereign power under which the issuer is organized;
(3) The location of the issuer's principal business office, and if the issuer is a foreign or territorial person, the name and address of its agent in the United States authorized to receive notice;
(4) The names and addresses of the directors or persons performing similar functions
(5) The names and addresses of the underwriters;
(6) The names and addresses of all persons, if any, owning of record or beneficially, if known, more than 10 per centum of any class of stock of the issuer, or more than 10 per centum in the aggregate of the outstanding stock of the issuer as of a date within twenty days prior to the filing of the registration statement;
(7) The amount of securities of the issuer held by any person specified in paragraphs (4), (5), and (6) of this schedule, as of a date within twenty days prior to the filing of the registration statement, and, if possible, as of one year prior thereto.
(8) The general character of the business actually transacted or to be transacted by the issuer;
(9) A statement of the capitalization of the issuer, including the authorized and outstanding amounts of its capital stock and the proportion thereof paid up, the number and classes of shares in which such capital stock is divided, par value thereof, a description of the respective voting rights, preferences, conversion and exchange rights, rights to dividends, profits, or capital of each class, with respect to each other class, including the retirement and liquidation rights or values thereof;
(10) A statement of the securities, if any, covered by options outstanding or to be created in connection with the security to be offered, together with the names and addresses of all persons, if any, to be allotted more than 10 per centum in the aggregate of such options;
(11) The amount of capital stock of each class issued or included in the shares of stock to be offered;
(12) The amount of the funded debt outstanding and to be created by the security to be offered, with a brief description of the date, maturity, and character of such debt, rate of interest, character of amortization provisions, and the security.
(13) The specific purposes in detail and the approximate amounts to be devoted to such purposes, so far as determinable, for which the security to be offered is to supply funds, and if the funds are to be raised in part from other sources, the amounts thereof and the sources thereof, shall be stated;
(14) The remuneration, paid or estimated to be paid, by the issuer or its predecessor, directly or indirectly, during the past year and ensuing year to (a) the directors or persons performing similar functions, and (b) its officers and other persons, naming them wherever such remuneration exceeded $25,000 during any such year;
(15) The estimated net proceeds to be derived from the security to be offered;
(16) The price at which it is proposed that the security shall be offered to the public or the method by which such price is computed and any variation there from.
(17) All commissions or discounts paid or to be paid, directly or indirectly, by the issuer to the underwriters in respect of the sale of the security to be offered. Commissions shall include all cash, securities, contracts, or anything else of value, paid, to be set aside, disposed of, or understandings with or for the benefit of any other persons in which any underwriter is interested, made, in connection with the sale of such security.
(18) The amount or estimated amounts, itemized in reasonable detail, of expenses, other than commissions specified in paragraph
(17) Of this schedule, incurred or borne by or for the account of the issuer in connection with the sale of the security to be offered or properly chargeable thereto, including legal, engineering, certification, authentication, and other charges;
(19) The net proceeds derived from any security sold by the issuer during the two years preceding the filing of the registration statement
(20) Any amount paid within two years preceding the filing of the registration statement or intended to be paid to any promoter and the consideration for any such payment;
(21) The names and addresses of the vendors and the purchase price of any property, or good will, acquired or to be acquired, not in the ordinary course of business, which is to be defrayed in whole or in part from the proceeds of the

security to be offered
(22) Full particulars of the nature and extent of the interest, if any, of every director, principal executive officer, and of every stockholder holding more than 10 per centum of any class of stock or more than 10 per centum in the aggregate of the stock of the issuer
(23) The names and addresses of counsel who have passed on the legality of the issue;
(24) Dates of and parties to, and the general effect concisely stated of every material contract made, not in the ordinary course of business, which contract is to be executed in whole or in part at or after the filing of the registration statement or which contract has been made not more than two years before such filing;
(25) A balance sheet as of a date not more than ninety days prior to the date of the filing of the registration statement showing all of the assets of the issuer, the nature and cost thereof, whenever determinable, in such detail and in such form as the Commission shall prescribe (with intangible items segregated);
(26) A profit and loss statement of the issuer showing earnings and income, the nature and source thereof, and the expenses and fixed charges in such detail and such form as the Commission shall prescribe for the latest fiscal year for which such statement is available. Such a statement shall be certified by an independent public or certified accountant;
(27) If the proceeds, or any part of the proceeds, of the security to be issued is to be applied directly or indirectly to the purchase of any business, a profit and loss statement of such business certified by an independent public or certified accountant, meeting the requirements of paragraph (26) of this schedule;
(25) Of this schedule of a date not more than ninety days prior to the filing of the registration statement or at the date such business was acquired by the issuer if the business was acquired by the issuer more than ninety days prior to the filing of the registration statement;
(28) A copy of any agreement or agreements (or, if identical agreements are used, the forms thereof) made with any underwriter;

NOTE: The following paragraphs are not required to be included in the investment prospect: (Authors comm.)

(29) A copy of the opinion or opinions of counsel in respect to the legality of the issue, with a translation of such opinion, when necessary, into the English language;
(30) A copy of all material contracts referred to in paragraph (24) of this schedule, but no disclosure shall be required of any portion of any such contract if the Commission determines that disclosure of such portion would impair the value of the contract and would not be necessary for the protection of the investors;
(31) Unless previously filed and registered under the provisions of this subchapter, and brought up to date, (a) a copy of its articles of incorporation, with all amendments thereof and of its existing bylaws or instruments corresponding thereto, whatever the name, if the issuer be a corporation; (b) copy of all instruments by which the trust is created or declared, if the issuer is a trust; (c) a copy of its articles of partnership or association and all other papers pertaining to its organization, if the issuer is a partnership, unincorporated association, joint-stock company, or any other form of organization; and
(32) A copy of the underlying agreements or indentures affecting any stock, bonds, or debentures offered or to be offered.

Source: Schedule A, 15 USC Chapter 2A – *Securities and Trust Indentures* (01/03/07) of the Securities Act of 1933

APPENDIX VI: INTERVIEW GUIDE ORIGINATOR

Q1: Which factors are the most important in describing risk?

Q2: In the prospectus, to what extent is there information concerning the underlying securitizations in the SPV?

Q3: Are there any pieces of information that you feel are missing from a typical prospectus?

Q4b: To what extent is the originator aware of its effect on the perceived risk of the CDO?

Q5: What is most common, the investor approaching the originator, or the opposite?

Q8: Do you regard CDOs as being an important line of business to your firm?

APPENDIX VII: INTERVIEW GUIDE INVESTOR

Q3: Are there any pieces of information that you feel are missing from a typical prospectus?

Q4a: To what degree is the investor concerned with who the originator is?

Q5: What is most common, the investor approaching the originator, or the opposite?

Q6a: Typically, within what timeframe must the investment decision be made?

Q6b: Is this investment decision taken by a single individual, or as part of a team?

Q7a: Do you typically read the whole prospectus or do you extract certain information?

Q7b: If so, what information do you extract?

Q7c: Does this depend on which CDO tranche you are seeking to invest in?

Q8: Do you regard CDOs as being an important line of business to your firm?