

The role of securitisation and credit default swaps in the credit crisis: A South African perspective

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DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MAGISTER COMMERCII (RISK MANAGEMENT) IN
THE SCHOOL FOR ECONOMICS, RISK MANAGEMENT AND INTERNATIONAL TRADE,
NORTH-WEST UNIVERSITY (POTCHEFSTROOM CAMPUS)

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**Potchefstroom
November 2011**

Acknowledgements

This dissertation would have been impossible to complete alone and there are certain people in my life that have helped me. Thank you for all the encouragement, assistance and belief in me. I would like to express my sincere gratitude to the following:

- To God, for blessing me with my abilities and always providing for my every need.
- My supervisor, Dr Gary van Vuuren, for all the hard work he has done to make this happen and the guidance he has provided. Without your help this dissertation would never have been a success.
- To my father, Hannes White, for granting me this opportunity of study and for always being there when I needed him.
- A special word of thanks to my fiancée Melony, for always being at my side and encouraging me through this process. Thank you for all your love and belief in me. I really do appreciate it very much.

ABSTRACT

The financial crisis that struck financial markets in 2008 was devastating for the global economy. The impact continues to be felt in the market – most recently in sovereign defaults.¹ There are many questions as to the origin of the crisis and how the same events may be prevented in the future. This dissertation explores two financial instruments: securitisation and credit default swaps (CDSs) and attempts to establish the role they played in the financial crisis. To fully understand the events that unfolded before and during the crisis, a sound theoretical understanding of these instruments is required. This understanding is important to discern the future of stable financial markets and to gain insight into some of the potential risks faced by financial markets.

The South African perspective regarding securitisation, CDSs and the global financial crisis is an important field of study. The impact of the crisis on South Africa will be explored in this dissertation, as well as, the effect of the crisis on South Africa's securitisation market (which has proved healthy and robust over the first part of the new millennium despite the global slowdown of these instruments) and the CDS market. A key goal of this work is to establish whether or not CDSs have been used in South Africa to hedge the credit risk component of bonds linked to asset-backed securities (ABSs). This will provide an indication of the maturity of the South African credit risk transfer (CRT) market and how South Africa compares to more developed financial markets regarding complexity, regulation, sophistication and market sentiment. Through the exploration and understanding of these concepts, the efficacy of emerging economies to adapt to globalisation, and how welcome financial innovation has proved to be in emerging markets – will be addressed.

Keywords: Securitisation, CDSs, global financial crisis, financial innovation, South Africa.

¹ For example, Greece and Italy – November 2011.

OPSOMMING

Die finansiële krisis van 2008 was katestrofies vir die globale ekonomie. Die impak daarvan kan nogsteeds gesien word in markte en veral wat die kredietwaardigheid van soewereine entiteite aanbetref.² Na aanleiding van die krisis is daar baie vrae rondom die oorsake daarvan, asook hoe dieselfde gebeure in die toekoms verhoed kan word. Hierdie verhandeling ondersoek twee finansiële instrumente: sekuritisasie en “credit default swaps” (CDSs) en poog om die aandeel wat hierdie instrumente in die krisis gehad het, vas te stel. Om die gebeure voor en na die krisis te verstaan is dit nodig om ‘n volledige teoretiese agtergrond van hierdie instrumente te skets. Dit sal dit moontlik maak om die toekoms van finansiële markte vas te stel, asook om insig te bekom oor die potensiële risiko’s wat hierdie markte inhou.

Die Suid-Afrikaanse perspektief rondom sekuritisasie, CDSs en die globale finansiële krisis is ‘n belangrike studieveld. Die impak van die krisis op Suid-Afrika word in die verhandeling ondersoek, asook die impak van die krisis op die sekuritisasie mark in Suid-Afrika (alhoewel die mark goed vertoon het in die eerste deel van die nuwe millenium, gegewe die afname in globale aktiwiteit) en die CDS mark. ‘n Belangrike doelwit van hierdie verhandeling is om vas te stel of CDSs in Suid-Afrika gebruik is om die krediet-risiko komponent van gesekuritiseerde bates te verskans. Dit sal ‘n indikasie gee van die volwassenheid van die Suid-Afrikaanse mark vir krediet-risiko oordrag instrumente en hoe die mark vergelyk met ontwikkelde markte wat betref kompleksiteit, regulering, sofistikasie en mark sentiment. Gedurende die ondersoek en deur die verstaan van die verskillende konsepte sal die aanpasbaarheid van ontluikende ekonomieë rakende globalisasie asook die aanvaarding van finansiële innovasie in hierdie ekonomieë bespreek word.

Sleutelwoorde: Sekuritisasie, CDSs, globale finansiële krisis, finansiële innovasie, Suid-Afrika.

² Byvoorbeeld, Griekeland en Italië-November 2011

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CHAPTER 1: OVERVIEW

1.1. Introduction

The securitisation market is well established in South Africa, but the same cannot be said about credit derivatives, in particular credit default swaps (CDSs) (Mminele, 2008:4). Securitisation leads to a more efficient allocation of capital and is an effective capital, market-based funding mechanism used in many developed countries to address balance sheet mismatches, financing constraints and funding costs (Goswami, Jobst and Long, 2009:6). Credit derivatives are one group of financial instruments that include CDSs which can be used to trade the risks that are associated with debt-related events (Longstaff *et al*, 2005:2216).

The dissertation focuses upon securitisation and CDSs and the role these instruments have played in the global financial crisis as well as the local effect of the crisis on the South African market. The growth of securitisation in South Africa over the period 1999-2009 as well as the CDS market on a global and domestic scale will be explored. The dissertation will also explore the causes of the global financial crisis and the effects on South African financial markets in terms of securitisation and the presence of CDSs. In later chapters, the mechanics of and steps in securitisation and CDSs are explained in more detail.

1.2. The history of securitisation

Securitisation dates back to the early 1970s where mortgage loans were securitised by government sponsored enterprises such as Fannie Mae, Ginnie Mae and Freddie Mac (which guaranteed the transaction), created by the federal government of the United States (US) (Greenbaum and Thakor, 1987:380). Cowley and Cummins (2005:194) define securitisation as the right to receive a set of cash flows arising from the isolation of a pool of assets and then trading this restructured pool of assets or cash flows in the capital market. This process (securitisation) was initiated to facilitate home owner supply by providing home mortgage financing (Cowley and Cummins, 2005:194). The process of securitisa-

tion enabled mortgage originators such as banks, insurers and thrift institutions to obtain funds for the purpose of lending by moving assets from their balance sheets (Cowley and Cummins, 2005:194).

Traditionally banks used deposits to finance loans, but in the early 1970s the demand for home finance grew substantially (Saayman, 2003:1). Initially home loans were funded by the thrift industry better known as savings and loan associations, but these associations borrowed funds at a floating rate and lent money to home buyers at a fixed rate (Saayman, 2003:1). US government regulation made it impossible for thrift industries to meet the demand leading to the mismatch of both funds and interest rates.

The problems of supply meeting demand ultimately led to the establishment of securitisation and a secondary home loan market. Banks thus had the necessary instruments in order to obtain or raise more funds for the purpose of financing home purchases. Although securitisation began with mortgage backed securities, it is important to grasp the dynamic structures and different possibilities involving securitisation. Student loans, auto loans, equipment leases, credit card receivables and insurance (Saayman, 2003:3) may also be securitised.

South Africa's first securitisation transaction was completed in November 1989 by the United Banking Society which later became part of ABSA and was followed by Sasfin in 1991 with a private placing of instalment rental loans (Moyo and Firrer, 2008:27). The South African market is still small today in comparison with other more established economies, but it is important to note that South Africa is still considered to be an 'emerging market'. More detail about the current securitisation situation in South Africa and growth over the last ten years is addressed in Chapter 2 of the dissertation.

1.3. The history of CDSs

The global economy has been hedging credit risk for more than 40 years since the introduction of the Black and Scholes (1973) model for option pricing. Credit derivatives – including CDSs – are an instrumental financial innovation which occurred in the last 40

years. A CDS is a form of insurance consisting of a contract against the possibility of default by a particular entity (Hull and White, 2000:30).

The pricing of credit risk dates back to the financial models of Black and Scholes (1973) and Merton (1974). Using CDSs to hedge default risk associated with financial obligations began in the early 1990s (Lubben, 2007:5). The growth of the credit derivatives market since 1997 has been substantial and the reason for this growth is the need by banks and financial service providers to manage credit (Weistroffer, 2009:3). Traders on financial markets also benefited from the new innovative financial instruments available.

The biennial British Bankers' Association (2006) survey pointed out that the credit derivatives market grew from US\$40bn in outstanding notional value in 1996 to nearly US\$1.2tn at the end of 2001. The projected figure by the end of 2004 stood at US\$4.8tn according to the British Bankers Association Credit Derivatives Report of 2006. CDSs accounted for nearly half of the credit derivatives traded in financial markets (Zhu, 2004:2). At the end of 2006 the International Swaps and Derivatives association estimated that the growth of the credit derivative market grew to US\$34tn (British Bankers' Association, 2006).

By the end of 2007 the estimated outstanding notional value of credit derivatives worldwide stood at US\$58tn (Weistroffer, 2009:1). A growth of US\$24tn was therefore achieved in a single year in the credit derivatives market. The Bank of International Settlements Triennial Survey (2007) estimated that 88% of the overall outstanding notional value of credit derivatives can be related to single- and multi-name CDSs. Although world markets have embraced this financial innovation, it is not clear whether or not the South African financial markets have enjoyed the same success.

Credit derivatives are clearly important to financial markets – particularly CDSs. It is also interesting to note that CDSs make up the bulk of the transactions worldwide. CDSs are discussed in more detail in Chapter 3 and the South African CDS market is explored in Chapter 5.

1.4. Problem statement

What role did securitisation and CDSs play (and what future role do they look *likely* to play) in hedging the default risk of asset-backed securities in South African financial markets?

1.5. Goals of the dissertation

In the course of the dissertation, this study will meet four goals, namely, it will:

- discuss the theory and history of securitisation, together with an in depth look at the instruments used in different securitisation transactions,
- present the theory of CDSs and the role they play in the South African debt markets, together with an overview of CDSs in world markets,
- to address the global financial crisis and provide reasons why many financial markets have failed. It will also provide reasons for the failure of CDSs to hedge default risk; and
- to answer questions embedded in the problem statement in order to have more knowledge about securitisation and CDSs in a South African context and how the future will look in terms of securitisation and CDSs after the crisis.

1.6. Research design and procedure

The research design of this dissertation followed the outline below:

Pose research questions: Broad questions were first posed about the nature of securitisation and credit default swaps in the pre-crisis (i.e. pre 2008) and post crisis (2011) financial environment. How did these instruments affect the financial milieu globally and in South Africa? Were they to some extent responsible for the credit crisis? Did they mitigate the effects of the crisis in South Africa? What of the future for these instruments?

Critical literature review: A critical literature review ensued in which existing work by practitioners in the field was consulted.

Theory building/adapting/testing: Developing new ideas requires back-testing, validation and endorsement from other practitioners. The bulk of the results reported in this dissertation were from empirical analysis.

Action research/data collection: Data used were from original sources where possible, usually directly from the market via interviews and questionnaire feedback.

Conceptual development: This research is intended to provide accurate, but practical, information for use by risk analysts and risk managers. The goal of the questionnaire is to gain a deeper understanding of the South African CDS market and to establish the point of view from a banking perspective as CDSs are traded over the counter (OTC).

Reflection/theory extension: Results obtained from the questionnaire have been critically assessed, analysed and the findings are meaningfully displayed. The questionnaire comprises questions regarding CDSs in South Africa and the role that credit derivatives have played in the credit market and are likely to play in the future. Due to the sensitivity of some of the answers retrieved from the questionnaire, the banks involved remain Anonymous and will be referred to simply as Bank A, Bank B and Bank C.

State/disseminate findings: The data have been analysed, meaningful results have been obtained and displayed appropriately and the findings have been recorded in later chapters. The questionnaire was answered by three of the major South African banks and contains expert views and opinions from these banks. It is important to point out that the questionnaire was not pre-tested and the respondents constitute 60% of the South African domestic market that do trade in CDSs.

Further work: To complement major findings of and ensure the continuation of work not addressed (or that could not be undertaken due to lack of data or theory) in this dissertation, future work has been then proposed for risk theorists and practitioners.

1.7. Layout of the dissertation

The dissertation comprises six chapters of which Chapter 1 is an introduction into securitisation and CDSs. A brief history of these two concepts is given and the rest of the chapter comprises of the problem statement, goals and the dissertation layout.

Chapter 2 and Chapter 3 will discuss the theory of securitisation and CDSs in order to understand the mechanics behind these financial instruments together with a broad overview of each of these instruments. Chapter 2 and Chapter 3 will also indicate how these two instruments can be used and the purposes of each. Chapter 4 will take an in depth look at the reasons for the current financial crisis and address the question as to why CDSs did not hedge default risk efficiently.

Chapter 5 will investigate the current situation in South Africa regarding CDSs and the impact of the global financial crisis from a South African perspective. It explores the way forward through a structured questionnaire completed by the major market players.

Chapter 6 concludes the dissertation and provides a summary regarding the topics, securitisation and CDSs in South Africa.

CHAPTER 2: SECURITISATION

2.1. Introduction

This chapter provides a theoretical overview of the process of securitisation and the function of these instruments. The South African securitisation market for the period 1999-2009 is also discussed in detail.

2.2. Defining securitisation

There are various definitions regarding securitisation. Shenker and Colletta (1991:1373) describe securitisation as:

“the sale of equity or debt instruments, representing ownership interests in, or secured by, a segregated, income producing asset or pool of assets, in a transaction structured to reduce or reallocate certain risks inherent in owning or lending against the underlying assets and to ensure that such interests are more readily marketable and, thus, more liquid than ownership interests in and loans against the underlying assets.”

Schwarcz (1994:134) describes securitisation as the process where a company deconstructs itself by the separation of highly illiquid assets from the risks faced by the company. These assets are then used to raise funds in capital markets at a lower cost than issuing more debt or equity and the retained savings from this process is the financial advantage obtained.

Cowley and Cummins (2005:194) simplifies the definition of securitisation even more, by describing it as the isolation of a pool of assets or the right to receive a set of cash flows and then trading this restructured pool of assets or cash flows in the capital market. Securitisation can also be described as the financing process where a corporate entity can move certain assets to a bankruptcy remote special purpose vehicle (SPV) which enables the entity to enter into the securitisation transaction (Moyo and Firrer, 2008:27). The SPV is responsible to market these asset-backed securities in the open market.

2.3. Why securitise?

The above definitions describe the function of securitisation and address the joint issues of liquidity and risk management. Securitisation leads to a more efficient allocation of capital and is a capital market-based funding mechanism in many developed countries, to address issues like balance sheet mismatches, financing constraints and funding costs (Goswami, Jobst and Long, 2009:6).

There are three distinct advantages linked to securitisation (Davis, 2000:4). The first advantage is more efficient financing, leading to a lower weighted-average cost of capital. The second advantage is associated with the structure of a firm's balance sheet, which can improve gearing ratios and other economic measures. The third advantage is the risk management: securitisation lowers funding risk by diversifying funding sources (Davis, 2000:4).

When addressing the liquidity advantages linked to a specific entity entering into a securitisation transaction, any firm and banks also, can benefit from securitisation. The demand for funds in the banking sector can be attributed to the withdrawal of deposits and credit requests from customers (Saayman, 2003:3). Banks also need funds in order to finance daily expenses associated with doing business.

Banks securitised large volumes of their loan portfolios in the 1980s in order to meet banking regulations and to cope with changing market forces (Ergungor, 2003:2). By removing loans from their balance sheets, banks were able to generate funds from securitisation and receive fees for the servicing of the securitised loans (Ergungor, 2003:2). Securitisation leads to a higher degree of liquidity and has made capital requirements from a regulatory point of view easier (Ergungor, 2003:2).

Saayman (2003:4) undertook a comprehensive study regarding the liquidity advantage linked to securitisation for the banking industry and pointed out that risks (not only liquidity risk, but also systematic-, credit- and interest rate risks) can be spread by entering into a securitisation transaction. There is, however, the investor side, which also plays an important role in the process and advantage of securitisation.

Securitisation leads to more complete markets, as new categories of financial assets are introduced, that can suit the risk preferences of investors accordingly (Davis, 2000:4). Investors are likely to diversify their investment portfolios in order to spread the risk associated with different sectors of financial markets, thus investors will not put all their proverbial eggs in one basket (Ergungor, 2003:2).

Securitisation can lead to a combination of attractive yields, increased liquidity of secondary markets and more protection given by the guarantees (Comptroller's Handbook, 1997:7). The largest factor for growth in the structured finance market can be attributed to structured credit enhancement and diversified asset pools (Comptroller's Handbook, 1997:7). The above arguments show that securitisation can be advantageous to more than one party and stress why this financial instrument is so important in the world of finance.

2.4. The process of securitisation explained

Securitisation is the isolation of a pool of assets or the right to receive a set of cash flows and then trading this restructured pool of assets or cash flows in the capital market. By entering into a securitisation transaction, several parties are included in the process.

2.4.1. Definition of terms and parties related to a securitisation transaction

Obligor/Borrower: An obligor is a customer of a financial service provider, who is obliged under contract to make payments to the financial service provider for some financial support received (Davis, 2000:3). An example of an obligor is a borrower receiving financial support from a bank (originator) in the form of a loan. In most securitisation transactions the borrower is not aware of the fact that his loan has been sold and thus the financial service provider can maintain the customer relationship (Comptroller's Handbook, 1997:9).

Originator/Sponsor: An originator is the seller of assets to the SPV and is responsible for the servicing of the assets, in return for a management fee (Davis, 2000:3). Originators include a combination of finance companies, computer companies, thrift institutions,

commercial banks, airlines, manufacturers, securities firms and insurance companies (Comptroller's Handbook, 1997:9).

Special Purpose Vehicle (SPV): SPVs are usually a bankruptcy remote trust or incorporated entity, which gains ownership of the securitised assets or receivables from the originator (Davis, 2000:3). The SPV or trustee is the third party to the transaction and primarily preserves the right of the investor (Comptroller's Handbook, 1997:10).

Bankruptcy remote: This entails that the SPV is legally protected from claims in the event that the originator might go bankrupt and thus limits the credit risk faced by investors, who invested in the SPV assets (Davis, 2000:3).

Investors: Investors usually take the form of institutions (insurance companies, pension funds, fund managers and some commercial banks (Comptroller's Handbook, 1997:12)) and purchase securities issued by the SPV (Davis, 2000:3). There are various securities on offer in securitisation and can take the form of bills, bonds, notes, commercial paper or preferred stock (Davis, 2000:3). These securities are also rated by external rating agencies, in order to establish the quality of the underlying assets (Davis, 2000:3).

Credit Enhancement: According to Davis (2000:3) credit enhancement protects the investors from losses incurred from securitised assets and consists of subordinated debt, cash deposits, third-party guarantees and over-collateralisation. Credit enhancement also improves the credit rating of the security and thus contributes to more efficient pricing and marketability (Comptroller's Handbook, 1997:11).

Over-collateralisation: Over-collateralisation is the protection provided to investors in the event that there is a shortfall in payments linked to the underlying security (Davis, 2000:3).

Liquidity Support: In the event of insufficient cash flows from receivables, the SPV is assisted by a financial institution (usually a bank, in order to meet the required payment to investors and this form of protection is required by rating agencies and the involved investors (Davis, 2000:3).

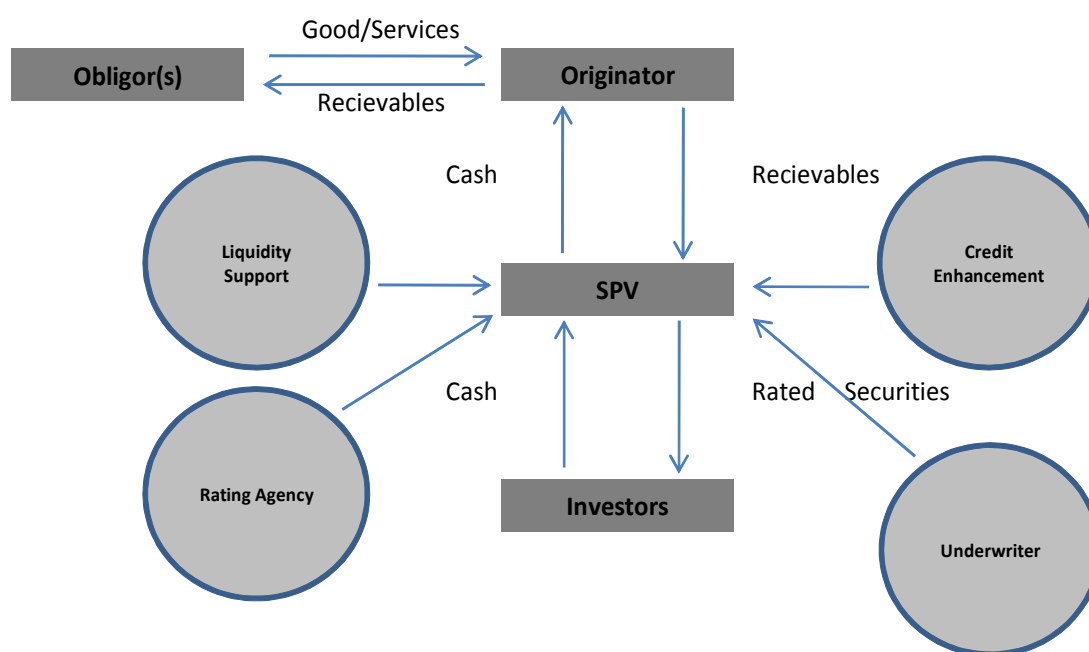
Off Balance Sheet Sale Treatment: Securitisation transactions enable the originator to remove the assets under sale from their balance sheets, for accounting and regulatory purposes (Davis, 2000:3).

Rated securities: Securities obtained in securitisation transactions are assigned a rating of default risk, by a rating agency, in order to establish the quality of the security in question (Davis, 2000:3). It is important to note that rating agencies have no financial interest in a securities' cost or yield (Comptroller's Handbook, 1997:11).

Underwriter: The role of the underwriter, in a securitisation transaction, is primarily to advise the seller on the structuring of the security, as well as pricing and marketing to investors (Comptroller's Handbook, 1997:12).

2.4.2. The Securitisation process

Figure 2.1: Schematic representation of a simple securitisation process.



Source: Comptroller's Handbook (1997:8) and Davis (2000:2).

A simple securitisation transaction may be explained in four steps:

Step 1: The securitisation process starts with the pooling of assets (loan by an originator to the obligor) and it can be created either on a cash-basis or synthetically (Fender and Mitchell, 2009:3). All assets can be securitised as long as there is a steady cash flow linked to the asset in question (Moyo and Firrer, 2008:28).

Step 2: The originator or sponsor instigates the securitisation process by the creation of a SPV ((Prinsloo, 2009:2), (Gorton and Souleles, 2005:15)). The cash flows linked to the underlying assets are then tranching into asset-backed securities for issuing in the market (Gorton and Souleles, 2005:15). The SPV is responsible for the housing of the underlying assets as well as the issuing of the securities to the investors (Saayman, 2003:7).

Step 3: The SPV then pays for the assets by issuing securities to investors, in the form of certificates representing ownership of the loans (Saayman, 2003:7). These securities are then rated by rating agencies, in order to establish the quality of the issued securities (Davis, 2000:3). This rating process will continue on an on-going basis, in order to ensure the performance of the assets in the portfolio and the credit enhancement levels throughout the life of the transaction (Saayman, 2003:7).

Step 4: The originator will service these loans by collecting the payments linked to the pool of loan assets and pay these proceeds over to the SPV in order for the SPV to pay interest to the investors who invested in the securities (Prinsloo, 2009:2).

2.4.3. A more detailed look at securitisation

Although securitisation has been explained simply, there are aspects that need to be presented in more detail, that are relevant to any securitisation transaction. To enter into a successful securitisation transaction, two conditions must be met (Davis, 2000:6):

- the existence of a robust, financial infrastructure is necessary, in order to enable the successful transfer of the relevant assets from the originator to the SPV and this must be done in such a way, that the interests of the investor are protected and

- the second condition is strong investor demand, which in turn leads to lower financing cost to the originator. The investor demand will depend on the risk associated with the securities issues, as well as the credit rating assigned to these securities.

2.4.3.1. Originators

Originators can be categorised as financial and non-financial corporations or entities. In many securitisation transactions, the originator takes on the form of a bank and this section will focus on that origination aspect. Although this dissertation has mentioned some benefits as to why securitisation is used in the financial world, it is appropriate to explore this aspect even more.

The originator in any securitisation transaction has to ask different questions regarding financial ratios, liquidity, risk management etc. From a bank's point of view the question is asked: "What are the benefits of securitisation?" The first advantage or benefit of securitisation is the removal of illiquid assets (loans in this case) from the bank's balance sheet, in order to free up more capital and reduce financing costs ((Griffin, 1997:19), (Telpner, 2003:2)). In this process of asset removal certain risks are also transferred to the SPV taking ownership of the assets (credit-, liquidity-, systematic- and interest rate risk) (Liaw and Eastwood, 2000:5).

Jobst (2006:733) indicates that banks can benefit largely out of an accounting point of view, in the sense that balance sheet growth is kept to a minimum. This will in turn have a positive effect on capital requirements, as well as the opportunity to expand lending activities and thus the acquiring of new clients ((Liaw and Eastwood, 2000:5), (Griffin, 1997:19). Even though banks have traditionally used deposits from clients in order to participate in lending activities, securitisation offers a cheaper method of financing in this specific case (Carlstrom and Samolyk, 1992:1).

Traditionally banks struggled to match the maturities of assets to those of liabilities because of the longer maturities of assets. In the case where a bank makes use of securitisation in order to minimise these asset and liability mismatches, the maturities of the securi-

ties issued should be the same as that of the assets linked to these securities ((Griffin, 1997:19), (Telpner, 2003:2), (Jobst, 2006:733), (Liaw and Eastwood, 2000:5)). Other benefits stemming out of securitisation include an additional stream of income not affected by the interest rate (in the form of servicing fees) and economies of scale (Griffin, 1997:19).

2.4.3.2. Disclosure

Griffin (1997:21) points out that a bank is required to disclose certain information about any securitisation activities:

- Firstly, the bank must declare the nature and the amount of its involvement in the securitisation of assets, as well as the details surrounding the marketing or servicing of securitisation schemes,
- Secondly, the bank must supply relevant information, which stipulates the arrangements made in order to prevent any difficulties arising from securitisation activities to impact on the bank or any other companies which form part of the banking group,
- Thirdly, the bank must release a statement in which the bank indicates whether or not the financial services that the bank is providing to the SPV are being provided on arm's length terms and conditions and at fair value,
- In the fourth instance regarding disclosure, the bank must release a statement stating the existence of asset purchases from the SPV, as well as the terms and conditions relating to the purchase and
- Lastly, the bank must supply information on any funding provided to the SPV.

2.4.3.3. Special Purpose Vehicle (SPV)

SPVs must be bankrupt remote, which in turn minimises the credit risk associated with the securitisation transaction and the interest payments linked to the issued securities. The sale of the assets by the originator to the SPV must also take on the form of a "true sale" to prevent investors being vulnerable to claims against the originator (Cowan, 2003:4).

Gorton and Souleles (2005:4) shortly describes SPVs as robot firms, which in turn have no employees, make no economic decisions, are not physically located and as cannot go bankrupt. Gorton and Souleles (2005:4) and Standard and Poor's (2002) list the following summarising characteristics of SPVs:

- the capitalisation of SPVs is thin,
- there is no existence of management or employees in the structure of a SPV,
- a trustee performs all the administrative functions associated with the SPV,
- a servicing arrangement ensures that the assets held by the SPV are serviced correctly,
- for practical reasons the SPVs structure ensures that it cannot go bankrupt,
- there are limitations as to the incurring of debt by the SPV,
- the existence of security interests over assets and
certain restrictions regarding dealings with parents and affiliates.

2.4.3.4. Different forms of SPVs

Different forms or types of SPVs may be defined to structure a securitisation transaction, in such a way that the desired legal form, as well as applicable taxing requirements by law, is in line with the initial needs of the parties involved (Comptroller's Handbook, 1997:18). These different forms of SPVs also issue different types of securities, in order to structure the desired transaction (Comptroller's Handbook, 1997:18). These forms or types of SPVs include (Comptroller's Handbook, 1997:18):

- The grantor trust - the ownership of the assets sold is granted to the holders of the certificates (investors). In order to qualify as a grantor trust, the structuring of the deal must take on a passive form and this simply entails that multiple classes of interest cannot exist,
- The owner trust – notes are issued subject to a lien of indenture and a properly structured owner trust is treated as a partnership. The main difference between

a grantor trust and that of an owner's trust is the issuance of multiple securities with different maturities, interest rates and cash flow priorities and

- The revolving asset trust – there are two types of revolving asset trusts, the one being, a stand-alone trust and the other a master trust. The difference between the two trusts mentioned, is the fact that a master trust allows the issuer to sell securities at different times from the same trust, whereas the stand-alone trust makes use of a single group of accounts with receivables and in order to make new issues, a new group of accounts must be sold to a separate trust.

2.4.3.5. Credit Enhancement

Credit enhancement protects the investors from losses that might be incurred when investing in an asset-backed security and it also enhances the credit rating of the security. In order to calculate the amount of credit enhancement needed, the historical loss experience linked to the asset pool must be analysed in accordance with the risk appetite of the intended investors (Liaw and Eastwood, 2000:6).

Credit enhancement can be invoked in several ways which include internal and external forms of credit enhancement (Telpner, 2003:6). By combining the views of several authors (Comptroller's Handbook, 1997:23, Davis, 2000:9, Cowan, 2003:5, Gorton and Souleles, 2005:14, Liaw and Eastwood, 2000:6, Griffin, 1997:19 and Telpner, 2003:6) the different types of credit enhancement provided internally or externally can be summarised as follows:

Internal

- Excess spread - this occurs when the yield of the portfolio related to the receivables supporting the asset-backed securities, is greater than the coupon, expected losses or servicing costs of these securities in a particular month. This residual amount is then regarded as a profit to the seller of the securities and can be used to cover unexpected losses.

- Spread account – the spread account reverts to the financing costs charged from the underlying pool of receivables on a monthly basis, in order to cover unexpected losses. This occurrence is also called the excess spread and is “trapped” in the spread account for the purposes of credit enhancement.
- Cash collateral accounts – this type of account is a segregated trust account, which can be used in the event that there is a shortfall in interest, principal or servicing expenses. This account is funded on the outset of the deal and is used when the spread account is reduced to zero. The funding of the account can be done by the issuer, but is normally funded by a third-party bank and will be repaid as soon as all the holders of all classes of certificates are paid in full.
- Collateral invested amount (CIA) – the CIA is a privately placed ownership interest in the trust, which is uncertified and subordinate in payment rights to all investor certificates. The CIA is used in the same way as that of a cash collateral account for any shortfall in payments. The CIA can be protected by the monthly excess spread, as well as a cash collateral account and if the CIA absorbs losses, it can be reimbursed by future excess spreads when available.
- Subordinate security classes – this form of internal credit enhancement can be seen as a junior claim to other debt. This process entails that the more senior classes of securities can claim first, before the subordinate security classes are allowed. This type of credit enhancement involves different tranches of securities and will be explained in more detail later in the chapter.

External

- Third-party letter of credit – in the event that an issuer has a credit rating below the level sought for the security issued, a letter of credit provided by a third-party can cover a certain amount of loss or a percentage of losses if the situation demands it. An example of institutions willing to offer this protection includes banks and insurance companies. In the event that a loss has been incurred, the SPV can

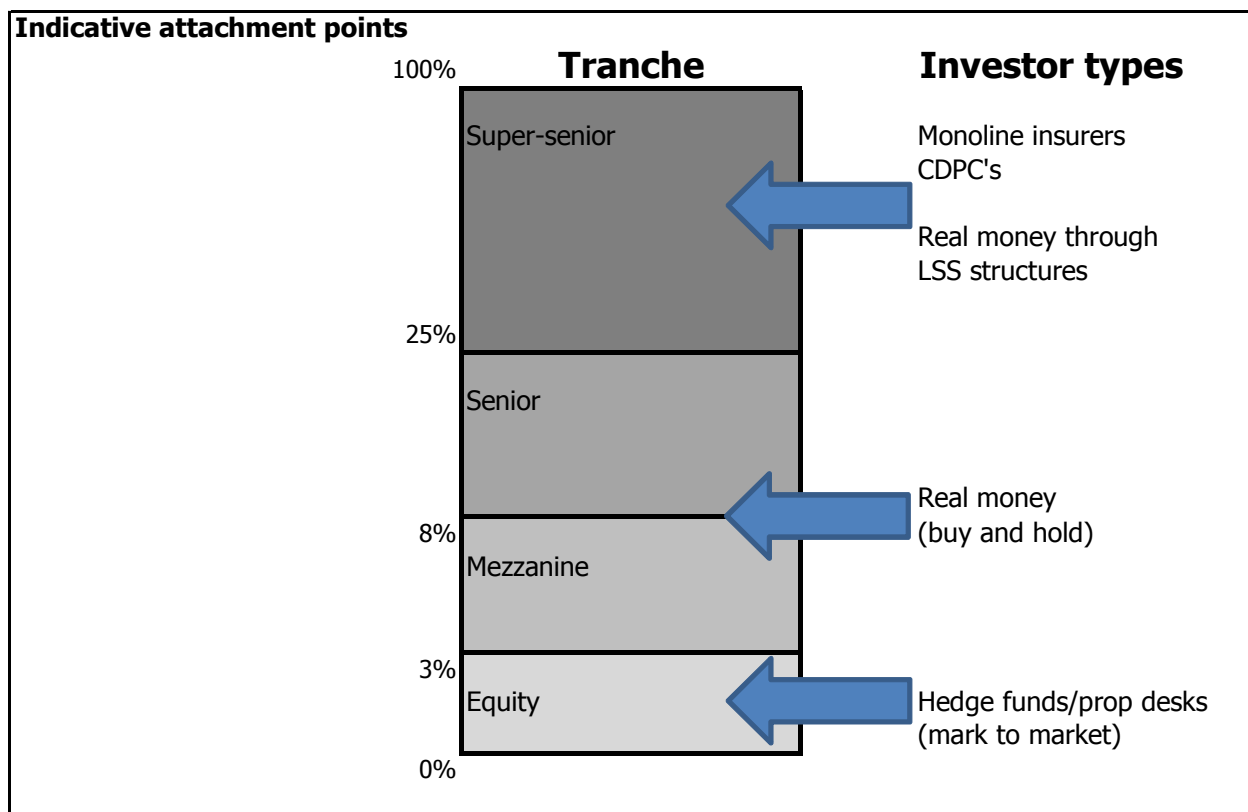
repay draws on the letter of credit by use of excess cash flows from the securitised portfolio.

- Third-party guarantees - insurance provided by a financial institution in the event of losses incurred by the SPV. There has however been an emergence of specialised companies entering into these types of transactions called “monoline” insurers (usually AAA-rated). Monoline insurers offer protection in the form of surety bond which in turn offer a guarantee or wrap of the principal and interest payments up to a 100% of the transaction.
- Recourse to seller – this form of external credit enhancement is usually used by non-bank issuers and it entails, that the seller offers a limited guarantee, which covers a specified maximum amount of losses on the pool.
- The last form of external credit enhancement is the obligation by a bank to take back non-performing loans.

2.4.3.6. Tranches

The role of tranches collaborates with the internal credit enhancement structure linked to subordinated debt. In the event of a securitisation transaction the SPV issues tranches of securities based on seniority (Gorton and Souleles, 2005:16). These tranches or notes can be divided into two classes, namely senior notes (also called A notes) and junior or mezzanine notes (also called B notes) (Gorton and Souleles, 2005:16). There is, however, also C class notes (equity), which are usually unrated and carry most of the credit risk associated with the securities issued (Elul, 2005:21).

Figure 2.2: Investor types according to tranche.



Adapted from: Tymoigne (2009:42).

The placing of C notes are typically private and this is because these notes are more risky and do not qualify as debt for tax purposes (Gorton and Souleles, 2005:17). The placing of C notes and that of other junior notes with more risk attached to the security, does have a meaningful role in financial markets. Fender and Mitchell (2009:5-6) points out, that the structure of tranches provides much needed information to potential investors, in order to make correct decisions regarding investments. The more sophisticated investors (who can analyse the security and structure of the securitisation transaction) will tend to buy the riskier securities and in return receive higher interest on their investment (Fender and Mitchell, 2009:6).

This in turn means that the less informed and more inexperienced investor will tend to buy the more senior notes (and receive less interest on the investment). If there are losses for the duration of the investment, the senior tranches will be paid in full as long as the

losses do not exceed the face value of the subordinated classes (Liaw and Eastwood, 2000:7). Tranches thus provide flexibility and information regarding securitised assets which in turn satisfy the needs of investors and in the process contribute to the completion of the market.

2.5. The history of securitisation in South Africa

South Africa's first securitisation transaction was completed in November 1989 by the United Banking Society which later became part of ABSA and was followed by Sasfin in 1991, with a private placing of instalment rental loans (Moyo and Firrer, 2008:27). However, the securitisation market in South Africa has expanded quite rapidly since then.

There was no significant activity in the South African securitisation market for a long period of time, stretching from 1991 to 1999 as indicated by Table 2.1. with the exception of the Sotta Securitisation International deal in 1998. The first noteworthy securitisation transaction took place in February 1999 when SA Homeloans set up Thekwini I worth R1.25bn and also recorded the first South African Residential Mortgage Backed Security issuance, aimed at direct competition to commercial banks (van Vuuren, 2004:1). This was only the first of many securitisation transactions by SA Homeloans to compete with the commercial banks.

In 2000 there were various securitisation transactions with the Kiwane Fund being the first in May 2000 (Saayman and Styger, 2003:10). The fund was set up as a multi-seller Collateralised Debt Obligation (CDO), aimed at promoting a more liquid debt paper market in South Africa (Prinsloo, 2009:2). In June 2000 the first ever cross-border securitisation transaction was completed worth R1.7bn with the underlying assets being dollar merchant voucher receivables by Rand Merchant Bank (RMB) (Saayman and Styger, 2003:10) and (Prinsloo, 2009:2). Rand Merchant Bank (RMB) also entered into a second securitisation transaction for 2000 worth R3.9bn and the underlying assets taking the form of CDOs (van Vuuren, 2004:2).

The highlight regarding securitisation in 2001 was the first ever Residential Mortgage Backed Security issuance by an actual bank (Investec Private Mortgages) worth R1.6bn.

Other securitisation transactions included R2.9bn worth of CDOs by Rand Merchant Bank (RMB), R300 m. by Clover and an additional R250 m. by Mustek in the form of trade receivables. In 2002 there were several more securitisation transactions, which include R1.1bn by FRESCO for CDOs, R1.3bn by Procul for auto loans, R1.93bn by, On the Cards for store cards, R1.1bn by Thekwini 2 for RMBS, R630 m. by Fintech for lease receivables and R1bn by Private Mortgages for RMBS (Pottas, 2009:6).

In 2003 the South African securitisation market was once again very active. Some of the highlights of 2003 include a R1bn aircraft deal by Eagle Bonds One, R1bn by Autoloans Investment and R2.955bn by CARS 1 for auto loans, R1.5bn by Thekwini 3 and R1bn by Private Mortgages 2 for RMBS. In 2004 there was once again a new category of issuance, when iFour Properties issued R2bn which became the first South African based Commercial Mortgage Backed Security (CMBS) programme and in 2005 Growthpoint Properties issued the largest CMBS programme for R5bn (Pottas, 2009:6).

In 2006 and 2007 history was made by Nitro International and Blue Granite No. 4 for the first off-shore based Asset Backed and RMBS programme valued at R2bn and R6bn respectively. Investec also managed to place the first multi-borrower Commercial Mortgage Backed Security (CMBS) with a value of R1.469bn in 2007 (Commercial- Property, 2007).

In 2008 securitisation prospects in South Africa decreased as a reaction to the global financial crisis. According to Bloomberg (2009) the South African bond market and specifically Asset Backed Securities decreased by 78% due to higher interest rates and the global credit crisis, resulting into a curbed investor demand for these assets. The value of bonds issued in 2008 amounted to R9.2bn in relation to the record amount of R41.5bn in 2007 as well as R31.7bn in 2006 (Bloomberg, 2009). In total there were only nine securitisation transactions concluded which is a 42% decline on the 2007 figures (Pottas, 2009:6).

In 2009 the first securitisation issue was made in May by Absa Capital for Nqaba Finance 1 for R760 m. which is the securitisation vehicle of Eskom Finance Company (The Institute of Bankers in South Africa, 2009). Once again 2009 did not flourish with securitisation deals and in total there were eight transactions, which was one less than in 2008, for an amount

of R7.87bn and a decline of 14% in comparison with 2008 (Pottas, 2010:5). The securitisation highlight for 2009 was the R4.4bn raised by Absa Capital for Edcon in August and November (Media Release by Absa Capital and Edcon, 2009).

The global financial crisis is the main factor contributing to the decline of securitisation volumes in South Africa in 2008 and 2009. More detail surrounding the financial crisis will be presented later in the dissertation. There are, however, certain questions regarding the growth of securitisation between 1991 and 1999 in South Africa and these questions will be answered in the next section.

Table 2.1: Highlights of securitisation transactions in South Africa.

Year	Amount securitised	Entity involved	Information
1989	R250m	United Building Society	Securitisation of bank mortgages
1991	R60m	Sasfin Ltd.	Securitisation of corporate rentals.
1998	R35.4m	Sotta Securitisation International	Securitisation in an adapted form aimed at funding Small and Medium enterprises.
1999	R1.25bn	SA Homeloans Thekwini I	First South African Residential Mortgage Backed Security issuance aimed at direct competition to commercial banks.
2000	R1bn	Saambou Bank Ltd.	Adapted form in securitising once-off portion of existing mortgage loans.
	R1.700bn	First Rand Bank Ltd. / RMB	First future flow and first across border securitisation of dollar merchant voucher receivables.
	R3.9bn	RMB CDO 1 Ltd.	Collateralised Debt Obligation.
	R2bn	Kiwane	Multi-seller Collateralised Loan Obligations aimed at promoting a more liquid debt paper market in South Africa.
2001	R1.6bn	Investec Private Mortgages	First South African Residential Mortgage Backed Security based issuance by an actual bank.
	R2.9bn	RMB CDO 2 Ltd.	Collateralised Debt Obligation.
	R300m	Clover	Trade Receivables.
	R250m	Mustek	Trade Receivables.
2002	R1.1bn	FRESCO	Collateralised Debt Obligation.
	R1.3bn	Procul	Auto loans.
	R1.93bn	OntheCards	StoreCard.

	R1.1bn	Thekwini 2	Residential Mortgage Backed Security.
	R630m	Fintech	Lease receivables.
	R1bn	Private Mortgages	Residential Mortgage Backed Security.
2003	R1bn	Eagle Bonds One	Aircraft - ECA Guaranteed.
	R1bn	Autoloan Investments	Auto loans.
	R3bn	CARS 1	Auto loans.
	R1.5bn	Thekwini 3	Residential Mortgage Backed Security.
	R1bn	Private Mortgages 2	Residential Mortgage Backed Security.
	R1bn	Autoloan Investments 2	Auto loans.
	R670m	Equipment Rentals Securitisation	Lease receivables.
	R50m	Workforce	Trade Receivables.
	R100m	Clover 2	Trade Receivables.
2004	R2bn	iFour Properties	First South African based Commercial Mortgage Backed Security programme.
2005	R5bn	Growthpoint Properties	Largest South African based Commercial Mortgage Backed Security issuance at the time.
2006	R2bn	Nitro International	First offshore based Asset Backed Security programme.
2007	R6bn	Blue Granite No. 4	First offshore based Residential Mortgage Backed Security programme.

Source: Prinsloo (2009:8), van Vuuren (2004:2).

2.5.1. The slow growth of securitisation in South Africa

Securitisation in South Africa did not really feature between 1991 and 1999. The reasoning behind this occurrence is two-fold. The first reason is the period before the change in securitisation regulations in December 2001 by the South African Reserve Bank (SARB) (Saayman and Styger, 2003:12, van Vuuren, 2004: 1) and (Prinsloo, 2009:8). Keep in mind that the current regulations in 2001 were implemented since August 1990 after the first securitisation transaction was already concluded in 1989 (Prinsloo, 2009:8).

The second reason involves the lack of a strong demand for and supply of asset and mortgage-backed securities together with a public misperception regarding the financial stability of companies wanting to enter into securitisation transactions, which lead to the bad reputation of securitisation (Saayman and Styger, 2003:12, 15).

A new, regulatory framework for securitisation schemes was implemented in December 2001 which lifted the constraints placed on certain activities, namely prudential consid-

erations, in order to ensure the financial soundness of financial institutions and the financial system (South African Reserve Bank (SARB), 2001:4). This new framework lifted the uncertainty that surrounded securitisation with regards to institutions that were allowed to enter into securitisation transactions (as well as regulatory compliances) and the roles that financial institutions could fulfil in a securitisation transaction (Saayman and Styger, 2003:12 and van Vuuren, 2004:2).

According to the SARB (2001) the new securitisation scheme amended three main areas in accordance with international developments and market needs:

- the first amendment, was the broadening of the definition of securitisation, in order to allow banks to fulfil multiple roles (originator, remote originator and sponsor) and to introduce non-banking assets into the securitisation set-up,
- the second amendment, permitted banks to provide a wide variety of services in securitisation schemes. There were, however, certain capital requirements which banks had to adhere to, in accordance with their risk profile, when providing credit enhancement and liquidity facilities and
- the last amendment, addressed the uncertainty, which involved the compliance requirements regarding securitisation schemes.

These new regulations were aimed at facilitating the South African securitisation market, in accordance with international securitisation principles, market needs and capital adequacy proposals by the Bank for International Settlements (BIS) (van Vuuren, 2004:2).

Saayman and Styger (2003:12) pointed out that there were certain demand and supply constraints, which lead to the slow growth of securitisation in South Africa before 2001. Some of these reasons include:

- there was a concern under investors about the liquidity of asset- as well as mortgage-backed securities,
- there existed no secondary market for these securities, due to a lack of market makers,

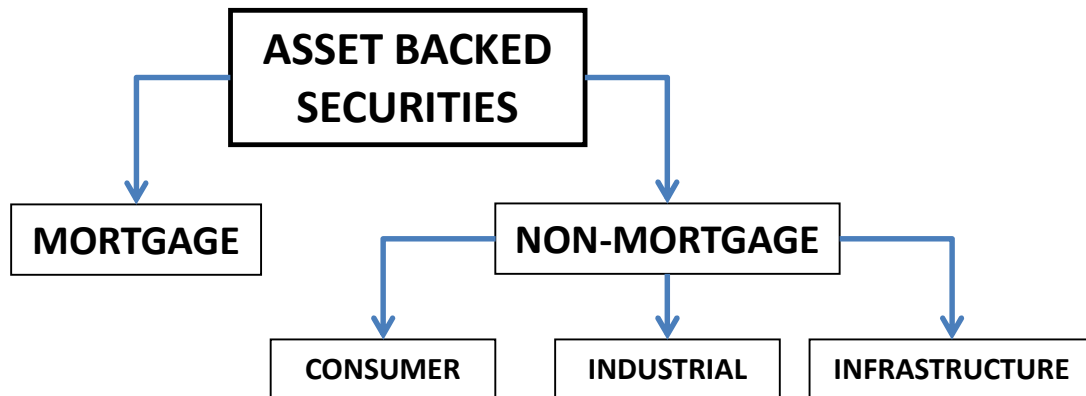
- there was no presence of Government guarantees, which lead to investors being risk averse, when considering investment in securitised bonds,
- investors were more prone to invest in property, rather than debt, due to the historically high inflation rate,
- the time and cost it took to conclude a securitisation transaction was an obstacle for originators,
- it was difficult to rate securitised securities, due to the lack of default and delinquency data, as well as access systems,
- liquidity constraints faced by the larger banks in South Africa, did not play an influential role and thus there was no need to securitise assets and
- the funding of corporate entities was easily done by banks and securitisation was not needed in order to obtain funding.

All of these reasons played a big role in the slow growth of securitisation in South Africa prior to 2001. Table 2.1 illustrates the success of securitisation transactions in South Africa up to the time of the credit crisis and definitely indicates that the South African securitisation industry has developed into a very complete and stable market, with a world of opportunities to companies and investors alike.

2.6. Classes of Asset-Backed Securities

There are endless possibilities when looking at financial markets and the instruments these markets offer in terms of investment, as well as risk management. Securitisation makes up a small portion of what is on offer in these markets. Securitisation does in fact also present a wide, variety of securities and different forms of assets that back the aforementioned securities. Figure 2.3 illustrates the broad categories of different asset-backed securities whereas Table 2.2 presents more detail in this regard.

Figure 2.3: Asset-Backed Security categories.



Adapted from: Giddy (1999).

Table 2.2: Asset classes.

Securitisation	Underlying Asset
RMBS	Home Loans
CMBS	Commercial Property Loans
	Commercial Real Estate
ABS	Auto Loans
	Credit Card Receivables
	Equipment Leases
	Trade Receivables
CDO/CLO/CBO	Corporate Debts/Bank Loans

Adapted from: Karoly (2006:28).

The definition of securitisation states that the assets that are being securitised must have a set of cash flows linked to it. Alles (2001:8) explains that the assets that are the easiest to securitise are: assets that are in large pools (greater economies of scale and profit), that have homogeneous characteristics, standardised documentation, historical information and where ownership is transferrable. When a pool of assets is comprised of these characteristics, it is easier for rating agencies to assess the risks associated with the pool, predict

future cash flows and default rates, obtain the credit quality and in the process give a more accurate credit rating (Alles, 2001:8 and Davis, 2000:5).

There are four broad classes of assets that can be securitised and they are Asset-Backed Securities (ABS), Residential Mortgage-Backed Securities (RMBS), Commercial Mortgage-Backed Securities (CMBS) and CDO which include Collateralised Loan Obligations (CLO). Credit card receivables, equipment leases, trade receivables, vehicle loans or leases and any type of other consumer loan (for example student loans) fall within the asset-backed class (Moyo and Firrer, 2008:28). Credit card receivables are quite different from the other asset classes, due to the fact that there is no fixed payment amount or amortization period (Furletti, 2002:3). The Asset-Backed Security class is very diverse and in principle, it is possible to create an Asset-Backed Security from almost any stream of receivables (Sabarwal, 2006:260).

Mortgage-Backed Securities can consist of either residential- or commercial mortgages that are secured by a single property or group of properties (Moyo and Firrer, 2008:28). Mortgage-Backed Securities are responsible for attracting new investors, as well as integrating the mortgage market into developed capital markets and in the process enlarge and stabilise mortgage funds (Christiansen and Elebash, 1987:83). From a South African perspective, Residential Mortgage-Backed Securities are the dominant class in the domestic market (Goswami, Jobst and Long, 2009:23).

Collateralised debt is very similar to asset-based borrowing, where the person or entity that needs to borrow money, pledges assets (value of assets measured according to market value if sold or the ability to generate a cash flow stream) to secure payment (Giddy, 1999) and consists mainly out of corporate debt and bank loans (Karoly, 2006:28). This form of Asset-Backed Security ensures a lower cost of debt or preferred stock and is only achievable when issuing collateralised debt (Giddy, 1999).

2.7. Conclusion

This chapter has provided theoretical background regarding the concept of securitisation, the benefits, the steps in the securitisation process as well as the different instruments or

assets that can be used in securitisation. This has been one of the goals of the dissertation and has been addressed in detail. This chapter, however, contained important information regarding the problem statement.

The first aspect was the history of the South African securitisation market and the market for the period 1999-2009. The relevant information showed that the South African market was inactive for almost a decade. The reason for this slow growth was also discussed in detail and the conclusion was made, that the South African market initially showed no growth at all. Between 1999 – 2009 the benefits of securitisation were realised by policy makers and the banking sector (and other financial sectors engaged in regular market activity) thereby increasing the growth of the market.

The next chapter addresses CDSs and their pricing. The role they have played in the local (South African) manifestation of the global credit crisis will be discussed in Chapter 5.

CHAPTER 3: CREDIT DEFAULT SWAPS

3.1. Introduction

This chapter focuses on the concept of CDSs and provides the theoretical background on these financial instruments including the market particulars. Why these instruments are used together with the risks that are associated with CDS transactions is also addressed in this chapter. A brief overview of the pricing aspects of CDSs, as well as an example of how these instruments are priced, is also given to provide deeper insight into the working of CDSs.

3.2. Defining credit derivatives and CDSs

“A decade ago, the transfer and pricing of credit was straightforward. The typical credit relationship was between an individual or corporate manager and the lending officer of a bank, and the typical credit instrument was a loan. Lawyers for the parties looked to standardised loan documentation in their negotiations, and the interaction of borrowers and lenders determined material terms, such as covenants, amortization schedules and interest rates. Individuals, small businesses, and large public corporations used credit instruments that were virtually identical in form and substance.” - [Partnoy and Skeel (2007:1)]

The quotation in the previous paragraph is not as applicable today (November 2011) since much has changed in the interim. The quotation focused on public companies and the composition of credit markets where the typical credit relationship in present times is formed between sophisticated risk managers (Partnoy and Skeel, 2007:1). The changing dynamics regarding credit, introduced the market for credit derivatives, which changed the financial world and brought about an era of seemingly endless possibilities.

Credit derivatives are contingent claims that involve the periodic payment of a premium, where these payments are linked to the creditworthiness of a particular party or sovereign entity (Longstaff, Mithal and Neis, 2005:2216). Credit derivatives can also be defined as the isolation of credit risk, from an underlying financial asset (Meng and Gwilym, 2005:17).

Credit derivatives are OTC instruments and since their introduction, credit derivatives have become increasingly popular for credit protection purposes (Zhu, 2004:2).

There are two functions of credit derivatives, the first being, to replicate the credit risk that exists in a standard cash instrument and the second, a more exotic means of credit risk distribution by splitting up the credit profile of a group of assets (single asset class also applicable) to meet the needs of investors, who have different risk appetites (O' Kane, 2001:3). Under these two forms there are various financial instruments that can be used in the transfer of credit risk and in particular CDSs.

A CDS is a form of insurance consisting of a contract against the possibility of default by a particular entity (Hull and White, 2000:30). Another definition of a CDS is, where there exists a contract between two parties, one being the lender and the other the borrower, where the lender (protection buyer) pays a premium to the protection seller (indirect party to the transaction) and in the event that there is a default on the part of the borrower, the protection seller is obligated to make a payment to the protection buyer (Jakola, 2006:2).

These instruments can be used in various ways, which is quite apparent from the definitions given. One relationship that is noteworthy to the goal of this dissertation is the link that exists between securitisation and credit derivatives, especially in the process of finalising a securitisation transaction and the transfer of credit risk as documented by Uwaifo and Greenberg (2001:140). The main focus of this chapter will be CDSs and how these financial instruments are used to manage credit risk, as well as from an investor point of view, in gaining exposure to credit markets.

3.3. How do CDSs work?

From a banking perspective there are various risks that banks have to manage and in particular credit risk. Banks receive compensation for these risks where the compensation is primarily market-driven and one possible solution to diversify a portfolio is to trade the underlying credit risk (Schwartz, 2007:175). Credit derivatives are one group of financial

instruments that include CDSs, which can be used to trade the risks that are associated with debt-related events (Longstaff *et al*, 2005:2216).

There are various articles on how CDSs work, which include the work of Schwartz (2007:175), Longstaff *et al* (2006:2216), Davi (2008), Packer and Suthiphongchai (2003:80), Chan-Lau (2003:5,6) and Wallison (2008:23).

This section details the work of the aforementioned authors.

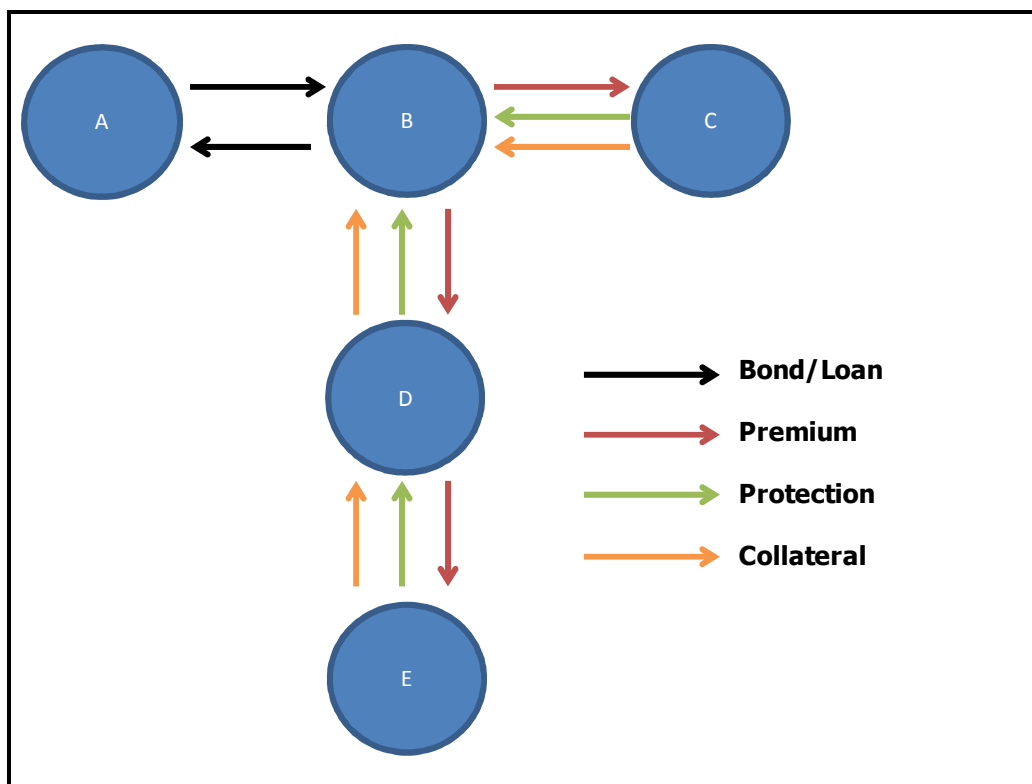
There are three parties to the contract (for simplicity reasons) in a single-name CDS (more variations will be discussed later in the chapter). These are the protection buyer, protection seller and the reference entity. The protection buyer is the first party to the transaction and needs to be insured against the probability of default on a bond that was issued to the reference entity. The second party to the contract is the protection seller. The protection seller is willing to bear the default risk that is associated with the reference entity.

In return for bearing this risk the protection seller is compensated with periodic payments (a percentage of some notional amount) that can be made upfront, quarterly or semi-annually. These payments are called default swap premiums or swap rates and are paid by the protection buyer. In return the protection seller is obligated to buy the reference issue (reference obligation), in the event where the reference entity is not able to make the necessary payments.

Wallison (2008:23-24) provides a detailed example of how the CDS process functions and the different parties that can participate in the transaction. In a CDS transaction there can be more than just three parties that enter into the transaction. The link between the parties can either be direct or indirect, but the process still stays the same. If there are three initial parties called A (reference entity), B (protection buyer or lender) and C (protection seller) entering into a contract where the original loan amount is US\$10 million, B will be obligated to pay a certain percentage of the notional amount to C in premiums and C is obligated to pay B the agreed amount in the case of a default on the part of A. C is also obligated to provide the necessary collateral to assure B that C can make the payments in the event of default.

There are however other parties that can also enter into the chain of this transaction called D (insurance company) and E (bank). In this case C will pay a premium to D (default of A) and D will pay a premium to E (default of C) for protection against a default. There thus exists separate transactions between the parties and therefore D cannot buy protection in the case where A defaults. Figure 3 illustrates the discussed chain of transactions.

Figure 3.1: How CDSs operate.



Adapted from: Wallison (2008:23).

The specific event that has been discussed is called a credit event and the payment that is received for compensation by the protection buyer, is called the final value (Schwartz, 2007:175). There are two ways in which a contract can be settled.

The first settlement option is the physical settlement of the CDS, where the protection seller buys the defaulted note from the protection buyer at par value (Schwartz, 2007:175). The second option is the cash settlement of the CDS (Schwartz, 2007:175). The cash settlement option entails, that the protection buyer receives a payment that is com-

puted by taking the difference between the par and recovery value of the reference security and this is normally determined by either price quote services or a dealer poll (Chan-Lau, 2003:5).

There are five events that qualify as credit events (Raunig and Scheicher, 2008:7):

- bankruptcy,
- repudiation,
- reference entity fails to make the necessary payments on due date,
- restructuring of debt and
- the acceleration or default of obligation.

The contract that exists between the protection- buyer and seller, stipulates the exact credit events that will lead to the settlement and termination of the contract. Theoretically CDSs are easy to understand and implement. From a market perspective, it is however more challenging to keep track of the different movements regarding a credit borrower's position and the parties involved in the transaction. The next section provides more details on how the market grows, functions of CDSs and the different responsibilities of parties to the contract.

3.4. The market for CDSs

The market for credit risk has shown substantial growth over the last fifteen years (since 1996) and CDSs are the biggest contributor (Parlour and Winton, 2009:1). Chapter 1 provided a numerical representation of the growth of the CDS market. CDS contracts are predominantly traded OTC and each contract is negotiated between the protection- buyer and seller (Squam Lake Working Group on Financial Regulation, 2009:2). Until now there has not been an active exchange traded market for CDSs. In the OTC market the dealers act as intermediaries similar to clearinghouses, offsetting the trade (Baseri, 2011:43).

CDSs are the most liquid of the credit derivative group and also provide the basic building blocks for more complex products (Blanco, Brennan and Marsh, 2005:2256). The maturi-

ties of CDS contracts differ from market to market. Where a mature market exists the trading of contracts are highly concentrated in five-year contracts whereas emerging markets portray various options which include one-, two-, five- and ten year contracts (Chan-Lau, 2003:5).

The market for CDSs demands that the dealers or protection sellers in this case, post collateral, to guarantee that they will in fact be able to fulfil their obligations (Squam Lake Working Group on Financial Regulation, 2009:2). It is important to remember, that the market for financial instruments changes on a daily basis. The collateral process functions under the same conditions as any other instrument.

At the initiation of the contract, the protection- buyer and seller can be seen as “even”, but due to the change in the market’s judgment of the reference entity’s credit, one of the CDS parties can be “in the money” (Wallison, 2008:23-24). This implies that, in the case of a deterioration in the reference entity’s credit, the protection buyer will be obligated to post more collateral. On the contrary, where a more positive outlook is experienced, the protection buyer may be obligated to post collateral, to ensure the payment of the premiums (Wallison, 2008:23-24). This phenomenon is called “the credit default spread” and forms an integral part of the market.

In the above mentioned case, “the spread “ is solely linked to a CDS transaction.

There is however a close relationship between the CDS- and bond markets. Both these markets tend to fluctuate over time and this can have the effect where credit default spreads and bond spreads can tend to diverge, referred to as the default swap basis (Chan-Lau, 2003:6). The effect on the default swap basis can be summarised as the widening and tightening of the basis as illustrated by Chan-Lau (2003:6):

The widening of the basis

- The cheapest-to-deliver option – this has the effect of a higher premium being charged by the protection seller, in the case where settlement is agreed upon physical settlement. The reason for this, is the fact that the bond may be less valuable when delivered, which can result in a substantial loss.

- The issuance of a new bond and/or loans – an adverse effect on the market for protection can potentially be initiated due to new bonds/loans. This is explained by the increased need for protection and an increase in the cheapest-to-deliver option regarding these assets.
- The shorting of default swaps rather than bonds – this occurs when the bond issuer's credit quality deteriorates which then results in an increased demand for protection.
- The bond price trading at less than par – the protection seller agrees to cover the par amount of the asset in a CDS contract rather than the bond price. In this case the bond price is lower leading to the widening of the basis.

The tightening of the basis

- Counterparty risk – this occurs when there is a greater counterparty risk linked to the protection- seller, rather than the buyer, which simply means that the protection buyer will pay less than the bond spread for protection.
- The funding risk – if the protection seller has no funding there is an overall decline in risk and a decrease in the compensation expected from the seller.
- The increased supply of structured products – this leads to an increase in the supply of protection in the market due to the increased issuance.

The market for CDSs has shown considerable growth and positive attributes, but the recent global financial crisis has raised some red flags considering these financial instruments. More about the crisis and the role CDSs have played will be discussed in Chapter 4.

3.5. The risks associated with CDSs

In any financial transaction there are certain risks that can have a devastating impact on the parties involved. It is important to keep track of these risks and provide the relevant protection where needed. The next section will discuss the different risks that arise, when entering into a CDS contract.

The definition of credit derivatives and CDSs clearly points out that the main risk being transferred in a transaction of this form is credit risk. There are however certain other risks, that can also influence the effectiveness of a CDS contract and it is thus important to give an overview of these risks and the role they play in the CDS market.

According to Adam (2005:3-6) there are nine important risks to keep in mind, when participating in a CDS contract. The following section will give a brief introduction to eight of these risks, with a more in depth look at credit risk later in the chapter:

1. Interest rate- and market risk – any change in interest rates can affect a debt management instrument and this form of risk evolves during the lifetime of the swap. The sensitivity of interest rates is closely linked to the underlying market conditions and hence the market risk.
2. Currency or exchange rate risk – many CDSs are traded internationally and thus there exists a difference between the nominal currencies of the interest bearing debt. A change in the value of one currency will have a definite effect on the future payments involving the CDS.
3. Liquidity risk – the liquidity of any asset is displayed, in the ease with which the asset can be transformed into cash. The secondary market for swaps plays an integral role, in providing the needed liquidity, together with the structure of the swap itself.
4. Mismatch risk – this type of risk evolves, due to the complex nature of financial instruments and the amount of agreements that are made in the process. There are various differences regarding the market for CDSs, which include the notional principal, floating index, payment frequencies and others.
5. Basis risk – the difference between two prices, is known as basis risk. In a CDS agreement the difference between two floating interest rate indexes is the basis risk of the transaction.

6. Sovereign risk – is very much the same as currency risk, but is limited to the financial standing of a particular country and is very similar to credit risk. It is thus the risk that counterparty in a foreign country, can honour its contractual obligations as set out in the swap agreement.
7. Delivery- or settlement risk – there are significant time differences between two countries on different sides of the world and thus this has an influence on the settlement hours between the two parties. The payments of the counterparties are thus affected by this difference.
8. Systematic risk – the global financial crisis is a pertinent example of systematic risk. Financial disturbances in other economic sectors can have a devastating impact on the sector in question, which can lead to a loss of confidence and overall panic among market participants.
9. Credit- and counterparty risk – the main purpose of using CDSs and the reason they were invented, is to hedge credit risk (Weistroffer, 2009:11). Credit risk is defined as, the risk of incurring a loss in the event of a default by a borrower (Tolk, 2001:4). There are various parties that can be affected by credit risk and a simple explanation is any party that is making or receiving a loan or debt payment (Neal, 1996:16). To be more specific, these parties may include bond issuers, bond investors and commercial banks, although these parties are just a small representation of credit risk affected parties (Neal, 1996:16-17).

Credit risk is thus associated with a default, but default is not the only credit event that may take place (see Section 3.2). According to Haworth (2006:2) the modelling of credit is difficult, due to the scarcity of data that exist on these types of events and the fact that credit events do not often occur (as was the case before the global financial crisis of 2008/9). When credit events such as defaults do occur, the losses incurred are significant and the size and timing is difficult to predict (Haworth, 2006:2).

For investors to evaluate the future changes in the credit risk of a company, credit curves (the term structure of an entity's default probability) are commonly used to capture cer-

tain credit risk changes (O' Kane, 2001:14). The changes that are captured by a credit curve are manifested in the shape of the curve and are defined as "the excess yield over some benchmark interest rate of a credit as a function of the maturity of the credit exposure" (O' Kane, 2001:14).

O' Kane (2001:15) summarises the three main credit curves as the following:

- An upward sloping: This upward sloping credit curve is very common when assessing different credits. The reason for this is, that credit is of high quality in the short-term and is expected to remain constant. For longer term evaluations, uncertainty tends to rise and thus the credit spread increases due to the increased uncertainty. In the process the investor is compensated for the risk being incurred over time,
- A humped: The humped credit curve focuses more on the medium term characteristics of credit and specifically, in the case where credit is likely to worsen in the medium term. The short-term default probability still remains very low. In this specific case, the credit spread tends to fall and by this illustration, credit will be more likely to survive the longer term if the medium-term is survived over the maturity of the credit and
- A downward sloping (inverted): In the event that credit has shown a significant deterioration and a default is probable, the bonds in question start to trade on a price basis. This entails that bonds with the same seniority will tend to be traded with a similar price, even when there are significant differences in their maturity and coupon rates. This leads to the inverted spread curve and elevated short-maturity spreads.

Credit risk and the above mentioned credit curves are influenced by two broad categories as illustrated by Neal (1996:16):

- Business cycles: During a time-period where economic expansion and high growth are experienced, earnings tend to be more sustainable which in turn keep default rates to a minimum. On the contrary, economic contraction can have the opposite

effect, where pressure on earnings can cause a rise in default rates, due to the decline in loan and bond payments and

- Firm-specific: This risk is unrelated to business cycles and comprises certain firm activities or industry developments that can have a significant impact on credit risk. An example of such a situation is product liability lawsuits, which can force a firm into filing for bankruptcy and thus also defaulting on bonds held by the firm.

Another aspect that is closely linked to business cycles is the interdependent nature that exists between industries and the fact that companies do not function in isolation (Haworth, 2006:2). This can be observed in contracting business cycles, where individual credit events, that are related to one specific firm can cause contagion through the market, affecting the whole network of companies in the industry and having a devastating impact on the market as a whole (Haworth, 2006:2). This contagion effect will be discussed in more detail in Chapter 4.

Another aspect of managing credit risk by using CDSs is the possibility of counterparty risk that may arise over the intended period of protection stipulated in the CDS contract. Counterparty risk, is the possibility that the protection seller will not be able to honour the contractual agreement that exists with the protection buyer, which in turn can result in a significant loss for the protection buyer (Weistroffer, 2009:11). The contrary is also applicable in this instance where the protection seller can incur losses due to the possibility, that the protection buyer may not be able to make the necessary periodic payments for protection.

Counterparty risk has different consequences for the different parties involved. Weistroffer (2009:11) gives a simple summarisation of these consequences:

- in the case where the reference entity is not able to honour the contractual agreement with the protection buyer, an orderly settlement between the protection seller and protection buyer is reached, where the protection buyer receives compensation from the protection seller,

- in the event that the protection buyer is not able to make the contractual periodic payments, replacement is the consequence, stemming from the agreement where the protection seller loses the remaining payments and the protection buyers loses the intended coverage,
- the protection seller defaults on its obligations, the protection buyer loses the coverage and can then attempt to replace the old contract with a new one. This however is very difficult and can be very costly especially in constrained markets,
- the uncovered loss, is the result of default from both the reference entity and the protection seller. When this occurs the protection buyer loses the needed protection and is then heavily exposed to the credit risk that arises from the reference entity.

It is evident that the protection buyer and the protection seller are heavily dependent on the ongoing liquidity, creditworthiness and robustness of the other counterparty (European Central Bank, 2009:36). This is particularly true in the case of dealers (in this case the protection seller) who act as market-makers in trading and agreeing to enter into CDS contracts (European Central Bank, 2009:36).

In the process of entering into a CDS contract, in order to hedge credit risk, the assumption that financial stability will be obtained is very dangerous. There are many other risks that arise due to the nature of the market and it is never possible to be immune against these risks. The following chapter will consist of more detail regarding this vulnerability to financial risks and the devastating effect that it has had on the financial world.

3.6. The pricing of CDSs

The term “swap” in CDS agreements is important to understand: effectively a default-free-floating-rate note is swapped for a defaultable floating-rate note (Duffie, 1999:73).

The pricing of CDSs is based on a quantitative approach and there are primarily three parameters that are included in the calculations: the likelihood of default, the possible recovery rate when a default does occur and some consideration for market sentiment

about the credit, liquidity and regulatory implications (Whetten, Adelson and van Bemmelen, 2004:4).

Duffie (1999:74) provides an interpretation of two possible problems regarding the pricing of CDSs:

- When the contract is initiated, the market value is zero (ignoring dealer margins and underlying transaction costs). It is, however, necessary to determine the at-market annuity premium rate, and
- After the contract is originated there are changes in the market value of the CDS. This occurs due to changes in market interest rates, a change in the credit quality of the issuing entity and the passage of time. It is therefore necessary to determine the current market value of the contract which can differ from zero.

In any CDS contract, there are two cash flow streams: a fixed – or premium – leg and a contingent – or protection – leg (O’ Kane, 2003:6-8). The protection buyer pays the protection seller a certain agreed sum of money for protection (fixed leg) and the protection seller agrees to compensate the protection buyer when a default occurs with a pre-determined sum of money (contingent leg).

The contingent payment is $(1 - R) \cdot N$, where R is the recovery rate, defined as a percentage of the notional amount, N (Whetten, Adelson and van Bemmelen, 2004:7). The value of the CDS contract to the protection buyer is the difference between the present value of the contingent leg and the fixed leg and is illustrated as (Whetten, Adelson and van Bemmelen, 2004:7):

$$\text{Value of CDS} = \text{PV} [\text{contingent leg}] - \text{PV}[\text{fixed leg}] \quad (1)$$

The first step in the pricing of a CDS is to estimate the probability of default of the reference entity and this is considered as the most important step in the pricing process (Garcia, Van Ginderen and Garcia, 2001:2). These default probabilities should be risk-neutral and these are estimated from bond prices or asset swaps (Hull, 2005:512). An alternative

to this approach is to imply the default probabilities from CDS quotes (Hull, 2005:512-513).

Hull and White (2000:33-34) provide an in-depth representation of how the estimation of default probabilities is undertaken using bond prices bonds. The first step is to assume, that the reason for a difference in the price of a treasury bond and that of a corporate bond is the possibility of default. This implies that a corporate bond sells for less than a treasury bond, even though the characteristics of the bonds are similar. This assumption leads to the following:

$$\text{Value of a treasury bond} - \text{Value of corporate bond} = \text{Present value of default cost.}$$

This relationship is used on a range of different bonds issued by the reference entity and this can even be done in the case where the reference entity does not have a substantial amount of actively traded bonds. The alternative is to use bonds with a similar credit rating and in the same industry. This approach is used to estimate the probability of default at different future dates.

In practice the same method of calculation is used and a simple example that Hull and White (2000:33-34) have used will be discussed. The example makes use of a five-year zero-coupon treasury bond with a face value of 100. The corporate bond is similar and the yields on the two bonds are 5.0% and 5.5% respectively as well as continuously compounded.

The present value of the treasury bond is $100 \cdot e^{-0.05 \times 5} = 77.8801$ and the corporate bond is $100 \cdot e^{-0.055 \times 5} = 75.9572$. Using the same approach as above the present value of the cost of default is:

$$77.8801 - 75.9572 = 1.9229.$$

The next step is to define the risk-neutral probability of default during the term of the contract (in this case, five years). Define this parameter as ρ and make the simplifying assumption that there are no recoveries in the case of default. The following equation is used:

$$100 \cdot \rho \cdot e^{-0.05 \times 5} = 1.9229$$

$$\rho = \frac{1.9229}{100 \cdot 0.7788}$$

$$\rho = 2.47\%.$$

It is important to keep in mind that in practice, the calculation of default probabilities is more complicated due to the fact that recovery rates are usually non-zero and most corporate bonds are not zero-coupon bonds (Whetten, Adelson and van Bemmelen (2004:7-10)).

Two important factors to consider regarding CDS pricing are the recovery rate of the bond in the case of default and risk-free discount factors. The pricing model discussed below omits counterparty risk.

Assume that the notional value of the swap is US\$1 million, the annual CDS premium is S and the accrual days expressed as a fraction of a year is d_i . The CDS premium as a quarterly payment is $S \cdot d_i = S \times 0.25$ per quarter. This payment is due only if no default on the part of the reference entity occurs. It is necessary to include the survival probability of the bond into the model. If the survival probability of the bond over the first three months is $q(t_i)$ the payment after three months, or t_i , is:

$$q(t_i) \cdot d_i \cdot S = \left(\frac{q(t_i) \cdot S}{4} \right) \text{basis points (bps) per quarter.}$$

Assume the relevant discount factor is $D(t_i)$. The present value of the payment can then be calculated and summing these payments together the following result gives:

$$\sum_{i=1}^N D(t_i) \cdot q(t_i) \cdot S \cdot d_i \quad (2)$$

The next step is to include the accrued premium that is paid up to the date of default. Default may occur *between* payment dates and must be accounted for. In this example, the assumption regarding default is that it occurs in the middle of an interval between con-

secutive payment dates. This entails that the default on the part of the reference entity is between t_{i-1} and t_i and the accrued payment amount is $S \cdot \frac{d_i}{2}$.

The marginal survival probability of the bond is:

$$q(t_{i-1}) - q(t_i).$$

The expected accrued premium payment for any particular interval is:

$$[q(t_{i-1}) - q(t_i)] \cdot S \cdot \frac{d_i}{2}.$$

The present value of all expected accrued payment is:

$$\sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)] \cdot S \cdot \frac{d_i}{2}. \quad (3)$$

Adding Equation 2 and 3 the present value of the fixed leg is:

$$PV = \sum_{i=1}^N D(t_i) \cdot q(t_i) \cdot S \cdot d_i + \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)] \cdot S \cdot \frac{d_i}{2}. \quad (4)$$

The next step is to calculate the present value of the contingent leg. Again the assumption is that default occurs between payment dates and the protection buyer will receive a contingent payment of $(1 - R)$ where R is the recovery rate. The contingent payment must also be adjusted by the marginal survival probability $q(t_{i-1}) - q(t_i)$. After discounting each expected payment and summing the payments over the term of the contract:

$$PV = (1 - R) \cdot \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)]. \quad (5)$$

If Equations 4 and 5 are substituted into Equation 1, the value of a CDS transaction is obtained:

$$\begin{aligned} CDS \text{ value} = & \sum_{i=1}^N D(t_i) \cdot q(t_i) \cdot S \cdot d_i + \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)] \cdot S \cdot \frac{d_i}{2} \\ & - (1 - R) \cdot \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)] \end{aligned}$$

Recall that the CDS spread is set so that the value of the swap transaction is zero when the contract is initiated. This implies that the fixed leg of the transaction is set equal to the contingent leg and solving this equation for S the annual premium payment is:

$$S = \frac{(1-R) \cdot \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)]}{\sum_{i=1}^N D(t_i) \cdot q(t_i) \cdot d_i + \sum_{i=1}^N D(t_i) \cdot [q(t_{i-1}) - q(t_i)] \cdot \frac{d_i}{2}}$$

A pricing example showing all cash flows is shown in Table 3.1. The notional amount is US\$1m and the CDS contract spans two years with quarterly premium payments.

Table 3.1: Pricing example.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Month	Discount Factor	Survival Probability to Period (%)	Fixed Periodic Payment (bps)	Expected Value of Fixed Payment (bps) (2) x (3)	PV of Fixed Payment \$1m x (4) x (1)	Default Probability for the Period (%)	Expected Accrued Payment (bps) (3)/2 x (6)	PV of Accrued Payment \$1m x (7) x (1)	Expected Contingent Payment (bps) at R=45%; (1- R) x (6)	PV of Contingent Payment \$1m x (9) x (1)
0	1	100.0	0	0.00	0.00	0.00	0.00	0.00	0.00	0
3	0.99	99.9	40.00	39.96	3956.04	0.10	0.02	1.98	5.50	544.50
6	0.98	99.6	40.00	39.84	3904.32	0.30	0.06	5.88	16.50	1617.00
9	0.97	99.1	40.00	39.64	3845.08	0.50	0.10	9.70	27.50	2667.50
12	0.96	98.4	40.00	39.36	3778.56	0.70	0.14	13.44	38.50	3696.00
15	0.95	97.5	40.00	39.00	3705.00	0.90	0.18	17.10	49.50	4702.50
18	0.94	96.4	40.00	38.56	3624.64	1.10	0.22	20.68	60.50	5687.00
21	0.93	95.2	40.00	38.08	3541.44	1.20	0.24	22.32	66.00	6138.00
24	0.92	94.0	40.00	37.60	3459.20	1.20	0.24	22.08	66.00	6072.00
Sum of PV (\$)					29814.28	Sum of PV		113.18	Sum of PV	31124.50

Source: Whetten, Adelson and van Bemmelen (2004:9).

The valuing of the fixed leg can be separated into two parts, the first being, the fixed periodic payments and the second the accrued payments. In order to calculate the present value of all the expected fixed payments, it is necessary to multiply the fixed payment of each period with the respective survival probability and then discount this number at the discounted risk-free rate. The next step is to sum this amount over the term of the CDS which will result in the amount at the bottom of row (5) in the table which is US\$29,814. This amount is the present value of fixed periodic payments for a US\$1m amount.

To calculate the accrued segment of the fixed leg, there has to be the assumption that default will occur in this case just for clarity reasons. The assumption will be that default will

occur in the middle of the time interval between two payment dates. If the premium of a payment is 40 bps and default occurs in the middle of the time interval, the accrued premium payment will only be 20 bps. Column (7) represents the first step in the calculation where the expected value of the accrued payment, in this case 20 bps, must be multiplied by the probability of default for that period.

After discounting these values for all the periods and taking the sum over the term of the CDS the amount is US\$113 which can be seen at the bottom of column (8). This calculation is the present value of the expected accrued payments and is a very small number. The reasoning behind this is the fact that the accrued payment in the event that there is a default, is 20 bps and the default probability for each period is very small numbers. To calculate the present value of the fixed leg the two segments have to be added and it amounts to $(29,814 + 113 =)$ US\$29,927 for a notional amount of US\$1 million over a two-year term. This is the amount that the protection buyer will have to pay over the term of the contract.

The value of the contingent leg is also explained by Table 3.1 and the expected value if default occurs during each period is $(1 - R)$ multiplied by the probability for default for that period and this is given by column (9) in the table. The recovery rate in this case is assumed to be 45% and therefore the expected contingent payment is given by 55% multiplied by the default probability of each period. The present value of the contingent payment is calculated by discounting for each period and then taking the sum over the term of the CDS contract. The amount is given by column (10) and is the present value of expected contingent payments (US\$31,124).

The value of the CDS can then be calculated and is:

$$\text{Value of CDS} = \text{PV [expected contingent payment]} - \text{PV [fixed leg]} =$$

$$\text{US\$31,124} - \text{US\$29,927} = \text{US\$1,197 for a notional amount of US\$1 million.}$$

The intuitive interpretation of the calculations above is easy to understand. The survival rate of the CDS after two years is 94% and thus the default probability over the term of the CDS is 3% per year. Taking the recovery rate of 45% the average expected loss per

year can be calculated and is $(1-45)*3\% = 1.65\%$. In this example the protection, the protection buyer receives for the credit risk is 165 bps although, the premium is only 160 bps. This is a very valuable transaction for the protection buyer, due to the positive CDS value and is calculated to be US\$1,197 or 12 bps for a US\$1 million notional amount.

3.7. Conclusion

Chapter 3 provided a presentation of the theoretical aspects of any CDS transaction and provided some insight as to what these instruments are, their form and function, the market in which they operate and the risks and valuation of CDSs. These instruments were shown to be important constituents of credit derivatives and the credit risk faced by any financial institution can be hedged using CDSs.

The next chapter addresses the background to the financial crisis, its causes and effects and the main protagonists in the drama that has unfolded since 2007. The role of securitisation and CDSs will also be explored in the context of the crisis.

CHAPTER 4: THE GLOBAL FINANCIAL CRISIS

4.1. Introduction

Chapter 2 and Chapter 3 discussed the theory behind securitisation and CDSs. Both these instruments depict relative simple concepts and the advantages linked to each of them are beneficial to any financial institution, given that they are implemented under the correct circumstances. Chapter 4 clarifies the events before, during and after the financial crisis by focusing on the causes of the global financial crisis, including securitisation and CDSs. Only certain aspects regarding securitisation and CDSs will be discussed in order to keep the presentation simple and understandable.

The connection that exists between securitisation products and the use of CDSs to hedge the credit risks of these bonds is presented with a global perspective and with reference to the crisis. This will also provide underlying information regarding the problem statement and the contents of Chapter 5. This chapter also demonstrates how a lack of regulation and inadequate market practices contributed to the crisis. The concept of sub-prime mortgages is also briefly explained and how the asset-backed securities that resulted from them contributed to the crisis. One important question needs to be answered regarding CDSs. Why, when there are derivatives like CDSs, was the credit risk associated with asset-backed securities not covered during the crisis? This question will be answered and the explanation presented in this chapter.

The financial crisis is a very good example of when certain financial instruments fail these can lead to financial turmoil. The recession which started in 2008 led to a banking panic and the meltdown of all types of securitised products (Ivashina and Scharfstein, 2010:319) and is considered to be the greatest economic down-turn since the Great Depression (Pavel, 2010:1).

This meltdown was also responsible for the loss of confidence in financial institutions' ability to be liquid and solvent, leading to a full-blown banking panic which saw the failure of Lehman Brothers, Bear Stearns as well as Washington Mutual in the US, to name a few (Ivashina and Scharfstein, 2010:319). The saying of "when the United States of America sneezes the world

catches a cold”, became a modern day reality. Financial markets all over the world suffered severe and catastrophic losses (Longstaff, 2010:436). These losses forced financial institutions to increase risk management and in the process lower their capacity as well as their willingness to take on risk, which led to tighter lending standards and the withdrawal of lines of credit (Duchin, Ozbas and Sensoy, 2010:419).

The worldwide economic turmoil led to various questions being asked and the most important ones were, whether or not the financial crisis could have been prevented and what the role of financial institutions were, leading up to the crisis (Pavel, 2010:2). Authors and researchers all over the world have (Longstaff (2010), Pol (2008), Pavel (2010) etc.) documented and published their analysis of the crisis, in order to provide more clarity as to why the economic and financial instability occurred. Many of the studies have attempted to provide the relevant information, depicting the course of events leading up to the crisis and thereafter, as extraordinary, but in fact there have been many other financial crises of a similar nature (Marton and Szabo, 2008:5).

This chapter will document various analyses of the crisis, in order to establish what the causes of the crisis were, as well as the contagion effects. By documenting this information, the understanding of asset backed securities and the financial instruments linked to them will be improved. Chapter 4 will also address one more goal of the dissertation.

4.2. The Global Financial Crisis explained

4.2.1. The pre-crisis period

Long before the global financial crisis struck in August of 2007, there had been various other financial crises of a similar devastating nature, which possibly could have helped to prevent the current financial turmoil across many economies worldwide (Marton and Szabo, 2008:5). Thus there had been previous lessons learnt and an abundance of information, in order to warn individuals and financial corporations about the dangers that financial markets together with economies held.

Table 4.1: Previous financial crises that hit world economies.

Time	Event description
1986-1995	US savings and loan crisis
1990-1991	Scandinavian crisis – Sweden, Finland and Norway
1990-1999	Japanese banking crisis
1994-1995	Mexican Tequila [or peso] crisis
1997-1999	Asian financial crisis
1998	Russian financial crisis (and resultant LTCM incident)
2001	Banking crisis in Argentina and Turkey
2001-2006	Dotcom crisis (and accounting failures at Enron, Worldcom, and Parmalat)

Source: Marton and Szabo (2008:5).

The housing and credit bubble which started in 2001 and lasted until 2008 (in the US), used a guiding principle which primarily focused on the inability of an individual to understand the financial system and consequences of certain decisions to a decent extent, even when transparency is available (Pol, 2008:2).

This principle explained the cause of certain economic evils, which can be linked to the fruits of risk, uncertainty and ignorance. Pol (2008:2) further simplified the principle by focusing on individualism and the cause and effect flowing from uncertainty and ignorance. Might the global financial crisis or as many others have named it, the sub-prime mortgage crisis, be blamed on ignorance?

By now it is quite clear, that the global financial crisis or credit crunch had its origins in the US. The period leading up to the crisis started in 2000, when emerging economies like China and India experienced more balanced and accelerated growth, which placed these economies on a new path of growth and modernisation (Marton and Szabo, 2008:6). Marton and Szabo (2008:6) also mentioned the benefits that these growing emerging economies had on the economies of the developed world.

Developed countries had a growth increase in consumption (specifically the US) and this sudden growth could be attributed to the capital inflows which originated from flourishing emerg-

ing economies which in itself was a reversal of historically imbalanced trade financing. Financial markets became increasingly globalised, which meant that the movement of capital was free from any barriers and this phenomenon had a positive impact on global financial markets. New investment opportunities emerged, leading towards lower interest rates and declining return on investments, which lead to entirely new financial innovations in order to achieve higher yields (Marton and Szabo, 2008:6).

The US experienced a low interest rate environment due to the capital inflow from emerging markets and the Federal Reserve implemented a very lax interest rate policy (Brunnermeier, 2009:77). Brunnermeier (2009:77) pointed out, that emerging economies (specifically Asian – a lesson learned from the Southeast Asian crisis in the late 1990's) purchased various US securities, in order to hedge against the depreciation of their currencies and this just increased the amount of capital inflow in the US.

All this capital and good fortune contributed to the sudden and somewhat surprising growth in the mortgage market in the US. House prices rose with considerable amounts and all classes benefited from the sudden advantageous market conditions (Lim, 2008:2). Many families were able to afford homes and with the booming prices, they could afford to borrow more on their home equity which meant that everyone was having a good time (Lim, 2008:2). The affordability of credit and the low cost related to it paved the way for a new financial innovation known as “sub-prime mortgage lending”. This magnitude of growth and the means used to obtain financing was unsustainable, as was seen in the financial crisis that followed.

4.2.2. Sub-prime mortgage lending

“Sub-prime mortgages” are residential loans that have a lower expected probability of full repayment and do not conform to the traditional criteria known as prime mortgages (Kiff and Mills, 2007:3). Many rich countries focus on providing mortgage financing to low income households, but the main issue with providing this finance is whether or not the borrower has sufficient funds and is creditworthy (Pol, 2008:20).

The booming house prices in the US led to the financial innovation known as “sub-prime mortgages” (in extreme cases the borrowers had no employment, no income and also no assets and therefore termed “ninja loans”) and these can be described in four steps (Pol, 2008:21):

- **Step 1:** The sub-prime mortgage rate starts with a teaser rate (fixed interest rate) and also incorporates a reset or step-up rate (variable interest rate) which can be implemented after a time-period of two to three years.
- **Step 2:** Refinancing of the house depends solely on the appreciation over the precluded time-period.
- **Step 3:** The lender has the choice whether or not refinancing of the mortgage will be profitable or the borrower may be rolled into another sub-prime mortgage.
- **Step 4:** Financing under sub-prime mortgage standards include prepayment penalties to the borrower.

Ashcraft and Schuermann (2008:14) defines a sub-prime borrower under a set of credit risk characteristics which include:

- several delinquencies which include a minimum of two 30-day delinquencies that took place in the last 12 months as well as a minimum of one 60-day delinquency in the last 24 months,
- any of the following notices or means of action taken against the borrower in the last 24 months: Foreclosure, repossession, judgment or charge-off,
- if the borrower has a record of bankruptcy over the last five years,
- when a borrower has a very high probability of default evidenced in risk scores given by a certified credit bureau which all depends on the product/collateral and
- an inadequate debt service-to-income ratio or the inability of the borrower to cover monthly living expenses, after all debt servicing has been done.

The only reasoning behind sub-prime loans was the fact, that borrowers met the criteria to obtain prime loans, but with one exception, full income documentation was not presented in the application process for a loan (Kiff and Mills, 2007:3).

Kiff and Mills (2007:3) also put a timeline together which indicates the origins of sub-prime lending facilitated by several legal milestones in a simple and understandable manner:

Table 4.2: Timeline of the origin of sub-prime mortgages.

Year	Description
1980	Interest rate caps were imposed by several states and federal legislation followed.
1982	Adjustable rate-mortgages were allowed to lenders.
1986	Residential mortgages were the only consumer loans which was tax deductible due to the Tax Reform Act of 1986.
1990-5	Sub-prime loans developed into a specialist loans class in the mid-90's which lead to a substantial growth in home ownership.
2001-8	Time-period associated with the housing boom in the US.

Source: Kiff and Mills (2007:3).

During this time-period there were however various other factors which also impacted on the development and growth of sub-prime lending/mortgages. These factors included, securitisation and automated underwriting (statistical computer models used to assess loan applicants' credit risk rather than a loan officer) which led to more cost efficient loan applications and processing (Kiff and Mills, 2007:4).

All the factors needed to create and implement a market for a financial innovation like sub-prime mortgages were in place and led to a fast growing and dynamic market. The question is then raised, why this new and supposedly sustainable market could lead to a global financial crisis?

One school of thought according to Gotham (2009:364) is the withdrawal of regulation imposed by state entities overseeing the real estate and financial sectors. The lack of registration of policies, legal-regulatory frameworks, as well as statutes required in order to facilitate sub-prime lending practices which are formulated and implemented by these state entities, contributed to

the crisis. The rest of the chapter will attempt to explain the recent global financial crisis in more detail.

4.2.3. The unfolding of the global financial crisis

The recent global financial crisis started similarly as any other previous crises and is most likely rooted in people's desires (Foo, 2008:293). The US had experienced an abundance of capital inflow from foreign countries together with a very lax interest rate imposed by the Federal Reserve. The easy access and affordability of capital also provided extra fuel for the heated growth of the real estate market in the US (Foo, 2008:293).

This enabled various businesses and financial institutions to report record profits, forcing them to hire more people in order to keep up with consumer demands leading towards several bubbles which also spread to global financial markets (Thompson, 2008:54-55). During this bubble, various banks and financial institutions who specialised in the origination of mortgage loans (specifically in the US), originated loans with the intent to pool and securitise these loans in order to sell them as investment products in financial markets all over the world, gaining additional sources of finance (Altunbas, Gambacorta and Marques, 2007:7). In the process of originating-to-distribute, financial institutions were able to spread credit risk and obtain additional funding in order to expand mortgage business together with the removal of illiquid assets from their balance-sheets.

The additional source of finance enabled these financial institutions to originate more loans, thus lending practices could be expanded (Marton and Szabo, 2008:9). Investors' appetite for securitised products showed significant growth and financial institutions ultimately started to decrease their lending standards in order to make more loans with the intention of distributing them (Brunnermeier, 2009:82).

In the years leading up to 2003, the majority of loans originated in the US conformed to Government Sponsored housing Enterprises' (GSEs) criteria (Fannie Mae and Freddie Mac) and these loans were also purchased by the two enterprises, but by 2006 more than 50% of these loans did not conform to the criteria set by the GSEs (Kiff and Mills, 2007:6). What was once a

niche market (sub-prime mortgages), developed into a very large portion of the US mortgage market (Dell'Arriccia, Igan and Laeven, 2008:3).

Traditionally the pools of mortgage back securities that were securitised consisted out of prime loans made to home buyers. However, this all changed when CDOs were created in order to pool a mixed asset class (mortgages), which had an interest payment linked to it and in the process created a secondary market for sub-prime mortgages (Lim, 2008:3; Schwarcz, 2008:376). It was now possible for loan originators to repackage sub-prime loans in order to sell them to SPVs and transfer their credit risk, together with the inferior quality of the underlying asset on to investors from all over the world (Altunbas, Gambacorta and Marques, 2007:7).

Table 4.3: Timeline of US sub-prime crisis.

Time	Description
Late 2006	The US housing market slows after two years of increases in official interest rates. Delinquencies rise followed by a wave of bankruptcies.
Feb 7 2007	Europe's biggest bank, HSBC Holdings, blamed soured US sub-prime loans for its first ever profit warning.
Apr 2 2007	Sub-prime lender New Century Financial Corp. files for bankruptcy.
Jun 20 2007	Two Bear Stearns funds sell US\$4 billion of assets to cover redemptions and expected margin calls arising from sub-prime losses.
Jul 10 2007	Standard and Poor's said it may cut ratings on some US\$12 billion of sub-prime debt.
Jul 17 2007	Bear Stearns says two hedge funds with subprime exposure have very little value; credit spreads soar.
Jul 20 2007	Home foreclosures soar 93% from the previous year.
Aug 9 2007	BNP Paribas suspends redemptions in US\$2.2billion of asset backed funds; says it cannot determine security values.
Sep 13 2007	UK mortgage lender Northern Rock seeks financial support from the Bank of England; report sparks a run by worried depositors.
Oct 1 2007	Swiss bank UBS said it would write down US\$3.4 billion in its fixed income portfolio; first quarterly loss in nine years.

Oct 30 2007	Merrill Lynch ousts Chairman and Chief Executive Stan O'Neal after reporting biggest quarterly loss in company's history.
Nov 4 2007	Citi group announces a further US\$8 11 billion of subprime related writedowns and losses. Charles Prince resigns as CEO.
Dec 12 2007	Central banks coordinate the launch of the temporary Term Auction Facility (TAF) to address pressures in short term funding markets.
Jan 1 2008	Bank of America purchases Countrywide Financial in an all-stock transaction.
Feb 13 2008	President Bush signs the Economic Stimulus Act of 2008 into law.
Mar 11 2008	Federal Reserve announces creation of Term Securities Lending Facility (TSLF).
Mar 16 2008	Federal Reserve announces creation of Primary Dealer Credit Facility (PDCF).
Mar 24 2008	JP Morgan acquires Bear Stearns in rescue partially financed by Federal Reserve Bank of New York.
Jun 5 2008	Standard & Poor's announces downgrade of monoline insurers AMBAC and MBIA.
Jul 11 2008	Office of Thrift Supervision closes IndyMac Bank, F.S.B.
Sep 7 2008	Federal Housing Finance Agency places Fannie Mae and Freddie Mac in government conservatorship.
Sep 15 2008	Bank of America announces purchase of Merrill Lynch; Lehman Brothers files Chapter 11 bankruptcy.
Sep 16 2008	Federal Reserve authorises lending up to US\$85 billion to AIG.
Sep 25 2008	Office of Thrift Supervision closes Washington Mutual Bank.
Sep 29 2008	Federal Deposit Insurance Corporation (FDIC) announces that Citigroup will purchase the banking operations of Wachovia Corp.
Oct 3 2008	Congress passes Emergency Economic Stabilization Act establishing US\$700 billion The Troubled Asset Relief Program (TARP).
Nov 25 2008	Federal Reserve Board announces creation of Term Asset Backed Securities Lending Facility (TALF).
Dec 19 2008	US Treasury authorises loans for General Motors and Chrysler from the TARP.

Adapted from: Longstaff (2010:441).

The roots of the US sub-prime crisis were embedded in the depreciating house prices which started in 2007 and ultimately led to an increase in default rates among home owners, especially the less credit worthy clients (sub-prime borrowers) (Reinhart and Rogoff, 2008:4). The period leading up towards the increase in default rates, were low risk for banks as well as other financial institutions and simply meant that when there was a foreclosure on a property, the bank could quickly resale the property and in the process make a profit (Pavel, 2010:2).

It was however unsustainable, with default rates and foreclosures increasing, banks and other financial institutions found themselves in the midst of a liquidity spiral due to depreciating assets on their balance sheets (Pavel, 2010:2). It soon became common day practice to decrease lending, especially to institutions that held mortgage backed securities, increasing the liquidity shortage and in the process depressed asset prices even more (Pavel, 2010:2).

In the summer of 2007, securitisation markets experienced large losses in value (primarily mortgage related products) and the demand from investors for these financial instruments deteriorated (Fender and Mitchell, 2009:27). The problems in the securitisation markets started when sub-prime mortgages experienced a somewhat significant deterioration in credit quality, due to the halt in growing house prices in the US and illiquid markets contributed to even more devastating losses (Fender and Mitchell, 2009:27). The halt in growing house prices was also accompanied by the slowing economic growth experienced in the US which magnified the resulting problems (Pavel, 2010:2).

Investor concerns were not entirely focused on the sub-prime mortgage segment of securitisation markets or any other segment in particular, but on securitisation markets as a whole and resulted in the plummeting of securitisation volumes across all spectrums (Fender and Mitchell, 2009:2). It was quite evident that sub-prime mortgages and the financial products (securitisation products) that were tied to it started to enter into a downward spiral (Thompson, 2008:55).

Investors from all over the world had invested quite heavily in mortgage backed securities stemming from US markets, as can be seen in the documentation of the crisis by Schwarcz (2008), Thompson (2008), Pavel (2010), Longstaff (2010) etc. These investing practices had

some devastating consequences for the countries and regions involved, especially Eastern European and Asian countries, which led to the worst global recession since the Great Depression experienced in the 1930's (Brunnermeier, 2009:77).

4.2.4. Contributing factors to the global financial crisis

The next section will describe certain of the underlying factors that played an instrumental role in the US sub-prime crisis, which ultimately were responsible for the global financial crisis and the worldwide recession that followed. The factors described in this section will differ from decisions made at managerial level in corporate institutions to some government policies and regulations.

This section will consist of two parts, the first part will discuss certain issues that are relevant and important to a financial institution like a bank, the second part will take a closer look at the factors that played a role from a market perspective. The aim of the next section is to provide the relevant information to enable the reader to understand certain complex aspects that caused the crisis.

4.2.4.1. Institutional practices

Demand Deposits

In the last quarter of the 20th century many financial transactions that were traditionally performed by banks moved to the securities markets and this led to a wide range of products being developed by various financial institutions (including thrifts and finance companies) in order to provide in a customer's servicing needs (Saidenberg and Strahan, 1999:1). What followed was increased competition between banks and other financial institutions for demand deposits from customers which ultimately meant that banks had to pay more for these deposits driving up the costs of doing business (Kelles Krauz, 2008:100).

Demand deposits are very important to a bank, enabling the bank to participate in intermediary activities and also from a social welfare perspective, where demand deposits can play a very important role in the risk sharing among depositors, due to liquidity issues (Diamond and

Dybvig, 1983:402). It is therefore understandable why banks form such an important role in the global financial scheme, but also to individuals and companies alike.

According to Purnanandam (2009:19) a bank's lending behaviour is influenced by two opposite economic forces. The first being, that banks with subsidised deposit insurance are more likely to engage in imprudent risk taking due to a large demand deposit base and secondly, that the fragility of these deposits can serve as a disciplining device. There are however banks that are not as fortunate as others and have much fewer demand deposits to rely on (due to increasing costs and competition), forcing them to develop new and innovative products (for example subprime mortgages and securitisation) in order to attract customers.

Before the global financial crisis struck, banks with large demand deposit bases did not participate in excessive and risky loans origination activities (Purnanandam 2009:20). Also during the global financial crisis, banks that had large demand deposit bases were less likely to be credit constrained and were in a better position to make new loans or provide credit line drawdowns, thus being less impacted by the shocks than banks with small demand deposit bases (Ivashina and Scharfstein, 2010:321). Thus when the bank runs started, these banks could afford to still participate in their day to day business activities.

This occurrence poses the question whether or not the access to funding primarily from demand deposits or the lack thereof played an instrumental role in why banks and other financial institutions originated inferior quality loans? According to Purnanandam (2009:21) the lack of demand deposits and a bank's risk taking incentives did in fact have a significant role and influence which contributed to the crisis in the first place.

Liquidity

According to Clerc (2008:1) there are three basic definitions that are readily used in defining liquidity. The first being, the ease with which value can be obtained by selling an asset, for the least amount of loss incurred. The second definition is related to a market's ability to trade or exchange a certain volume of assets or securities, without altering prices in any significant way. Third is the quantity of fully liquid assets that are circulated in an economy and are known as monetary liquidity.

Crockett (2008:14) expressed that liquidity has four defining characteristics and that liquidity can be divided into two broad categories. The characteristics are as follows:

- Liquidity is heavily dependent on the reactions of market participants that can be caused by uncertainty or increasing/declining asset prices. There are thus both endogenous and exogenous factors that can influence the liquidity of an institution,
- Liquidity is very volatile under different market conditions. Take the financial crisis as an example and many other crises before that. When market conditions are favourable, there is an abundance of liquidity and it tends to be “cheap”. In situations of distress, the contrary is applicable, where the scarcity of liquidity tends to drive up the costs of obtaining liquidity and can in some cases even be readily unavailable,
- There exists an interdependent relationship between individual intermediaries and liquidity in markets. Markets are dependent on the back up liquidity lines that are offered by financial institutions. To maintain stability and continuous market liquidity is very important in relation to risk management strategies for institutions and
- Liquidity in markets can be reduced quite dramatically if individual market participants decide to conserve liquidity (fully rational).

The two categories of liquidity are funding and market liquidity (Crockett, 2008:14). Funding liquidity, enables intermediation activities by financial institutions, where market liquidity is the ability by a financial institution to adjust risk profiles, as well as portfolios, without having an effect on the market prices of the assets in question. Market liquidity also consists of four dimensions, which include depth, tightness, immediacy and resilience (Crockett, 2008:14).

The role that liquidity played in the global financial crisis is twofold. The first being the abundance of liquidity in the pre-crisis period and secondly the downward liquidity spiral which ultimately erupted into the so called “credit crunch” (Crockett, 2008:14). This is also one of the characteristics of liquidity as explained earlier.

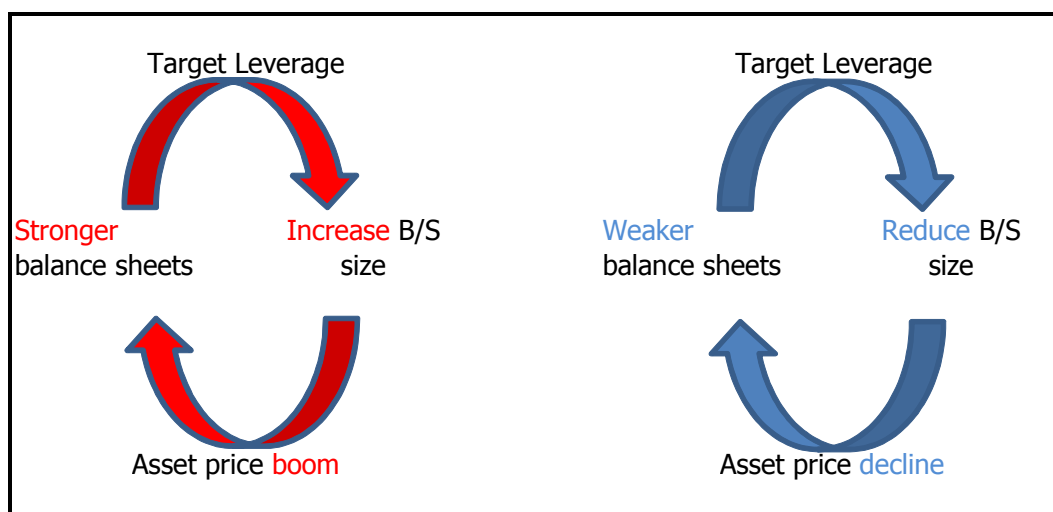
The abundance of liquidity or capital has been explained earlier in the chapter. Emerging economies like China, India and oil rich countries contributed heavily to capital inflow in the US.

More developed regions like the United Kingdom and Europe also followed this trend, in order to be a part of the credit and housing boom in the US and the lax interest rate policy implemented by the Federal Reserve had an impact.

One factor that also enhanced the amount of capital available to financial intermediaries was the repeal of the Glass Steagall Act of 1933 in 1999 (Davidson, 2008:6). The Glass Steagall Act was intended to segregate the capital markets and the business of commercial banks, preventing these banks from engaging in speculative practices using bank deposits (Crotty, 2009:567). This permitted financial institutions to be an underwriter as well as a lender, resulting in the excessive origination of loans which ultimately lead to the sub-prime crisis.

In the process of the Glass Steagall Act being repealed, two visions were created regarding financial intermediation (Clerc, 2008:1). The old vision entailed that banks were to be the only financial intermediaries where assets would be valued at historical cost and the depreciation would be done according to pre-set rules together with judgments. The new vision involved the trading of securities in markets and also the subsequent financial intermediation where positions and securities are market to market (at fair value).

Figure 4.1: Price amplification of balance sheet changes.



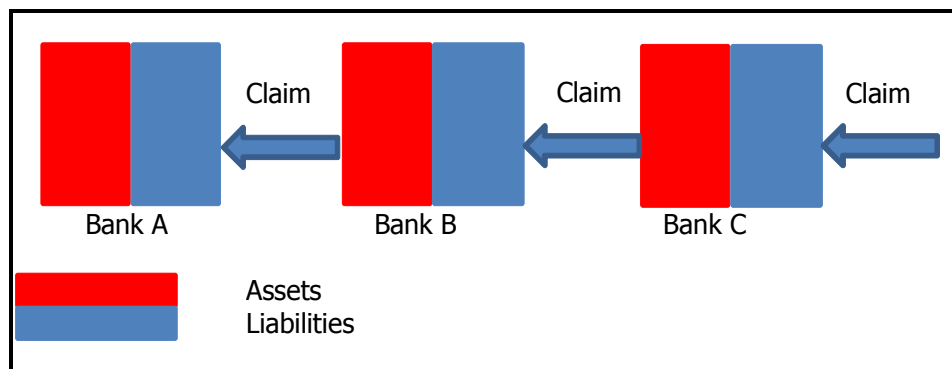
Source: Adrian and Song Shin (2008:5)

These two visions meant that the cost of capital, together with the competition for liquidity increased quite dramatically. Financial institutions found themselves in a race to attract as many

customers as possible and thus the development of financial products changed and became more innovative as discussed earlier. The development of asset backed securities, sub-prime mortgages and many other financial instruments were developed in order to obtain a larger portion of the market share on offer as well as higher profits. Figure 4.1 illustrates the price amplification of balance sheet changes and is a result of financial innovation. The increased competition led to other institutional practices and policies that also played an important role in causing the global financial crisis, which will be discussed further in the following paragraphs.

The financial turbulence caused by the crisis, highlights the importance of liquidity in global financial markets (Caruana and Kodres, 2008:66). The initial uncertainty led to the widespread financial contagion, where market illiquidity and the instruments traded, eventually erupted into funding illiquidity at a company level (Caruana and Kodres, 2008:66). Adrian and Song Shin (2008:2) illustrate and define the rapid deterioration of financial markets as the “domino” model of contagion.

Figure 4.2: The domino model of contagion.



Source: Adrian and Song Shin (2008:2).

Figure 4.2 clearly illustrates why there was a sudden turbulence in financial markets worldwide. The example to explain the domino model of contagion is very simple. If for instance Bank A has borrowed from Bank B and Bank B from Bank C, it is very possible that in the case of a default from Bank A, that Bank B will have no more capital left, if the loss incurred is large enough. The same can then be said about Bank C's financial position, for the loss incurred by Bank B will ultimately result in a loss for Bank C which can also result in a diminished capital base. The conta-

gion explained here affected many more banks and financial institutions leading to the illiquidity of international financial markets.

Tables 4.4 and 4.5 provide a case study which documents the spread of financial contagion.

Table 4.4: Money market instruments and uses.

Instrument	Use
Unsecured cash transactions (Deposits)	• Satisfy reserve requirements (banks)
Maturities: overnight to one year	• Manage fluctuations in customers' cash flows (banks)
Secured cash transactions (repos)	• Manage liquidity (banks)
Maturities: overnight to one year.	• Possibly exploit opportunities associated with expected interest changes (dealers) • Regular open market operations (OMO's) (central banks)
Money market derivatives (short term forward rate agreements, interest rate swaps, foreign currency swaps and options), in particular: Forex Swaps together with interest rate swaps/forwards	• Manage risks • Take speculative positions • Saving economic or regulatory capital • Transform the currency denomination of assets and liabilities so as to trade in or out of a specific currency risk • Hedge against changes in interest rates
Short term securities (Treasury bills and other short term government securities, commercial paper, bank certificates of deposits, certificates issued by non-bank entities for example: corporations, local government, mortgage institutions and finance companies), Certificates of deposits and Commercial paper	• Short term source of financing (banks) • Secured and unsecured instrument (banks, to finance loans, or firms)

Source: Ewerhart and Valla (2008:135).

Table 4.5: Participants of the money market.

Institution	Activity
Central banks	• Conduct open market operations • Implement the short term interest rate reflecting its monetary policy stance

	• Inject/withdraw liquidity from the banking sector as necessary
Domestic and foreign banks	• Trade in the secondary money market (mostly interbank) • Act as market makers or dealers offering quotes and being willing to trade on a permanent basis
Other financial institutions (money market funds, insurance companies, pension funds, large non-financial corporations)	Trade outside the interbank market
Governments	Borrow in the primary short term securities market
Market organisers	Offer brokerage services, organise exchange and provide information

Source: Ewerhart and Valla (2008:136)

Capital constraints, origination goals, screening and lending standards

One of the advantages of originating loans with the goal of distributing is the fact that banks and other institutions alike do not need a large capital base in order to require funding (Purnanandam, 2009:19). This is especially the case, when banks find themselves capital constrained and are thus limited to provide loans to creditworthy customers. In the case of international capital flows, liquidity or the lack thereof can bring global imbalances and liquidity constraints, in this case it can also be considered to be a special case of market incompleteness (Baclet and Vidon, 2008:117).

There exists a close linkage between capital constraints and an asset shortage or incomplete market in one of two ways (Baclet and Vidon, 2008:117). Firstly, the ability to borrow is quite heavily dependent on the collateral that can be offered and this collateral is nothing else but assets. Secondly, the accumulation of liquid assets which can be used in the future, in the event that a binding borrowing constraint can prevent acquiring funding, is also a very important linkage between the two concepts.

The capital constraints faced by banks and other financial institutions were easily dealt with due to the existence of various financial innovations, the credit as well as the housing boom. There were, however, certain internal policy changes or adjustments that played a significant role, especially in the origination of sub-prime loans. Due to the positive economic climates experi-

enced by almost every person and institution, financial institutions and banks slowly started to decline their lending standards (Dell'Arriccia, Igan and Laeven, 2008:3).

This could be seen in the declining denial rates of loan applications (also approval of larger loans) especially in areas where there was a presence of a large number of competitors and areas associated with more pronounced housing booms (Dell'Arriccia, Igan and Laeven, 2008:3). With the on-going approval and origination of loans, the methods used for screening potential customers were also altered. Banks have the responsibility of screening and monitoring potential and existing borrowers, creating an opaqueness of the banks' assets (Rochet, 2008:48). The opaqueness of a bank's assets has two defining characteristics, as documented by Rochet (2008:48):

- the opaqueness of assets makes it difficult to be evaluated by external analyst, creating the possibility of moral hazard, which can lead to insufficient or poor screening efforts implemented by a bank in the process of monitoring borrowers, after the loan has been granted and
- the opaqueness of assets is also responsible for the creation of externalities between the different lenders participating in interbank markets, payment systems or uninsured depositors. These externalities lead to the implementation of fundamental uncertainty linked to the quality of a bank's assets as well as strategic uncertainty which focuses on the behaviour of lenders or depositors in the case of renewal.

4.2.4.2. Market practices

Disclosure, transparency and complexity

There is one thing that the next three topics under discussion have in common and that is information. After the global financial crisis struck, many individuals and corporations wanted better disclosure in the financial sector primarily to reduce the uncertainty that markets deliver (Praet and Herzberg, 2008:103). The role that disclosure could have played in the period leading up to the crisis is the fact that investors would have had the opportunity to evaluate the risks involved in the financial instruments in which they were investing and funding for themselves in turbulent market conditions (Schwarz, 2008:1113).

Generally between 2001 and 2008 there was an abundance of financial information available to the public and this poses the question why no one could see the financial crisis coming (Pol, 2008:7)? The answer to the question is that the information that was available was too complex for investors and even to the institutions that made it available (Fender and Mitchell, 2009:32).

What contributed to the complexity of the information was the tranching practice followed in the process of securitisation, which ultimately led to the use of models, leading towards more uncertainty due to the effect of a small change in the variables (Fender and Mitchell, 2009:32). The layers and layers of financial derivatives also increased the complexity and lack of transparency of structured products (Eichengreen, 2008:25).

What worsened the role of information was the reputational considerations by investors regarding the institution participating in securitisation and this behavioural mechanism did in fact not work sufficiently in the US mortgage context (Fender and Mitchell, 2009:32). It is quite evident that asymmetric information and a lack of transparency was a very important factor which contributed to the global financial crisis (Caruana and Kodres, 2008:72).

Rating agencies

Rating agencies were briefly discussed in Chapter 2. The next section will add more information as to what the role of rating agencies is in financial markets, as well as the role agencies played in the global financial crisis.

Rating agencies primarily function on a consulting basis as an independent entity, with the goal of overcoming asymmetric information that may exist between two market sides, by evaluating financial claims according to a standardised quality category (Kuhner, 2001:2). Another definition of rating agencies is that they have the role of providing specialised intelligence for the use of investors in order to price opaque securities (Eichengreen, 2008:23).

One very important characteristic of a rating agency is the fact, that they have the primary incentive to build and maintain a respectable reputation among participants in financial markets. Thus there exists no legal mandate to assess the quality of the ratings provided (Kuhner, 2001:3).

The rise of the market for structured products can in part be related to the development of simulation based pricing tools implemented by rating agencies and which were adopted as the industry standard (Colander *et al*, 2009:5). In the aftermath of the global financial crisis, credit rating agencies were partly held responsible, due to the lax rating practices of structured products (Mathis, McAndrews and Rochet, 2009:660).

One devastating result that flowed from this lax rating policy was that rating agencies often gave high investment ratings to CDOs which was in large part backed by very high risk mortgages (Baker, 2008:78). Investors primarily based their investment choices on the ratings given by rating agencies and many of these structured securities were very appealing to the investors (Wray, 2007:7). What typically followed was the reliance of international investors on the ratings given in the country of origin and thus they did not seek the informational component of the investment opportunity (Colander *et al*, 2009:13).

The lack of information regarding the structured products was not only restricted to investors. Rating agencies were facing the same problem. The argument presented by Buiter (2008:5) was, that if a rating agency was to familiarise itself with the information that an originator of a loan or other asset had on the borrower, (which is difficult to begin with,) it would be even more challenging to access the information on the structured products, due to the tranching, enhancing and nonlinear functions embodied by the income streams.

If rating agencies played such a big part in the collapse of the global financial system, there had to be some problems or calculating difficulties experienced in the pre-crisis period leading to all the financial turbulence. Securitisation and the derivatives derived from them are very complex products due to the different tranches. The tranching aspect of structured products behaves quite differently from traditional corporate bonds in relation to ratings (Fender and Mitchell, 2009:33). The complexity to understand structured products was responsible for the underestimation of risks embodied by mortgage backed securities (Taylor, 2008:8).

The lack of historical information regarding the structured products also contributed to the complexity of the rating process (Baker, 2008:78). This was partly due to the fact that in the first years that these products existed, there were very few default rates and the rising house

prices continued to increase (Baker, 2008:78). This phenomenon started a cycle, in which rating agencies assigned low default probabilities to inferior quality loans (low documentation, no documentation and ninja loans) which resulted in good prices for the junior tranches as well (Wray, 2007:11).

The quality of ratings given by rating agencies can partly be attributed to the over reliance on the use of models in the assessment process and a conflict of interest. Eichengreen (2008:23) pointed out that the under performance of the ratings can be related to the imperfect models used by the agencies. An example given by Eichengreen (2008:23) compared a corporate bond to a debt security backed by mortgage loans. Corporate bonds are influenced by both the condition of the issuing firm, as well as the condition of the macro economy. By comparison debt securities in this case were more correlated due to the fact that their performance was reliant on the macroeconomic cycle.

Murphy (2008:5) came to the same conclusion involving the use of statistical models. According to Murphy (2008:5) these models are subject to various correlation problems and can even be more misleading when the amount of variables are increased, so the addition of more relevant variables can magnify the modelling errors even more. One other factor that contributed to the misleading nature of ratings was the fact that models were only used to calculate default risk and in the process liquidity risk was not regularly included in the calculation of ratings (Buiter, 2008:5; Eichengreen, 2008:23).

The problems worsened when rating agencies started to adjust their rating models in order to minimise the estimated risk together with capital requirements expected by financial intermediaries (Eichengreen, 2010:20). Rating agencies were responsible for the determination of many of the risk weights assigned to various assets, having a strong influence on the capital requirements faced by the financial intermediaries and this resulted in the practice where higher ratings meant that less capital was required (Crotty, 2009:573).

These practices implemented by rating agencies were a clear conflict of interest and are summarised by Buiter (2008:5 6):

- In the ratings industry the seller of the product pays the appraiser of the rating and not the buyer which leads to an information deficiency on the part of the buyer.
- The roles of rating agencies are those of advisory and consulting services, which are offered to the same clients. Rating agencies give advice on how to structure the product as well as the means to obtain a higher credit rating on the product.
- It is common practice among credit rating agencies to be involved in the structuring of products and the models used to evaluate these products are based on the information obtained during this process. By engaging in this form of rating calculation, the clients are the designers of the models used.

4.2.5. CDSs

The majority of this chapter has discussed the role that sub-prime mortgages played as an underlying cause of the global financial crisis. There are, however, other factors that also contributed to the sudden turbulence in financial markets. Securitisation has been discussed, together with the influence this financial instrument had in surging markets which led to an even more devastating impact due to the failure of sub-prime mortgages. One question in particular needs to be addressed. Why, when there are so many financial instruments to hedge all types of financial and other risks, did they not work?

Chapter 3 of the dissertation gave a theoretical background on CDSs and how these instruments can be used to hedge default risk. After all, the global financial crisis was initiated due to various defaults by borrowers and the inability to honour contractual agreements. CDSs are used for the main purpose of transferring credit risk onto a third party. In the process the buyer of the protection is protected by the seller against default risk in the event that there is a default by the reference entity. CDSs are traditionally traded OTC and the contract is negotiated privately between the two counterparties and the counterparty to the CDS is obligated to post collateral against the agreed obligation (Squam Lake Working Group on Financial Regulation, 2009:2).

Monoline insurers used to sell CDO insurance to investors who invested in corporate bonds, but in recent times investment banks, insurance companies and various other entities started to sell CDSs and in many cases, these institutions put up very little capital to ensure the validity of the contract (Baily *et al*, 2008:7,8). One reason why banks got involved in the trading of CDSs is the fact that large depository institutions did not pay any premium for deposit insurance to the Federal Deposit Insurance Corporation (FDIC) for several years before the crisis (Acharya *et al*, 2009:116). This enabled banks to be a market maker for CDS contracts due to the extra finance as a result of no deposit insurance premiums being paid (Acharya *et al*, 2009:116).

In the years preceding the global financial crisis, the CDS market grew substantially, being used to hedge and trade credit risk, resulting in better managed credit risks and gaining exposure to credit markets (Weistroffer, 2009:3). The use of CDSs started to spread to the securitisation market. Financial institutions used CDSs to take out the default component linked to mortgage backed securities, before these securities were marketed to investors (Baily *et al*, 2008:32). A CDS meant that the risk associated with a credit default was owned by someone else and this meant that the risk was soon forgotten (Buiter, 2008:7).

One other issue involving CDSs is the fact that there were no minimum capital or asset requirements expected from protection sellers, which resulted in counterparty risk (lack of funds on the part of the protection seller in the case of a default) (Baily *et al*, 2008:32). This can partly be explained by the regulatory oversight exemption of CDSs which gave dealers some legal certainty to trade CDSs more rapidly (Quinn, 2009:37). The creditworthiness, liquidity and robustness of counterparties are also very important in OTC transactions and in particular for dealers acting as market makers (European Central Bank, 2009:36).

Another issue was the sensitivity of CDS payoffs and the size of the CDS market which led to systematic risk (Squam Lake, 2009:2). Credit derivatives like CDSs became increasingly sophisticated, leading to a paradox, where the primary use of CDSs was to manage risks, but more and more investors used CDSs to enter into speculative transactions, increasing risk rather than alleviating it (Jickling, 2009:9). Large market players benefitted from this trading infrastructure regarding trading counterparties, but the opacity of the market (especially in terms of counter-

party risks) was considered a serious shortcoming during a systematic crisis in regards to financial stability (Acharya *et al*, 2009:117).

To answer the question at the beginning of the chapter, it is important to lay out an example and a situation that is relevant to the financial crisis. The financial crisis had many roots, sub-prime mortgages can be perceived as the most important one. The link between securitisation and CDSs is clear and this also played an important role in causing devastation in financial markets all over the world.

The US insurance company AIG is certainly the most important example under discussion in relation to the financial crisis and the role that CDSs played. According to the European Central Bank (2009:29) most of the blame for the problems experienced by AIG was rooted in their subsidiary financial products. During the period 2003 2005 AIG acted as the main net seller of CDSs for AAA rated CDO tranches which ultimately was responsible for concerns regarding financial stability (European Central Bank, 2009:29). There are two main reasons for this:

- The first reason is the way in which AIG conducted their business. AIG ran a “one way” book consisting of sold protection, whereas other CDS sellers had “matched” books with the purchase of protection, resulting in a low net exposure (International Swaps and Derivatives Association, 2009:1)
- Secondly, the sold protection that AIG offered to European banks was without any collateral. AIG made use of their AAA rating as guarantor and was obligated to post collateral in the event that their credit rating was downgraded (European Central Bank, 2009:29).

In March 2005 AIG’s AAA rating was downgraded which related to concerns on questionable transactions (reinsurance transactions) setting in motion the start of AIG’s financial deterioration (International Swaps and Derivatives Association, 2009:1). The downgrades forced AIG to post collateral to its counterparties totalling US\$39,9bn resulting in liquidity strains amplified by the deterioration of mortgage backed securities and AIG’s securities lending unit (International Swaps and Derivatives Association, 2009:2).

In 2007 the market for outstanding CDSs was a staggering US\$60tn and by September 2008, AIG was responsible for selling US\$500bn worth of CDSs (Baily *et al*, 2008:32). By the end of 2008 AIG's Financial Products unit recorded losses of US\$40,5bn whereas this unit was responsible for the rapid rise in AIG's profits during the boom (Crotty, 2009:565). It was as if AIG was in the speculative derivatives business, never taking in to consideration that there could be a default "explosion" of epic proportions (Jickling, 2009:9).

What followed with the losses incurred by AIG were the government bailouts. The International Swaps and Derivatives Association (2009:2) gave a good outline as to how the Federal Reserve as well as the treasury in the US provided funding to AIG which began in November 2008:

- AIG started to sell off non-core assets and they needed a bridge loan of US\$40bn in order to continue operating,
- AIG had to purchase CDOs which the Financial Products unit sold as protection amounting to US\$28bn,
- \$20bn in order to purchase sub-prime mortgage backed securities in which AIG had invested and
- The TARP program allocated US\$40bn to AIG for capital investment.

Once again market participants and players like AIG were under the impression that nothing could go wrong. In the process of market players being blind to the reality of what the consequences of certain decisions could be, perverse incentives had played an important role in the boom of CDSs (Crotty, 2009:565)

The reasons as to why CDSs were not functioning properly and ultimately contributed to the financial crisis, is very much the same as discussed earlier in the chapter in relation to sub-prime mortgages and securitisation. Weistroffer (2009:10) gives a good and simple explanation of the reasons why CDSs did not work as well as the impact resulting from that:

- CDSs increased the vulnerability of financial institutions to systematic shocks, which may have been caused by the alignment of risk profiles.

- It is possible that credit risks were piling up in certain parts of the financial system and institutions like AIG and monoline insurers did not have the organisational or financial capacity to deal with those risks.
- CDSs were responsible for spill over effects which made the system even more vulnerable, due to increased counterparty risk and the lack of information disclosure. The lack of a regulatory framework regarding CDSs played an important role in establishing the market practices, which led to the financial turmoil.

The situation with the market in relation to CDSs was very much the same as in the case with securitisation. Market investors became increasingly uncertain of their positions and started to execute their CDSs. This is simple to understand when the defaults in the US housing market started to increase. Ultimately the effects were similar to the example of the spill over effects mentioned earlier in the chapter. Everyone owed everyone else and one default lead to another creating a market panic. This meant that the credit in markets dried up quickly, placing a liquidity strain on almost every institution involved in the trading of securities and CDSs alike.

4.2.6. The way forward

In the aftermath of the crisis, it is important to have an in depth look at the causes and what should be done to prevent a crisis like this in the future. An in depth examination in Section 4.2.4 was explored. The prevention of a global financial crisis thus needs more attention in this case. The following section will give a representation of some of the fundamental issues that will be addressed in the future or which are already under discussion and in the process of implementation. These representations will be the views of three authors and the European Central Bank (Buiter, 2008:4 10, Mizen 2008:559 563, Foo, 2008:294 300 and European Central Bank, 2009:75) and will be discussed in the following paragraphs:

Buiter (2008:4 10) identified five problems in financial markets which caused the financial crisis and gave solutions to better manage these aspects of financial markets. Only two of these problems with solutions will be discussed:

- Securitisation: The first solution to alleviate some of the problems with securitisation is having simpler structures. These products are very complex and difficult to understand. That was the case with designers and sellers of these products. Simpler structures will enable all parties involved in a securitisation transaction to understand the underlying risks and how to price these products. Secondly, it is crucial to unpick securitisation in order to establish the quality of the underlying assets being pooled. The third solution is the retention of the equity tranche by the originator. This will entail that the originator will be much more careful in the origination of the loans, due to the risk of holding such a vulnerable tranche. The fourth solution regarding securitisation, is the part that external ratings plays.
- Rating agencies: The reputational concerns of rating agencies will be even more important. The removal of the quasi regulatory role that rating agencies played in the Basel II framework as well as other departments. The third solution entails that, rating agencies should specialise in the provision of one product. The fourth solution is that issuer should not be the party paying for the rating of products. The last solution regarding rating agencies is that there needs to be an increase in competition in the ratings industry.

In research done by Mizen (2008:559 563) the author focused more on the regulation, supervision and accounting aspects that caused the financial crisis. The most important realisation is that of regulation. There are four areas that need attention:

- there needs to be stricter regulation of originators and brokers,
- the regulation of the off balance sheet vehicles of banks and the obligation by the bank after the securitisation process will need more attention,
- rating agencies will have to be regulated in the future,
- the use of risk models and stress testing by banks and other financial institutions needs to be regulated.

Buiter (2008:9) also stressed the importance of regulation concerns and the fact that this deregulation partly caused the financial crisis on a global scale.

Foo (2008: 294 300) concluded that there are five lessons to be learnt from the financial crisis:

- the first one is, the well-known idiom simply stating: “Do not put all your eggs in one basket”. In the aftermath of the crisis, it is evident that the saying should read: “Do not put all *bad* eggs in one basket”,
- the second lesson is the occurrence where excessive demand outbalances the concept of risk and return. Investors and market makers did not fully understand the risks of many of the financial products and a lack of information amplified the consequences,
- thirdly, a lesson can be learned from the robustness of actions in order to resolve a crisis. The use of models in financial strategy can be misleading and can result in devastating consequences,
- it is important for banks to stay respectable. In the case of many of the banks mentioned in the dissertation thus far, it is clear that panic under investors regarding a bank’s “wellbeing” can have a devastating impact on the financial system. Banks therefore need to be more careful in managing their business and risks and
- the last lesson is the role that greed, innovation and politics played. It is apparent in the aftermath of the crisis and when looking at the housing boom in the US, that these three concepts helped build the boom in the first place. The innovation of sub-prime mortgages could never be tested in the years before the crisis and the impact of this untested innovation was felt all over the world. The future simply expects politicians and other role players to be more careful in providing a better life.

What the future of CDSs and other OTC derivatives are. The European Central Bank (2009:75) made a summary of the regulation proposal from the US Treasury and will be briefly mentioned below:

- Risks that pose a danger to the financial system resulting from activities by OTC markets will be prevented by laws and the existence of clearing practices within the OTC markets.

- Transparency within OTC markets to enhance the availability of information will be promoted, together with the efficiency of the market as a whole.
- Laws will be introduced or amended in order to prevent market manipulation, market abuses and fraud. This will include the authority to set position limits within the markets when needed.
- The spillover effects that were seen in the financial crisis, will from now on limit the types of counterparties that can participate in financial markets in order to prevent the marketing of OTC derivatives to unsophisticated parties.

4.3. Conclusion

The contents of Chapter 4 discussed some of the most important aspects of the global financial crisis and addressed one of the goals of the dissertation. The period before the crisis with referral to sub-prime mortgages, lax regulation policy and market practices was discussed. In the process of investigating the factors that contributed to the crisis, the role that securitisation played in the crisis was presented. This was the same regarding CDSs and the role that this credit derivative played in the crisis.

The reasons why CDSs did not provide the requisite protection when sub-prime mortgages (and the securities linked to them) began to default were discussed. The conclusion regarding the global financial crisis is that, although financial instruments like securitisation exist to improve liquidity and risk management together with CDSs, that the irresponsible use of these instruments and a lack of market regulation could in fact pose a danger to the stability of financial markets. The impact of the crisis was not only experienced in the US, but also on a global scale as many other international markets were linked with the US. The global financial crisis also poses new questions regarding the management of financial instruments and responsibility in this regard.

The next chapter addresses the effect of the crisis on the South African market, with a focus on securitisation and CDSs in particular.

CHAPTER 5: THE SOUTH AFRICAN PERSPECTIVE

5.1. Introduction

The previous chapter explored the causes of the financial crisis and the role securitisation and CDSs played in the years preceding the crisis. One of the goals of this dissertation is to illustrate how securitisation and CDSs function together with the benefits they hold; another is to establish what influence these instruments had on the South African economy and financial markets in the years preceding the crisis.

This chapter contains the view from some experts on the South African CDS and credit derivative market and the information was obtained by using a structured questionnaire. The goal of the questionnaire was to provide more detailed information of the South African CDS market and to establish the point of view from a banking perspective as CDSs are traded OTC. Chapter 5 refers to the current (2011) legislation in South Africa that is applicable to CDS markets especially as a response to the global financial crisis. Chapter 5 will also answer the questions embedded in the problem statement and address the most important goal of the dissertation being whether or not CDSs have been used in South Africa in order to hedge the credit risk that is associated with asset backed securities.

There are a number of questions that need to be answered relating to the problem statement of this dissertation. The first question was the role securitisation played in a South African context, in order to take advantage of the benefits of securitisation. It was answered in Chapter 2 and the reader could get a good overview of the size of the securitisation market in South Africa. The concept of CDSs was explained in detail in Chapter 3 together with some pricing aspects of these credit derivatives. The South African market however was not mentioned or discussed. Chapter 5 will discuss the topic in more detail and answer some of the questions regarding CDSs from a South African perspective.

There are, however, some other important questions that need to be answered in relation to the fact that South Africa is still an emerging market and the effect that securitisation and CDSs had on South Africa in particular, as well as a more generalised point of view regarding the

global financial crisis. The rest of Chapter 5 will attempt to answer the remaining questions and will be heavily interested in the South African perspective regarding CDSs together with the financial crisis.

5.2. The effect of the global financial crisis on South Africa

The South African economy was not completely guarded from the severe effects of the recent global financial crisis and South Africa experienced a recession for the first time in 17 years (Steytler and Powell, 2010: 2). According to Mminele (2008:6), Executive General Manager of the South African Reserve Bank, the effects of the global financial crisis primarily had an indirect impact on the economy of South Africa in the form of volatility in local financial markets.

There were other indirect implications for the South African economy and these were characterised by falls in manufacturing, as well as industrial production, low consumer confidence and trade credit financing problems which led to a decline in world trade growth (Balchin, 2009:12). In 2009 the number of jobs lost due to the recession was estimated to be close to a million and the increase in unemployment coupled with the rising poverty rate increased the demand pressure on state resources (Steytler and Powell, 2010: 2).

The conclusion that can be made about the effect of the global financial crisis on South Africa is that there was a substantial decline in the demand for natural resources and other manufacturing products. This could be seen in the volatility of South African financial markets. There was also a substantial loss in the employment sector and this will have a significant impact in the long run. This was the case for all emerging economies around the world. There are however some interesting conclusions on the lack of a direct impact on South Africa. The factors that played a role in this instance will be discussed in more detail in the rest of the chapter.

5.3. What protected South Africa from the potential severity of financial innovation?

This poses a very interesting scenario on the direct impact that the global financial crisis had on the South African economy and the rest of the world. In Chapter 4 the global financial crisis was discussed in detail and it was evident that reckless practice in financial innovation made a sig-

nificant contribution to this crisis. The contagion effects relating to financial markets were also mentioned and this can be perceived as the direct impact of securitisation and CDSs on the rest of the world. The question here is why South Africa was not so severely impacted by these financial instruments in particular? What did South Africa and other emerging economies do differently? Was there in any instance, a direct link to the global financial system regarding securitisation and CDSs?

The rest of this chapter will attempt to answer these questions and provide clarity from a South African perspective.

Chapter 2 shows that the securitisation market in South Africa can be seen as very active, although it does not compare with the magnitude of developed economies across the world. The same practices implemented by the US in relation to the way this financial instrument is used to raise capital for the purposes of expanding lending practices could easily have been adopted by South Africa. The truth on this subject is that it was not the case and will be discussed in the rest of the chapter. South Africa had certain policies and regulations that prevented the misuse of securitisation for the purpose of credit extension.

These were embedded in a sound framework for financial regulation and were implemented by financial institutions across South Africa (National Treasury, 2011:13). The focus of these regulations was to anticipate potential risks and mitigate them accordingly, which ensured sustainable credit extension (National Treasury, 2011:13). An important part of these regulations was the introduction of the National Credit Act 34 of 2005 which is still being implemented.

The new Act was primarily focused on protecting the consumer from exploitation on the part of credit providers. Some of the objectives of the Act are:

- the access of credit should be fair and non-discriminating,
- unfair practices should be prohibited,
- credit providers should conform to responsible credit granting practices,
- the reckless practice of credit granting should be prohibited,

- the standards of consumer information should be improved and a general regulation of consumer credit is a priority,
- in the case where there is over indebtedness, debt restructuring should be provided,
- there should be national norms and standards in relation with consumer credit,
- the establishment of the National Credit Regulator was a priority,

and the establishment of the National Consumer Tribunal was a priority as well.

The implementation of the Act was scheduled to be phased into operation in three separate phases. The first phase was the above mentioned establishment of the National Credit Regulator together with other administrative matters and came into effect on 1 June 2006. The final phase of the Act was scheduled to be implemented on 1 June 2007. This was a few months before the first signs of a possible global financial crisis were reported.

The National Credit Act 34 of 2005 was heavily invested in the protection of consumer rights and to provide regulation, which would lead to fair and responsible credit provision by financial institutions. This could be perceived as a much needed change in policy, which contributed to South Africa weathering the financial turmoil that resulted in so many of the developed countries across the world.

The National Treasury of South Africa (2011:14 15) however, contributed the resilience of the South African financial sector, against the direct impact of the global financial crisis, to other policies as well. These policies and the effect they had on the South African economy and financial system will be discussed in more detail in the rest of this section.

In 2002, South Africa suffered a small banking crisis with the failure of Saambou Bank. This event together with the implementation of the Basel II Capital Accord in 2008 forced domestic banks to implement appropriate and conservative risk management practices, including stronger crisis management arrangements. This conservative approach led to fewer securitisation transactions and derivative trading in relation to more advanced markets. Although securitisation transactions decreased, it is necessary to refer back to Chapter 2 when comparing

how the market grew, to research done by Saayman (2003) on banking liquidity. The use of securitisation could have had a positive impact on the liquidity of the banking sector in South Africa. This means that the impact of the global financial crisis on South Africa was absorbed accordingly, due to increased liquidity.

South Africa experienced limited exposure to foreign assets due to the prudential regulation of this market in the last decade. The regulations included limits on the extent of exposure to foreign assets. The parties that were influenced most by these regulations include banks and institutional investors. This approach ensured that South Africa had limited overall foreign risk and was protected against the severity of the global financial crisis.

The unique subsidiary structure and listing requirements enforced by the South African Government also had a positive contribution. In order to register as a bank in South Africa, the applicant has to be a subsidiary of a domestic or foreign parent company. These requirements ensure that when the parent company is in distress, the subsidiary's assets and liabilities are ring fenced. The impact that the listing requirement had on the market was improved and transparency, rigorous disclosure standards, as well as high standards of corporate governance were in place. This forced banks to satisfy shareholders together with stakeholders on a permanent basis.

The years preceding the global financial crisis saw the implementation of a robust monetary policy framework by the South African Reserve Bank. This enabled the South African economy to absorb relatively large external shocks, resulting in a stable and sound domestic economy. The excessive volatility that resulted from the crisis was managed, through the flexible inflation targeting framework and also provided an anchor for monetary policy. The same can be said for the flexible exchange rate which absorbed the impact of disruptive capital flows.

The South African Reserve Bank also implemented a countercyclical monetary policy in order to ensure stable prices. The period before the crisis saw a rapid increase in consumer credit and posed a threat to the inflation target. The response from the South African Reserve Bank was to gradually increase the repo rate. In 2005 the repo rate was 7% and by mid-2008 it was 12%, which led to a decrease in credit growth and mitigation of risks that resulted from global fi-

nancial activity. The domestic economy was cushioned from the crisis due to the rapid reduction in rates by the South African Reserve Bank.

The South African economy was also characterised by a countercyclical fiscal policy. A reduction in Government spending due to the crisis and less tax revenue did not threaten the fiscal position of the Government. This enabled South Africa to respond accordingly to the fiscal challenges of the crisis. Countries that overspent during the financial boom preceding the crisis found it extremely difficult to survive the fiscal challenges that resulted from the global financial turmoil.

The proactive approach from the Registrar of Banks to regulate credit risk was also very beneficial to the South African economy. Credit extension was limited due to raised capital adequacy requirements and setting conservative leverage ratios. The National Credit Act reduced household vulnerability due to potential reckless lending practices and resulted in less consumer risk.

5.4. The South African CDS market

This section focuses on the direct impact of the global financial crisis in relation to CDSs. The previous section provided some explanations on why there was no direct impact from the CDS market on a domestic and global scale. It is still necessary to investigate what result these policies and regulations had on the credit derivative market of South Africa in relation to CDSs. The question here is why South Africa was not heavily impacted by the direct implications of CDSs, as was the case for developed countries? This section will also comment on some CDS figures and will contain the views of certain domestic banks in South Africa regarding CDSs.

Data on the South African CDS market are not readily available and this could be a clear indication of a lack of market activity in South Africa. Mminele (2008:4) shared this view and commented that South Africa is still lagging behind the industrialised markets in relation to Credit Risk Transfer (CRT) products. He also commented that the securitisation market has shown healthy growth rates, but that the transfer of credit risk from these underlying assets is not readily available.

The same conclusion can be reached, when accessing the point of view from domestic banks in South Africa. An approach of one of the domestic banks is certainly more unique than other banks in South Africa and the reason for this is that they package CDSs into Credit Linked Notes (CLN) in order to be sold (Bank C, 2011). The Head of Credit in Africa for Bank C pointed out that there is not an active market for CDSs in South Africa and that this particular bank has had virtually no traded contracts in this regard (Bank C, 2011).

First Rand Bank Limited can be used as an example (First Rand Bank Annual Report, 2008, 2009 and 2010). In the annual report of First Rand Bank Limited for the year 2008, the protection sold for intermediation purposes was R970m. The protection bought for its own credit portfolio was R2.102bn and the protection sold was R152m for its own credit portfolio. In 2009 the protection sold for intermediation purposes was still R970m and is an indication that no new contracts were sold. The protection bought for their credit portfolio was slightly higher at R2.264bn. A similar trend was found in 2010 where there were no outstanding CDS contracts, but protection bought and sold for portfolio purposes was R2.68bn and R2.59bn, respectively.

The results from the questionnaire containing strategic questions on the South African credit derivative market showed a similar pattern. The questionnaire was completed by Bank A, Bank B and Bank C and contained their expert views on the South African credit derivative market. The most commonly traded credit derivatives are credit linked notes (CLN) and CDSs. As stated previously, the South African market for CDSs is very small in comparison to international trading and volumes. The reasoning behind this occurrence is that there are only five banks and seven insurance companies that actively trade in this market. The liquidity of the market is also very limited due to the lack of participating companies. Even though the market for CDSs is small, the complexity of South African CDS products compare well with international standards, although an improvement would be welcomed to expand the market.

The South African CDS market comprises primarily of financial institutions, as banks tend to be the issuer of these products. These products are also used by hedge funds, pension funds, insurance companies as well as the mining industry. The market for CDSs was very active in the years preceding the financial crisis, especially during 2006 and 2007. The reasoning behind this

was the banks' high credit appetite and the prices of CDSs together with the fact that credit derivatives were very affordable. Investors were also active in the trading of CDO tranches which resulted in an appetite for credit derivatives. The credit derivative market virtually dried up in South Africa during the crisis and had no real impact on the domestic economy.

The question here is what the direct impact of CDSs and other credit derivatives were on South Africa during the crisis and especially in relation to the impact that was felt by developed countries? One reason for the small impact was the rigorous regulation of banks and financial markets. South Africa was protected from the global financial crisis' direct impact and especially taking into consideration the effect CDSs had on financial markets all over the world. The lack of market participants improved transparency and also helped in weathering the storm. South Africa's credit derivative market is also unsophisticated due to the size of the market and therefore local investors did not invest heavily in credit as an asset class. South Africa was protected further due to the exchange control restrictions that were imposed by the government and this prohibited local institutions from investing in offshore credit.

Taking these arguments into account and including the lack of liquidity (due to a lack of a secondary market) as well as high prices, the South African market for CDSs was not exposed to the financial turmoil that resulted from the crisis.

Even though there are still various obstacles to overcome regarding the CDS market, there is definitely a future for CDSs in South Africa and that these instruments would contribute to credit risk management and provide much needed liquidity in related markets. The CDS market in South Africa will thrive once local banks and institutional investors increase their level of sophistication. It is also important for local banks to trade CDSs with each other on a more direct basis.

Table 5.1: Results from the questionnaire on credit derivatives in South Africa.

Question	Bank A	Bank B	Bank C
What types of credit derivatives are most commonly used in SA financial markets?	CDSs and CLNs	CDSs and CLNs	CLNs
What are the risks that are hedged against with credit derivatives?	Credit Risk	Credit Risk	Concentration Risk Capital Risk Credit Risk Spread Risk
Which economic sector is more likely to use credit derivatives and why?	Financial and Mining Sector	Financial Sector	Financial Sector
When – in the last decade – were credit derivatives used more regularly and why?	The period between 2006 and 2007	The period before the crisis in 2008	The period before the crisis in 2008
How does the SA credit derivative market compare to those of the US & Europe in relation to size, complexity and secondary market?	The South African market is very small compared to other parts of the world seeing that there are only 5 large banks and about 7 insurance firms that participate in this space. The United Kingdom, US and Europe are massive compared to South Africa. South Africa's products compare very well to theirs with regards to complexity	The South African credit derivative market is unsophisticated when compared to developed markets and is also much smaller compared to the US and Europe. There is little to no secondary market trading in credit derivatives in the South African market	The South African market is very small compared to the US and Europe. The market is also very illiquid and the complexity is still in a development phase
Does the bank make international deals for SA companies? If so, how are these structured?	No, this is done by Barclays Capital	Yes, the bank is involved in international loan syndications	Cannot divulge the particulars
Is the bank ever a counterparty in local credit derivative	Yes, when the price is satisfactory	Yes, with the issue of CLNs	Yes

deals?			
How does the bank manage credit derivative risks?	The bank's portfolio is monitored and the credit quality of the counterparty is tracked on a monthly basis	Default risk is hedged with CDSs and the interest rate risk with interest rate swaps	Cannot divulge the particulars
Do credit derivatives stabilise financial markets?	Yes and they provide more liquidity	Yes, credit risk is spread to different financial players in the market. No, credit derivatives price risks punitively and sells off more severely than other markets during times of distress and sometimes induces panic in other markets	If they are used correctly, stable financial markets may be the outcome
What effect did the credit crisis have on the SA credit derivative industry?	The credit derivative market dried up, but not so severely as in the US and European markets	Due to the small size of the market there was no noteworthy effect	The crisis made market players more aware of the risks involved regarding credit derivatives
What protected SA from the severity of the credit crisis in relation to credit derivatives?	Regulation and the transparency of the market due to the lack of participants	The lack of sophistication as well as the exchange control restrictions implemented by the government	The Exchange Control limits protected South Africa and the general conservative approach by South African investors
Is there a market for CDS in South Africa? If not, why not?	There is and it will continue to grow in the future	There is and the market will grow when banks and institutional investors increase their sophistication.	There is a potential market, but liquidity needs to be increased in the corporate bond market
Do you think the CDS will ever be a major credit derivative in South Africa? Why?	The market is big from a South African perspective, but due to a lack of liquidity, regulation and the high prices the market will struggle to grow	CDSs will be a major credit derivative in South Africa when banks start trading them directly with each other. Currently, activity is limited to banks hedging directly with institutional investors, where banks issue CLNs to these investors	Do not see a reason why there cannot be a healthy CDS market in South Africa. South African investors are sophisticated enough as are the banks that traditionally trade in CDSs. In order for the market to grow, there needs to be liquidity

Source: Bank A, Bank B and Bank C (2011).

One positive outcome from being conservative is that South Africa has been proactive regarding the regulation and structure of financial markets. This fact is evident in the response from the National Treasury (R.S.A.) following the global financial crisis. In 2011 the National Treasury (R.S.A., 2011:1) released the Credit Rating Services Bill with the main focus being to regulate these agencies more appropriately. The aims of the bill are:

- to ensure that the relationship between South African authorities and international credit rating agencies are one of responsibility and accountability,
- that the credit rating process and ratings are independent, that it is done with integrity, maintains transparency and is reliable,
- to improve investor protection,
- that the efficiency and transparency of financial markets are improved,
- to reduce systemic risk in markets.

The Financial Markets Bill of 2011 (National Treasury RSA, 2011:9) aims to increase regulation in order to protect investors, ensure markets are fair, efficient and transparent and to reduce systemic risk. There are nine relevant principles that will ensure the effective regulation of financial markets in South Africa (National Treasury RSA, 2011:7 8):

1. Principle 1: Financial service providers must be appropriately licensed or regulated.
2. Principle 2: Regulation and supervision should be transparent.
3. Principle 3: The quality of supervision should be sufficiently intrusive, intense and effective.
4. Principle 4: Policy and legislation are set by government and legislature and in the process will provide the operational framework for regulators.
5. Principle 5a: Regulators should operate independently, with integrity and must be accountable for their actions and performance.

6. Principle 6: No individual institution or classes of institutions should be arbitrarily exempted from regulation and supervision and this objective will be met by universal applicability together with comprehensive regulation.
7. Principle 7: The legislative framework should allow for a lead regulator for every financial institution that is regulated by a group of financial regulators.
8. Principle 11: Oversight regarding market conduct should be sufficiently strong in order to complement prudent regulation.
9. Principle 15: If there are contradictions and inconsistencies in the principles, the international standards of the International Organisation of Securities Commissions will apply.

Taking the above mentioned Bills into consideration, it is apparent that South Africa will regulate financial markets even more intensely than in the past and the effect this will have on OTC derivatives like CDSs still remains to be seen. It is however important to refer back to Chapter 4 and what played a role in the leading up to the global financial crisis. The lax regulation policy of the US authorities had a significant impact on the financial markets and especially OTC markets. The contrary can be said regarding the approach followed by South African authorities and the constant regulation ensured resilience in OTC markets. Introducing strict regulation policies could be seen as a negative implication for markets, but it could also be the future of stability in financial markets.

Even though the South African credit derivative market cannot be compared to other international markets, it is important to view the current state from an emerging market perspective. These instruments are new in South Africa and are welcomed by the financial world. In 2010 the Indian government was contemplating whether or not CDSs should be introduced to the Indian market (Rao, 2010:209). The recent American experience has shed light on some of the pitfalls of these instruments and the Indian government has suggested certain guidelines before introducing CDSs to the Indian market (Rao, 2010:209).

These guidelines can be compacted into a set of tests as set by the Joint Forum of Basel Committee on Banking Supervision (Rao, 2010:216):

- the transfer of a clean risk is very important, when working with these instruments and the goal must be, to uphold this function,
- market participants should understand the risks involved when dealing with CRT products, and
- CRT products should be monitored to establish whether or not CRT activities are leading to undue concentration of credit risk in either the regulated or unregulated financial sector. This entails that market participants should have a good understanding of the relevant transactions as well as the circumstances in which credit risk is transferred or in the case where it is not transferred.

In order to manage the risks of CRT products the Central Bank of India plans to issue tradable insurance credits (TICs) which will function as a Central Bank backed CDS and this will serve as a guarantee on the assets of the institution holding the TIC in a systemic crisis (Rao, 2010:216). TICs provide the function of a bailout, but they can be seen as insurance agreements. Taking these guidelines into account and the way in which the Indian government wishes to structure the credit derivative market, it seems that risk management and strict regulation is the key to the success of these products in an emerging economy such as India.

The Australian OTC derivatives market was also very resilient against the shocks that resulted from the financial turmoil in 2008 and 2009 (Australian Prudential Regulation Authority, 2009:24). The explanation is the same as in the South African case and reflects the minute size of the Australian OTC market when comparing it to other international markets as well as the international exposure of the domestic market (Australian Prudential Regulation Authority, 2009:23). With that being said, the Australian regulatory authorities still aim to ensure that market transparency, legal robustness of trades, sound management of counterparty risks and efficient overall risk management are promoted in the markets (Australian Prudential Regulation Authority, 2009:23).

When comparing the South African, Australian and Indian markets, there is a common denominator that these markets share with regards to CDSs and credit derivatives as a whole. Strict regulation ensures that markets are robust and resilient to external shocks in order to protect

the domestic economy, together with investors from unfair market practices, as was seen in Chapter 4. One conclusion that can be made on this subject of regulation is that even though it will prevent credit derivative markets from growing rapidly, the long term benefits will outweigh the short term profits.

5.5. Conclusion

This section on credit derivatives and CDSs showed how innovation differs from market to market around the world. South Africa and other emerging economies are not as sophisticated as developed countries, regarding these instruments, but in this case it served as protection against the severity of the global financial crisis. The reason why South Africa was protected from the direct impact of the global financial crisis was also discussed in the chapter. Mminele (2008:5) summed up financial innovation as a means to reduce cost of capital, mitigate risk exposure, broadening access to capital and increase liquidity in the process. It is also important to keep in mind that financial innovation has certain risks when managed improperly, as was seen during the global financial crisis.

It is also necessary to refer back to Chapter 1 and the problem statement. A market in which CDSs are used to hedge the credit risk associated with asset backed securities in South Africa does not exist. The securitisation market has shown healthy growth rates, but the transfer of credit risk from these underlying assets is not readily available (Mminele, 2008:4). Although this statement was made in 2008, the fact remains that due to the global financial crisis that started in 2008, the CDS market virtually dried up, making the use of this CRT product even more difficult.

The next chapter concludes the dissertation.

CHAPTER 6: CONCLUSION

6.1. Introduction

Chapter 1 gave an introduction to the research purpose and discussed the history of securitisation and CDSs to provide an overview of the origins of these financial instruments and why they are considered to be instrumental in the financial world. The role that these instruments play from a South African perspective was also a key element of the research, but also the global impact these instruments have had.

In Chapter 2 the theory of securitisation was discussed in detail, as well as the South African market regarding this instrument. There is no argument against the potential benefits of securitisation and how this instrument can lower cost of capital, mitigate risk and improve liquidity. From a global perspective it is clear how influential these instruments were, leading up to the financial crisis. The South African market has lagged the international markets for some time, but at the turn of the century these instruments have become more significant. The South African market sentiment regarding securitisation started to change and more deals began to emerge.

Although South African deals and volumes do not compare to those of developed countries, they have shown signs of becoming a major financing source and investment option. The perception regarding securitisation was positive and the benefits were utilised. The global financial crisis proved that the misuse of securitisation can have a devastating impact on debt markets and that these markets need to be regulated on a wider scale. In fact, South Africa was protected from the severity of the crisis due to strict policy regarding consumer credit and various monetary regulations. The restriction on capital outflow to international markets also weathered the storm as the South African economy was not directly linked to international financial markets.

Chapter 3 showed what the purpose and uses of CDSs are and why they were invented. The theory on the benefits of these credit derivatives was also discussed in detail and the impor-

tance of CRT products was clearly stated. The pricing of CDSs and a comprehensive example of how this is calculated has given the reader an in depth knowledge of the instrument. The magnitude of CDSs in the financial world was portrayed in Chapter 1 and combining this with the theoretical aspects of CDSs, it is clear that this is a very important financial innovation, to mitigate risk in financial markets.

The management of securitisation can be seen as a very important aspect that contributed to the crisis, but by no means can this instrument be held responsible for the financial turmoil that followed, as was pointed out in Chapter 4. There were various circumstances that allowed the mismanagement of securitised products. The lack of regulation, cost of capital, lack of demand deposits and rating agencies all made a significant contribution to the crisis. The interesting question here was why, when there were credit derivatives, did these instruments not absorb the defaults that occurred before and during the crisis?

This was also discussed in Chapter 4 and it can be blamed on a lack of regulation, systematic risk piling up, lack of information, unlawful practice and the misguided ratings that provided the wrong perception. The lack of collateral posted on CDS contracts can also be seen as one of the important factors that contributed to the excessive risk that built up in the markets. This meant that institutions that were protection seller with regards to the CDS contract did not have the necessary liquidity in order to comply with the contractual agreement. It is also important to point out that CDSs and other credit derivatives are very complex and especially when looking at the AIG example.

The way forward with regards to securitisation and CDSs from a global perspective was also discussed in Chapter 4. The problem statement however focuses on the current situation of these instruments and the global financial crisis from a South African perspective. This was discussed in Chapter 2 and Chapter 5 respectively, where Chapter 2 focused on the South African securitisation market and Chapter 5 on the CDS market in South Africa. For the purpose of clarity it is necessary to revisit the topics discussed in the dissertation as well as the problem statement and goals.

6.2. Defining securitisation and CDSs

Securitisation can be described as the financing process, where a corporate entity can move certain assets to a bankruptcy remote SPV which enables the entity to enter into the securitisation transaction. The assets are thus removed permanently from the balance sheet of the originator and the payment linked to the assets is channelled to the investors. From the definition it is clear that securitisation can be used to fulfil funding needs, especially in the case of a financial institution that deals in bonds.

In Chapter 2 the advantages of securitisation was discussed and it can be summarised as efficient financing, improved gearing ratios as well as other economic measures and risk management. Securitisation also leads to more complete markets and variety of assets from an investor's point of view which in turn increases the liquidity in secondary markets. The variety of securitisation products is also beneficial to different financial institutions. These institutions are not only limited to banks and therefore the opportunities seem endless from a financial market point of view. The different asset classes are displayed in Figure 2.3 of this dissertation which complements the endless opportunities in the securitisation market.

The market for securitisation is also responsible for the use of different derivatives and Chapter 4 explained this relationship from the perspective of the global financial crisis. One of these derivatives is a CDS defined as a contingent claim that involves the periodic payment of a premium where these payments are linked to the creditworthiness of a particular party or sovereign entity. The main purpose of CDSs is to manage credit risk and they are primarily traded OTC. CDSs are an unfunded form of credit derivative and they are negotiated between the protection buyer and protection seller. The third party to the contract is the reference entity and for clarity reasons this is the borrower from whence the credit risk originates.

The purpose, benefits and use of securitisation and CDSs were discussed in detail in Chapter 2 and Chapter 3 respectively. Two of the goals of this dissertation were to give a theoretical background on securitisation and CDSs. The purpose of this approach was to clarify exactly what the function of these instruments was and why they are so important to the financial

world. It also has enabled the reader to understand the concept of each instrument and to provide more clarity in Chapter 4.

6.3. The problem statement and goals revisited

The problem statement and goals to be addressed in the dissertation were defined in Chapter 1 and for the sake of clarity, they are re stated in the following two sections.

6.3.1. Problem statement

What role did securitisation and CDSs play (and what future role do they look *likely* to play) in hedging the default risk of asset backed securities in South African financial markets?

6.3.2. Goals of the dissertation

The dissertation strived to meet four goals:

- Discuss the theory and history of securitisation together with an in depth look at the instruments used in different securitisation transactions.
- Present the theory of CDSs and the role they play in the South African debt markets together with an overview of CDSs in world markets.
- Address the worldwide financial crisis and give reasons why many financial markets failed. It will also provide reasons for the failure of CDSs in hedging default risks.
- Answer questions embedded in the problem statement, in order to have more knowledge about securitisation and CDSs in a South African context and how the future will look in terms of securitisation and CDSs after the crisis.

6.4. The South African securitisation market

Chapter 1 discussed the history of securitisation and also contained some information on the South African market and the fact that the first transaction was completed in November 1989 by the United Banking Society. The theory of securitisation was also discussed in Chapter 2 and gave a broad overview of the instrument. Two of the dissertation goals were met in Chapter 1

and Chapter 2, but the main focus regarding securitisation is the South African perspective regarding this instrument.

South Africa is still an emerging economy when compared to more developed countries and the same conclusion can be reached when comparing the South African securitisation market to those of the developed world. Even though this is true, there exists a market for securitised products and the growth of the market was considerable over the last 10 years. One interesting observation regarding securitisation was the absence of this instrument in financial markets between 1991 and 1999. The factors that prohibited the securitisation market from actively trading in that period was also discussed.

These factors may be summarised as regulation, lack of demand and a public misperception regarding securitisation. The regulations were lifted in 2001 by the SARB which set out a new regulatory framework for securitisation schemes and with this new framework the uncertainty that was linked to securitised products were lifted as well. The way for an active and stable securitisation market was paved and the benefits were utilised.

The activity in securitisation markets increased in the period 2001 2008 and there was an abundance of transactions. There were many highlights during this period and history was being made every year. Securitisation products became more diverse and other classes of assets were being securitised other than the traditional RMBS. This meant that there was more liquidity in secondary markets and the participants increased as a result.

Securitisation can have both short and long term benefits. The main benefit in this case is where a bank can diversify liquidity sources and in the process relieve liquidity pressures faced by the bank. In the process of securitisation the bank will also experience an increase in earnings due to the servicing of the assets. There are also the balance sheet and ratio benefits to keep in mind. The income received from the securitisation transaction can also be used to invest in more liquid assets and to increase loan financing.

By comparing the information of the previous two paragraphs, one conclusion can be drawn regarding the impact of the global financial crisis on South Africa. There was an increased appetite by banks and financing institutions to enter into securitisation transactions in the 1999

2009 period. This meant that these financial institutions were more liquid than before and when the global financial crisis' contagion effects started to spread around the world, the South African banks were more resilient to the impact due to the increased liquidity. It is also interesting to note that there were various banks, like Saambou in 2002, that were liquidity constrained and as a result of the bank runs they had to stop doing business. During the global financial crisis there was stability in the banking sector and this could be seen in the reaction of the Reserve Bank with regards to interest rates.

Taking all these arguments into account, it is clear that there is a healthy market for securitised products in South Africa. Therefore the future of securitisation has a positive outlook even when the impact of the global financial crisis is taken into consideration. This market is well established in South Africa and the benefits of these products will be utilised in a responsible manner due to the strict regulation of the South African government. The mistakes that were made in the US will also set a benchmark of lawful practice and secure the future of this instrument.

6.5. The South African CDS market

Chapter 3 gave the theoretical background of CDSs and included the pricing aspects as well as a practical example. The history of CDSs was discussed in Chapter 1 and it was clear that this instrument is of major importance on a global scale. More goals of the dissertation were met in the mentioned chapters and this served as a good overview of CDSs. Once again the main focus of the dissertation regarding CDSs was to outline the South African market regarding this credit derivative in order to meet the objective stated in the problem statement.

The South African CDS market is still in a growing phase, when all the available information is analysed. It is therefore once again not advisable to compare the South African market to those of the US, United Kingdom and Europe. Though this is true, it is interesting to note why this is the case. The characteristics of the CDS market are similar to that of the securitisation market with relation to regulation. The South African government has imposed strict policies on market participants in credit derivatives as a whole and these policies have had a severe impact on the trading of CRT products in financial markets.

The questionnaire that was answered by Bank A, Bank B and Bank C echoed the regulation aspects, but it also provided more reasons for the lack of growth in credit derivative markets and in particular CDSs. The lack of market players tends to be a barrier to CDS trading and this is portrayed in the liquidity of the market (thus no secondary market exists). The complexity of CDS products compare well to international standards and this can be seen as a positive attribute of the South African market. In order for the CDS market to grow the institutions trading this product need to become more sophisticated and this will enable them to manage more transactions. One other factor that needs to be considered is the trading of CDSs directly between banks. This will increase liquidity and also improve sophistication.

Although the respondents painted a very negative picture of the South African CDS market, the combined view was that there is a definite future for this instrument and that it will grow even more in the future. When comparing the South African CDS market to those of India and Australia, the same trend seems to emerge. The Indian market for CDSs does not exist at present and they are still contemplating how to introduce this instrument to the financial market. This is characterised by strict regulation policies and this is similar to the past and current situation in South Africa. The same can be said for the more developed country of Australia. Even though Australia is much bigger in comparison to South Africa and India, the same regulation policies seem to be implemented and this has minimised the rapid growth of CDSs in their financial markets.

When comparing this information and referring back to Chapter 4, it could be beneficial to regulate CDSs and credit derivative markets thoroughly. The lessons learnt from the global financial crisis have been implemented in South Africa in 2011 and this refers to the Credit Rating Agency Bill of 2011 and the Financial Markets Bill of 2011. Even though this can be seen as yet another barrier to the growth of CDSs in South Africa, it is still necessary for financial markets to be stable and resilient in the event of global shocks. This will ensure that credit derivatives are used to benefit all the parties involved and not just to make short term profits.

In the process of being conservative the true benefits and intention of using credit derivatives and CDSs in particular will have a positive impact on financial markets as a whole. This will en-

sure that markets are stable and this will attract more foreign investors to the South African market. More investors will mean an increased demand for various products, like asset backed securities and CDSs, and will also enhance the liquidity of these products in the secondary market. The above comments and approach could ensure that the emerging economy of South Africa shows healthy and sustainable growth as well as a more sophisticated market for derivatives as a whole.

6.6. The role of securitisation and CDSs in South Africa

In Chapter 4 of this dissertation the global financial crisis was discussed in detail. The factors that were influential in the build-up to the crisis were the main focus of the chapter. The birth of sub-prime mortgages and the securitisation of these assets were mentioned as one of the contributing factors. The failure of CDSs was also discussed in detail and this shed some light that relates to the problem statement of this dissertation. Even though this relationship is based on the global perspective, it is still applicable to the goals of the dissertation.

It was clear in Chapter 4 that securitisation had a significant impact on the provision of sub-prime mortgages in the US. The use of CDSs to hedge the credit risk associated with securitised products was also discovered in Chapter 4. The problem statement of this dissertation refers directly to this relationship, but from a South African perspective. The dissertation has covered various aspects of the South African securitisation and CDS market, but no combination of the two could be found. The securitisation market has shown healthy growth rates, but the transfer of credit risk from these underlying assets is not readily available. The securitisation and CDS market of South Africa is very small and has not been active on an on-going basis and is still developing.

This developmental stage could be seen as the reason why no link between CDS contracts and securitised products exists. The focus thus shifts to the future outlook regarding these two instruments. The question here is whether or not CDS contracts will be used to hedge the credit risk associated with an asset backed security? When observing the financial markets of the developed world, it is possible that this could be a reality. The securitisation market is more settled than the CDS market, but CDSs will grow in the future. This will mean that the access to

CDSs will increase and the use of this instrument will become more dynamic. Therefore the use of CDSs for hedging purposes of asset backed securities will become more readily available.

6.7. Future work

Future work on the role of CDSs in South Africa could include:

1. An exploration of the use of CDSs to reduce the liquidity risk faced by South African banks.
2. An investigation of the potential adoption of continuous securitisation programs in South Africa. While the once off securitisation of assets offers certain advantages. A continuous securitisation programme is necessary to relieve the liquidity pressures of banks and to lead to a true diversification of liquidity sources.
3. A survey of multi seller transactions to improve small banks' (that cannot offer a large number of loans) liquidity positions.
4. A study of the role of clearinghouses on systemic risk in South Africa. Banks should be encouraged to use clearinghouses to clear credit default swaps and other derivatives contracts. Banks and other regulated financial institutions should have higher capital requirements for contracts that are not cleared through a recognised clearinghouse.
5. An exploration of the promotion of greater transparency in the South African CDS market for the more liquid and standardised index and single name contracts.

6.8. Concluding remarks

Chapter 1 of this dissertation focused primarily on the history of securitisation and CDSs which was one of the dissertation aims. A descriptive context was presented for these securities and their importance from a global perspective was established. In addition to this the problem statement, goals and layout of the dissertation were defined in the chapter. The method of research was also presented in detail.

Chapter 2 of the dissertation detailed the theoretical aspects of securitisation. The various parties subject to a securitisation transaction, risks, the requisite steps and instruments and a

background on the South African securitisation market were explained. The South African market was discussed and the period of activity in the South African market (1999 – 2009) was introduced. The slow growth of securitisation for the period between 1991 and 1999 was also explained.

In Chapter 3 CDSs were explained in detail, including the probabilistic pricing of these instruments. The different parties to the transaction were defined and the history of CDSs (including their relevance to the risk management milieu and their role in the investment arena) was introduced.

Chapter 4 explored securitisation and CDSs and the role these instruments played in global financial crisis from a practical perspective. The period leading up to the crisis was discussed and other crises were also detailed. This chapter also showed the relationship that exists between securitisation and CDSs in global financial markets. The importance of regulation and lawful market practice was explored, as well as the impact of ignorance on the world economy.

When comparing the findings in Chapter 4 with those in Chapter 5 it is clear that considerable differences between South Africa and the US (regarding the regulation of financial markets) exists. Another aspect is the abundance of capital flowing to the US. Although South Africa receives a considerable amount of foreign investment, it is insignificant in comparison with that flowing into developed countries. This comparison shows once again that South Africa is still in a developmental stage with regards to financial markets and especially considering securitisation and CDSs.

Chapter 4 also discussed the way forward, regarding securitisation and CDSs. It is important for financial institutions to ensure that securitisation structures are kept simple and that the underlying assets are of a high quality. It is also important for the originator to retrieve the equity tranche of the transaction in order to be more careful when originating loans for the purpose of securitisation.

In Chapter 5 of the dissertation the South African perspective with relation to CDSs and the global financial crisis was discussed. The questionnaire that was answered by the South African banks provided insightful answers to the South African CDS market and the future thereof. In

order for the South African CDS market to grow and compare favourably to those of international markets, it is necessary to establish a more direct approach in which banks trade with each other and create a liquid secondary market for these products.

The impact of the global financial crisis was also discussed and it is clear that South Africa was protected to some extent, from the direct impact of securitisation and CDSs. South Africa was, however, not completely protected from the indirect impact, which saw the loss of nearly a million jobs and an economic recession that followed as a result of the global financial crisis. The reasons for lack of a direct impact were explained and again the importance of financial market regulation was stressed. The reasons for the resilience of the South African market can be summed up as the policies implemented by the government and this can be attributed to the liquidity of the banking sector as a result of securitisation. A comparison of the South African market in CDSs with that of Indian and Australian markets was made to provide more clarity on the South African situation and to establish a global context.

It is clear that the current state of the CDS market in South Africa does not allow for the hedging of credit risk associated with asset backed securities. The CDS market will, however, develop and become more sophisticated in order to fulfil this need in South Africa. This will then result in a direct link between securitisation bonds and the use of CDSs.

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