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Global Financial Markets: Derivatives

Why were derivatives invented? Have they served their true economic purpose or have they mainly served the purposes of the few?

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From the history of derivatives we learn that risk management is the reason why derivatives were invented in the first place. It is the process of identifying the desired level of risk, identifying the actual level of risk and altering the latter to equal the former. This process can fall into the categories of hedging and speculation whereby hedging is a strategy for reducing the risk in *"holding a market position"* while speculation refers to "*taking a position"* in the way the markets will move. Nowadays, hedging and speculation strategies are synonymous with derivatives, they are the tools or techniques that enable companies to more effectively manage risk. Derivatives have been blamed when investors failed to achieve their objectives. However, it is the investor who usually has not fully understood how it should be used with all its inherent risks, etc. While professional traders and money managers can use derivatives effectively, the odds that a casual investor will be able to generate profits by trading in derivatives are mitigated by the fundamental characteristics of the instrument.

The market fundamentalist policy that has been in place now for over thirty years, is plagued by "economic weakness and contradiction" and has produced a bleak economic outlook in both the private sector and global economy. Debt saturation and low demand have become the order of the day. Such an environment is doomed to stagnation and the current policies of monetary expansion and fiscal policy are not the answer to sustainable growth with shared prosperity.

Given their popularity in the global market, a balance has to be found so that derivatives will benefit society as a whole. In my thesis I have identified their advantages and disadvantages, however a road leading to shared prosperity is the only way forward and there exist many tools e.g. social media, which can be used for the global good.

Keywords	credit derivatives, options, forwards, futures, swaps, MBS, CDO, tranche, moral hazard, agency, EMH, bounded rationality

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1 Introduction

The purpose of this thesis is to understand the various characteristics of derivatives and to shed light on whether they serve the economic interests of everyone. My thesis about global financial markets, shows a heavy reliance on the U.S. aspect of the financial meltdown because research has proven that the USA was the major player in the derivatives market at the time. It must be remembered that the financial industry as with all other areas in the field of economics and finance is globally interconnected and so, "*what happens in Vegas no longer stays in Vegas!"*

I am hoping through the research I have done I will be able justify my hypothesis regarding my thesis question, in an understandable and well-articulated fashion. My hypothesis is that, certain derivative instruments designed for higher returns were abused by some unscrupulous actors in the banking sector to the detriment of society. This encouraged and enhanced irrational behaviour by investors who saw the higher returns and became complacent by accepting word of mouth rather than doing their due diligence. In so doing they failed to see or as some would have it, turned a blind eye to the consequences of their actions. This was happening in many countries, not only the USA.

However, behavioural finance theory introduces us to cognitive dissonance[1] and theorists in this field are apt to believe it could be a reason these highly intelligent bankers were blinded to the consequences of their actions. Finance involves human behaviour and is therefore unpredictable under certain circumstances. My opinion, related to the reading and research I have done and cited in my literature review is that given the opportunity humans are prone to the abuse of any tool or situation that can create personal advantage. Having said that, it is of great significance to consider the role of neoliberalism and how it has created the revolving door between government and Wall Street in the US and High Street in the UK.

Chapter 2 is an explanation of the methods I used to gather information for my thesis. I used the narrative approach as it seemed the most viable since my understanding of the subject on financial derivatives is still very limited. It was only through lots of reading,

[1] Cognitive dissonance- The state of having inconsistent thoughts, beliefs, or attitudes, especially as relating to behavioural decisions and attitude change.

listening to podcasts and watching YouTube videos that I was able to slowly but surely gain a better understanding of their function and purpose to the financial industry especially and society.

Chapter 3 is concerned with an illustrated and currently accepted definition of credit derivatives as published by ISDA (2014), followed by descriptions of how they actually function, and more importantly their purpose to the various players in the global financial arena. I have cited from different authors their versions of the basic forms of derivatives on which later more complex innovations are built.

Chapter 4 provides a detailed history of derivatives presented on a timeline starting 4000 years ago in ancient Mesopotamia and taking the reader through to modern day financial systems.

Chapter 5 is my literature view which serves to verify the various opinions, theories and cases regarding the functions and purposes of financial innovation in the run up to the financial crisis of 2007-2009.

Chapter 6 is an attempt at analysing the socio-economic effects of derivatives in the financial industry and how neoliberal policies have created a huge and on-going rift between the blue collar labour force and the white collar corporate employees I attempt to highlight the imbalance in our global society due to the current political agendas.

My conclusion draws on the global effects of the Great Recession and the gaps that exist and their urgent need to be filled in a way that levels the playing field. One idea is to drastically change the current neoliberal political ideology and in so doing establish a modern system of education. There are admittedly several layers in the financial industry to peel away, but I am *fortunately* restricted to a minimum amount of pages and words.

2 Research Methods

2.1 Narrative research method employed

My aim is to define my points of view and their theoretical framework. This means that I will explore my topic from various angles offered by credible researchers in the field of finance and political economy. I will place emphasis on theories regarding the effects of derivatives through the banking system and the concomitant human psyche as seen by

proponents of behavioural theory. Through *wisdom of hindsight* many theories have emerged trying to answer “Why?” and “How?” the financial crisis happened. Also, the reasons why actors in the financial industry have chosen to use derivatives as their ultimate risk management tool.

My methodology follows a chronological pattern because of the way in which derivatives instruments have evolved over time from being a substitute to spot transactions, for example as futures, forwards, options and swaps, to becoming overly complex insurance policies with high returns, for example as mortgage backed securities, credit default swaps and collateral debt obligations.

2.2 Outlining hypotheses and possible results

My thesis question is: *Why were derivatives invented? Have they served their true economic purpose, or have they only served the purposes of the few?*

Through research the first part of the question will be answered by looking at historical evidence through the expert knowledge of a derivatives lawyer and a historian. However, for the second part of the thesis question I will introduce my hypothesis which is that I believe they have true economic value if they are used more for hedging than speculating. But, it is also true that if they are poorly understood they can be the cause of unprecedented losses for firms. Abuse by the “too big to fail businesses” were uncovered after the collapse of the financial system in 2007.

My intension is to make the reader understand how neoliberal policies have tried to convince society that their aim is to level the playing field so that everyone benefits from cheap borrowing which in turn creates a better living standard. By achieving this aim, I will cite from past and current researchers. Then, I hope to reveal how untrue and misleading the current political paradigm is, and how it has been instrumental in subsequently destroying the middle class.

My conclusion will highlight my thesis question and my hypothesis and reveal the outstanding gaps. I will then attempt to offer solutions.

3 Defining and describing credit derivatives

Most authors admit that a universally accepted definition of credit derivatives is still in the making. For the sake of this thesis, I will rely on the diagrammatic definition presented by Edmund Parker (2014), who has obtained it from the ISDA (2014) version.
See appendix 1 / (1-4)

3.1 The mechanics of derivatives

There are many sources from which to gain a basic understanding of the four fundamental financial derivatives, Forwards, Futures, Options and Swaps and Investopedia is one of them. Investopedia is a finance dictionary on the web from which one may obtain the latest information about what is trending as well as all the terms and jargon that is used in the financial industry.

Investopedia (2018) offers the reader a generic definition which states that a derivative is a financial security with a value that is based on or derived from an underlying asset or group of assets. It is a contract between two or more parties. The price of a derivative is determined by fluctuations in the underlying asset. Stocks, bonds, commodities, currencies, interest rates and market indices (indexes) constitute the most common underlying asset or *underlying* as they are generally referred to.

Derivatives can be traded over-the-counter (OTC) or on an exchange. The frequency of OTC trades is much greater and unregulated. Exchange traded derivatives on the other hand are standardised and are perceived as less risky to the counter-party than OTCs (Investopedia, 2018).

Credit derivatives were formerly used to ensure that international traders received balanced exchange rates for goods traded due to differing values of currencies. A more detailed explanation can be found in section 4: *A History of Derivatives*.

3.1.1 Forwards and Futures

We learn from Peery (2012: 6) that futures contracts were one the earliest used derivatives. These contracts were referred to as “forwards”. Forward contracts are traded over the counter and in the past were used to purchase e.g. grain in the future. Forwards, he

goes on to say are as fundamental to the economy as traditional cash purchases. A forward traded on the exchange is called a “futures contract or future”. A future is described as a contract entered by two counterparties, the seller and the buyer. They will then agree on price, quantity and some point in the future to exchange whatever it is that is the subject of the contract.

Peery (2012) informs us that a futures contract differs from a forward in that, a forward can be agreed upon by the counterparties informally, which is, without an established market and for any quantity of goods (over-the-counter/OTC, therefore riskier). A futures contract, on the other hand, is a standardised contract that is traded on an exchange and cleared through a clearing house. Collateral is a requirement by the clearinghouse to guarantee the performance of the parties to the futures contract.

Derivatives are also used to speculate or hedge and Peery (2012) provides us with an example of a hedge:

> A farmer enters into a contract for the payment for crops as they are planted, with a promise to deliver those crops at some specified later point, after the harvest. The farmer gets paid in advance for the crops that will be delivered at some point in the future.

This transaction is a forward. We learn from Peery (2012) that forward contracts helped prevent early physical markets such as Chicago, Illinois, from becoming flooded with commodities after the harvest. Some of these forwards were prepaid, but most required delivery and payment later, such as six months after the contract was agreed upon by the farmer and his counterparty. Farmers sought such arrangements to lock-in on a payment price as a way of protection against a possible drop in price due to either over supply or other factors. The purchaser then received the order at a guaranteed rate; perhaps the purchaser believed that the price for the crop would increase.

Derivatives are categorised as securities and there are a great number of derivative types, each having a specific function and application. Certain types of derivatives are used for insuring against risk on an asset (hedging). They are also employed for speculation, for example, betting on the future price of an asset or side-stepping exchange rate occurrences. Derivatives are associated with high leverage (Investopedia, 2018). See Appendix 4

From Peery (2012) we learned that despite the differences in the inherent structure of forward and future contracts, they both impose an obligation on both the buyer and the seller. Parameswaran (2011: 343) describes them as commitments contracts. He also informs us that the party who agrees to acquire the 'underlying', is referred to as the *long,* and must pay the agreed upon price to the other party, referred to as the *short.* The short then has an *obligation* to deliver the 'underlying' in return. See Appendix 4

3.1.2 Swaps

A swap transaction is a process involving the exchange of cash flows between two counterparties. Broadly speaking, swaps are divided into two categories: interest rate swaps (IRS) and currency swaps (Parameswaran, 2011: Ch.10).

Interest Rate Swaps (IRS) entail payments being made in the same currency, whereby the two cash flows being swapped will be calculated with the use of different interest rates. For example, one party computes its payments using a fixed interest rate, while the other party is subject to payments based on a market benchmark such as LIBOR. These swaps are known as *fixed-floating swaps.* Alternatively, both payments may be based on variable or floating rates. In this instance, party one has a payable based on LIBOR, and the counterparty calculates its owing based on a Treasury security. This swap is known as a *floating-floating swap.* It is interesting to learn that a *fixed-fixed swap* does not exist. In this case one would have to think in terms of a deal in which "Bank XYZ agrees to pay the counterparty every six months on an agreed principal, a rate of 5.25% per annum in return for a counterparty payment based on the same principal at a rate of 6% per annum." This scenario would be referred to as an *arbitrage* opportunity for Bank XYZ. The reasoning is that what Bank XYZ owes for every period is less than what is owed to it. This would be irrational and therefore unthinkable to any counterparty (Parameswaran, 2011: Ch.10).

Thus, it is should be obvious, that in the case of an interest rate swap, a principal amount must be specified to facilitate calculation of interest. However, physical exchange of the principal is unnecessary. The *underlying* principal amount is known as the *notional principal* (Parameswaran, 2011: Ch.10).

Currency swap: The difference between the interest rate swap and the currency swap involves interest payments being made to each other in two different currencies. This

gives rise to three possible methods for calculating interest: “fixed-fixed, fixed-floating and floating-floating (Parameswaran, 2011: Ch.10). See Appendix 6/ (1-2)

3.1.3 Options

Options are agreements between two parties whereby one side is offered the opportunity to buy or sell a security from or to the other side at a predetermined future date. Their similarity to futures stops at this point. (Investopedia, 2018)

With an options contract, the buyer, we are told by Parameswaran (2011: 343), has a right to transact the underlying. We learn that there is a difference between a right and an obligation in that a “right needs to be exercised if it is in the interest of the holder, but if there is no apparent benefit, it does not have to be exercised, hence the name option”. An obligation however, means it is compulsory to take the appropriate action, whether it is beneficial or not.

> Peter Norton has acquired an options contract that gives him the right to buy 100 shares of GE at a price of $42.50 per share after three months from Mike Selvey. If the price of GE shares after three months were to be greater than $42.50 per share, it would make sense for Peter to exercise his right and acquire the shares. Otherwise, if the share price were to be lower than $42.50, he can simply forget the option and buy the shares in the spot market at a lower price. Notice that he is under no compulsion to exercise the option: it confers a right on the holder but does not impose an obligation. However, if Peter were to decide to exercise hi right to buy, Mike would have no choice but to deliver the shares at a price of $42.50 per share. Options contracts always impose a performance obligation on the seller of the option (Parameswaran, 2011: 19)

Given the optional circumstance, like futures, options may be used to hedge the seller’s stock against a price drop and to provide the buyer with an opportunity for financial gain through speculation. An option can be “short or long”, as well as “call or put” (Investopedia, 2018). See appendix 7

There are several alternatives provided on options. For the purposes and scope of this thesis there is enough information provided thus far to enable the reader to understand the various types of basic derivatives available to investors and traders.

4 A History of Derivatives

4.1 Why derivatives were invented

So, how did these financial instruments become so vital to the financial industry? To gain perspective on derivatives and their value an historical overview of the origins of derivatives is essential.

I discovered a YouTube video presentation published in 2014 by Mayer and Brown that was created by a son and his father detailing in chronological order the history of credit derivatives. Edward Parker, the son, is a derivatives lawyer and Geoffrey Parker, the father, is a history professor. After watching this video and citing extensively from it I discovered that a similar presentation was delivered earlier on in book form by the author Edward J. Swan (2000) "Building the Global Market. A 4000 Year History of Derivatives".

The Parkers (2014) begin the chronology in Mesopotamia, four thousand years ago. Taking us through century by century, we learn the significance of derivatives in creating law and order in the business world, while at the same time enabling merchants throughout history to accomplish their bottom line – profit.

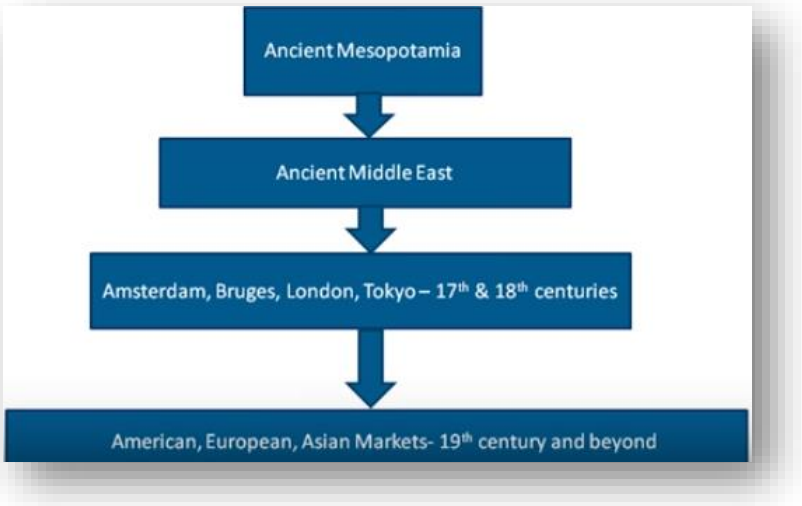


Figure 1. Source: (Parker and Parker, 2014)

"*A History of Derivatives: Ancient Mesopotamia to Trading Places",* by Edmund Parker & Geoffrey Parker explains what their research and experience, as a lawyer and history professor respectively, have uncovered.

They begin the presentation with a diagram illustrating an in-depth definition of Financial Derivatives, provided by the International Swaps & Derivatives Association (ISDA 2014). They go on to explain the rich history of derivatives and the role they played in securing resources, securing prices, providing opportunities to speculate and to invest. These activities are nothing new. See Appendix 1 / (1-4)

4.2 Urban Revolution

Parker and Parker (2014) say that the earliest record of a derivatives market was in Ancient Mesopotamia, in approximately 2000BC. They go on to explain that, it was not until people started living in large groups that the two vital pre-conditions for derivatives were found:

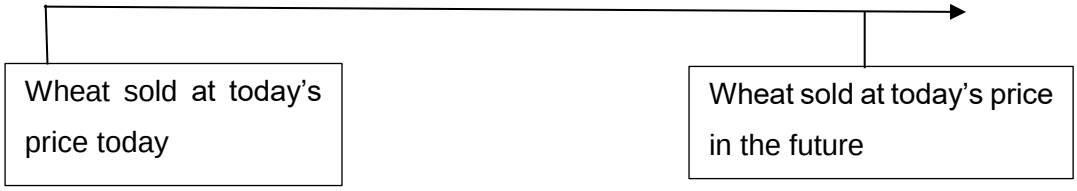
1. Communities so large, that they cannot feed themselves without importing goods.
2. Communities so complex, that they must invent writing to record, amongst other things, the arrangements needed to handle these imports.

This is known as the “urban revolution”. It developed in four areas of the globe at approximately the same time, and in very similar environments, the broad river valleys. Iraq, in the Tigris and Euphrates Valleys; Egypt, in the Nile Valley; Pakistan, in the Indus Valley; North China, Yellow River Valley, Yangtze. The link seems to have been irrigation from the flood plains. Inhabitants constructed dykes and farmers produced unprecedented crop surpluses (Parker and Parker 2014).

According to George Parker, in each of the fertile valleys, cities were established with buildings and houses arranged around public squares, and each having a complex form of writing. These were environments in which derivatives originated. There existed the rule of law, as well as writing and negotiability and enforceability of contracts. A forward or future are the likely instruments to have been developed and be successful in these times. The underlying assets would be in the form of commodities such as grain. The “purpose” is also there: Securing supplies, securing prices and allowing commercial trading, profit and speculation in contracts (Parker and Parker, 2014).

4.3 Social benefits of derivatives

Resource allocation:
Derivatives enhanced the allocative function of spot prices by facilitating the allocation of assets underlying the derivatives contract across time and space (Parker and Parker, 2014).



George Parker (2014) adds to this the four principle resource needs in an early society which could be satisfied by a derivative contract:

- Securing supplies
- Financing agriculture
- Managing risk
- Speculating for profit

All of this and lots more was present in Ancient Mesopotamia. Parker also reminds us that it was this society that invented the plough, the potter's wheel, the sailing boat, the draw loom, copper metallurgy, abstract mass, exact astronomical observation and the calendar. All appeared in Iraq around 3000BC and the scale of those achievements has few parallels in such a short period (Parker and Parker, 2014).

4.3.1 The first code of law

Parker and Parker (2014) then take us to a time around 2000BC when, the states of Iraq merge into the Babylonian Empire, famous for having the first surviving code of law recorded in history. It consisted of 3600 lines of law written in cuneiform. This is where the first derivatives are found. Named after the king, Hammurabi's code allows the sale of assets and goods to be delivered at an agreed price at a future date, requiring contracts to be written and witnessed. It also allowed assignment of contract. The sanction for breaking the rules was death.

There was sufficient need for regulation as temples were commercial hubs for facilitating trading between merchants, e.g. buying and selling grain and creating granaries to deposit the grain. Those depositories could also provide rules for minimum standards of quality and quantity to be met to allow the grain or other commodities to be deposited and graded (Parker and Parker, 2014).

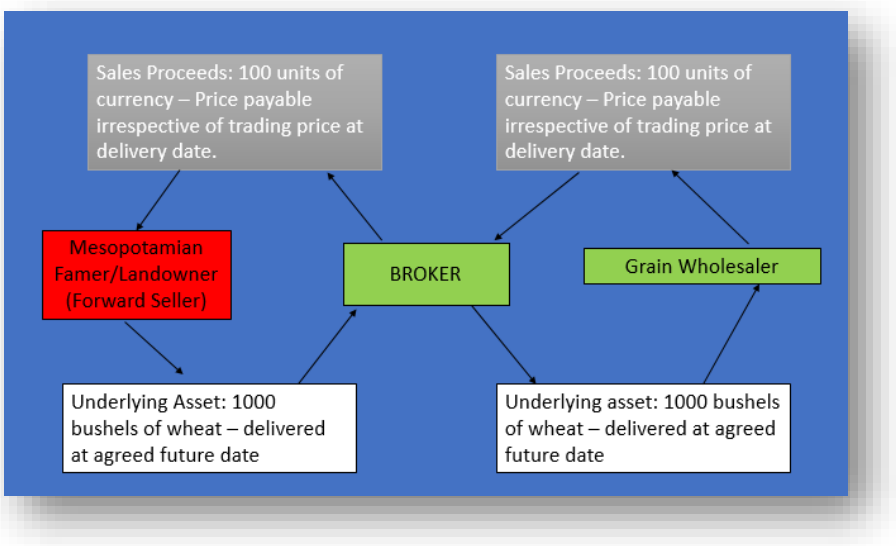


Figure 2. Mesopotamian Derivatives Forward (Parker and Parker, 2014)

The standardisation of goods meant there was no need to deliver the exact commodity by the farmer. Indeed, the wholesaler might not know the farmer was even there. With the ability to assign contracts, the derivatives market was present too. This is how its profits were generated, and we see this practice even with markets-makers today (Parker and Parker, 2014).

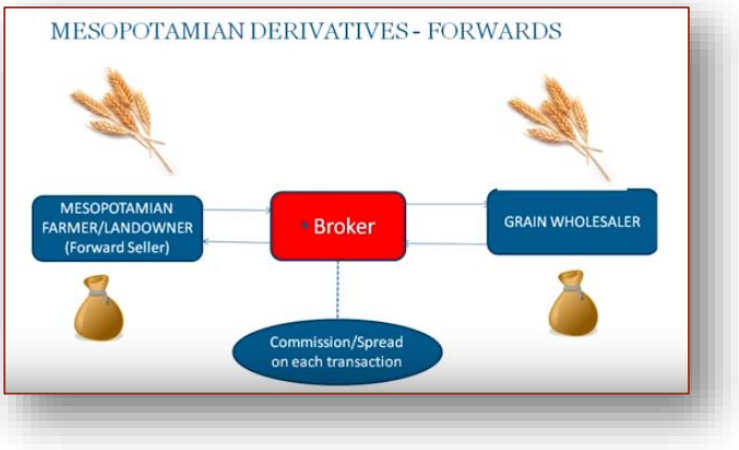


Figure 3. Source: A history of Derivatives, (Parker and Parker, 2014)

Ancient Mesopotamia had the conditions and infrastructure for the derivatives market to form a general part of commerce. It was probably not the only early civilisation to have a derivatives market, but it is the only one of which an unequivocal record exists (Parker and Parker, 2014).

4.4 Moving forward along the time-line

Hammurabi's code of law continued for at least another 1000 years with very little change to the contractual system. Then, it was taken over by Greek invaders led by Alexander the Great (356-323 BC). Alexander did not know about derivatives and operated a cash economy; in fact, all the Greeks did. When Alexander and his followers settled into Mesopotamia they saw the advantages of derivatives and decided to enforce the code. It then spread to Greece and from there, to Rome (Parker and Parker, 2014).

4.4.1 Ancient Rome

Rome was a trading empire with sophisticated processes for moving multiple types of commodity assets across the Empire, be it grain, olive oil, wine or slaves. Currency was also present, as well as contract law and writing, and the legacy of Roman law which still stands to this day. So, the basics for an active derivatives market appear here too. (Parker and Parker, 2014).

4.4.2 Second Century BC onward

Following the fall of the Roman Empire in the west, these sorts of contracts continued with trading between Italian merchant cities. However, it was in northern Europe that a real derivatives market was developing again, beginning in the 13th century. It was then and in subsequent centuries that the return of very large cities meant that they could not feed themselves without imports, especially in Northern Italy and the Netherlands; and it is here that one finds the emergence of banks, trading companies and important new legal instruments that protected merchants who wanted to get rich by buying and selling goods on credit. But that is as far as it gets (Parker and Parker, 2014).

Edmund Parker informs us that despite opposition from the Catholic Church thousands of contracts that promised to repay loans at more than face value, have survived; and hundreds of merchants got extremely rich from lending (Parker and Parker, 2014).

Emperor Charles V who ironically was a staunch catholic and ruled the Netherlands as well as half of Europe and a large part of America, signed legislation that recognised the legality of assignment of contracts for forward delivery of commodity assets, and thus gave support and encouragement to a tradeable market in derivative contracts, rather than just the underlying commodities. Merchants all over North West Europe were willing and eager to commit. The practice spread from Antwerp to Amsterdam, to Hamburg, to Danzig and to London. (Parker and Parker, 2014).

Thus, evidence of commodity derivatives, forex derivatives and at about this time the birth of equity markets in the very financial centres mentioned previously were available. The conditions were there for not only a complex financial market but for the birth of an equity derivatives market, and a more sophisticated commodity derivatives market (Parker and Parker, 2014).

In each of these new financial centres, speculation was present in the shares of privately owned companies or joint-stock-companies as they were referred to; of which the most famous and most traded were the shares of companies which specialised in long-distance commodity trade, like the East India Companies. There were also present contracts for differences, options on future commodities, and short-sales of commodities by sellers who did not want to own the under-lying commodity. The bottom line being profit-making and attaining a wealthy status. Indeed, all commodities were either essentials, like grain, fish, wine or wool; or high value goods, like precious metals and spices. So, people could and did make wagers on anything (Parker and Parker, 2014).

4.4.3 The first known asset bubble - "*Windhandel*" and the Tulip Bulb

Tulips are native to the Eastern Mediterranean, and only became common in Europe in the late sixteenth century. They produce flowers of spectacular beauty in a variety of colours. It takes several years to grow a flowering bulb or any bulb, from seed. An ordinary bulb can be produced in one to two years, but growing an exotic one, could take seven, nine or even twelve years. In Europe, a tulip blooms for a maximum of two weeks; and afterwards, for about three months they are dormant, and can be dug up and moved safely.

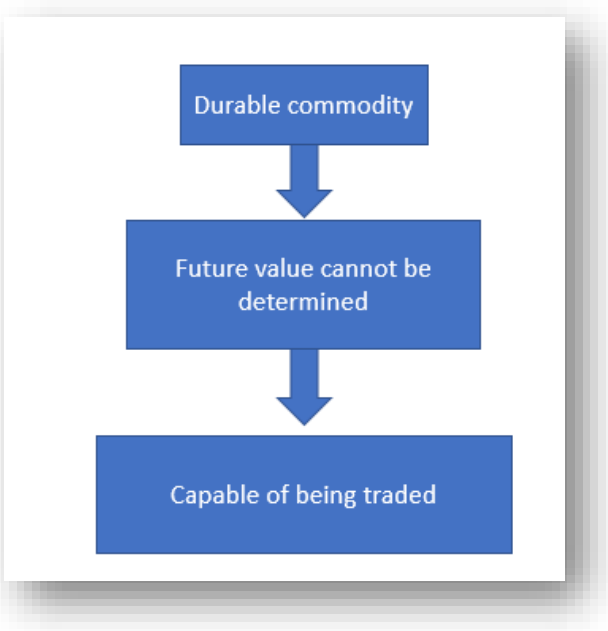


Figure 4. Perfect conditions for a commodity derivative (Parker and Parker, 2014)

As tulips became more exotic, the demand for them rose. By 1636, the tulip bulb was the fourth most important export of the Netherlands. Given the nature of the plant, supply could never keep pace with demand, and thus was born a fully-fledged futures market. Traders held regular meetings to buy and sell contracts for the following season's bulbs, while growers conducted spot sales or signed notarised futures sales. It is said that some bulbs changed hands ten times in a single day. Nevertheless, since the commodity did not yet exist, the Dutch themselves called the trade a "windhandel", exactly translated it means wind-trade (Parker and Parker, 2014).

In the winter of 1636, the price of some bulbs increased unsustainably by thirty-fold. Those, who the previous day had paid a staggering amount for a bulb future suddenly found no buyer and were left with a contract obliging them to make the agreed payment at the agreed date (Parker and Parker, 2014).

4.4.4 Mid-seventeenth century “Jobbers” and “Factors”

By the mid-seventeenth century the derivatives market in Europe was flourishing. There was global trade, greater sophistication and enforceability of contracts, assignment, and a strong merchant and trading class. There were also companies limited by shares, and there was competition between trading markets demonstrated by England and Holland. Forward trading of commodities on a negotiable basis was in place, in both Antwerp and London and there has been a development of a class of speculators called “Jobbers”.

The Jobbers would buy up an underlying asset, e.g. wheat, and wait for an increase in price due to scarcity. They could move into forward and future trading through standard-isation of the commodity markets, i.e. allowing contracts to be settled through delivery of a standard grading of the commodity rather than of the specific asset (Parker and Parker, 2014).

The Jobbers were accompanied by “Factors”, who acted as brokers or middle-men, buy-ing and selling commodity assets between end-users for commission. Some of these brokers started to buy up the underlying asset they traded to control prices and then sell the asset on. The existence of classes of businessmen like this aided the development of a commodity derivatives market, and a commodity futures market developed in wool and cloth (Parker and Parker, 2014).

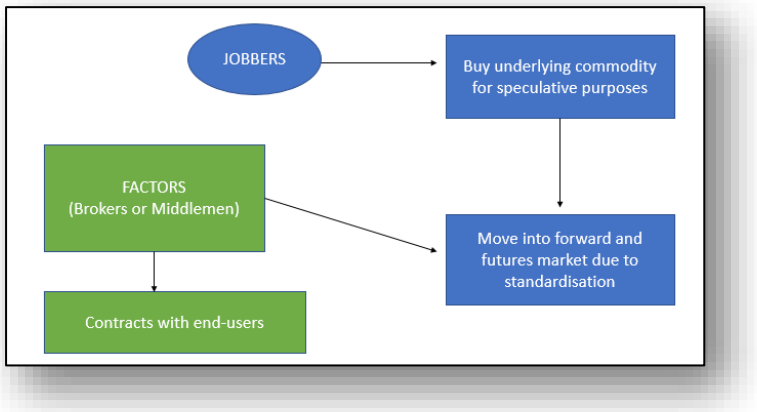


Figure 5. Antwerp & London: a development of a class of speculators called “Jobbers” (Parker and Parker, 2014)

4.5 The state of world trade in the 18th century and major financial centres

The “Industrial Revolution” began in Great Britain in earnest from about 1768. This was accompanied by an emerging global economy, and by the second half of the century there were trading connections between America, Asia and Europe, making an important contribution to wealth. Between 1702 and 1722, Britain’s already healthy foreign trade trebled. The foreign trade of France, which started from a lower base increased eight-fold. This trade required transportation of goods over large distances, mainly by ship, but it also required the support of a financial system. Before the industrial revolution really got going, strong foundations existed for the growth of a derivatives market.

The explosion in world trade was accompanied by the progression, development and sophistication of the rule of law. Shipping held the world economy together. In fact, it still holds the world economy together, with over ninety per cent of internationally traded goods being carried by sea. So, with that combination of sea-trade and finance situated in the city of London in the in the 18th century, a freight derivatives market began (Parker and Parker, 2014).

4.5.1 Exchanges

What we know today as the Baltic Exchange, started life in 1744 at the Virginia and Maryland coffee house in Threadneedle Street, London. The choice of location reflected its users: merchants and sea captains agreeing on prices for transporting goods around the world (Parker and Parker, 2014).

4.5.2 Forward freight agreements

A market began in forward freight agreements:

- Bilateral
- Over-the -counter (OTC), i.e. individually negotiated
- Forward contract using the same principle as explained earlier:
  Underlying assets = freight rates – the rate for carrying specific commodities, e.g. coal, divided by fixed routes, e.g. London to New York

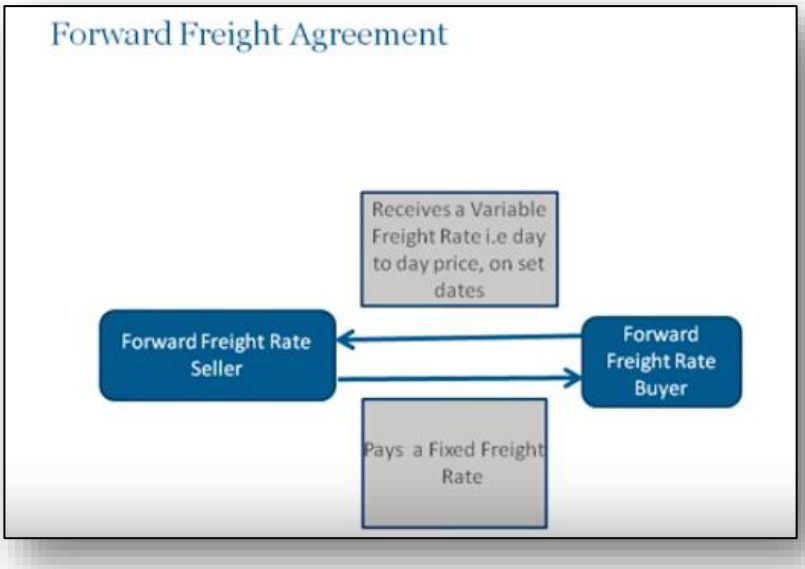


Figure 6. Source: (Parker and Parker, 2014)

Both rates are usually for the same agreed route: The contract then settles at an agreed future date. Other specialised exchanges which traded forwards and futures also got going, including a corn exchange on Mark Lane (Parker and Parker, 2014).

George Parker highlights the fact that the sophistication of the legal system was missing in earlier societies. In the 18th century English law progressed to recognise negotiability of these contracts permitting an assignee to gain the same title as the original holder (Parker and Parker, 2014).

4.5.3 Crises and regulation – The South Sea Bubble

The "*South Sea Bubble*" was perhaps the first of the great financial scandals, and it involved a joint-stock company called the South Sea Company. Launched in 1710, it traded on the basis that it would be able to reap the benefits of trading concessions with Spanish America as soon as peace was concluded between Spain and Great Britain (Parker and Parker, 2014).

A frenzy soon took hold of investors, with share prices soaring on the *expectation* that they would soar more, and not based on fundamentals. That saw several hundred thousand pounds of capital invested, before the whole system crashed. Sound familiar? (Parker and Parker, 2014).

Edmund Parker is certain that derivatives had a hand in fuelling the fast increases in that share price, and although there had already been some regulation of short-sales before, the South Sea bubble brought major restrictions to derivatives trading with an Act brought in by Sir John Barnard. He was a British Whig member of parliament (MP) for almost forty years from 1722 and he was also Lord Mayor of London for the year 1737(Parker and Parker, 2014).

In the aftermath of the South Sea bubble, derivatives trading had continued, and for some years a group of MPs had the practice firmly in their sights, just as their successors did in 2009. Sir John Barnard introduced an Act of Parliament in 1733, called a “Bill to Prevent the Infamous Practice of Stock Jobbing”. The rhetoric in the Houses of Parliament was like more recent discourses, with the Royal Exchange, where much of the trade in share forwards and options took place, described as a gaming house; and that is almost 300 years before the phrase “Casino Banking” was coined (Parker and Parker, 2014).

By 1750 there was a sophistication of proper derivatives trading markets, enforced commercial customs and a regulated environment, accompanied by a major expansion in trade. Prior to the late 20th century and early 21st century boom, one could say that this was the most important phase in the development of a derivatives market.

4.6 The 19th Century – The Industrial Revolution

By the 19th century, the industrial revolution had transformed the British economy from an agrarian one to mainly an industrial one. This is a new point in history. Britain had become the workshop of the world. Other countries such as Germany were moving in the same direction. This transition is accompanied and driven too, by further development of the financial infrastructure in the City of London, and to a lesser degree in other countries. The legal system supporting derivatives continued to develop (Parker and Parker, 2014).

4.6.1 The derivatives market in the USA

The USA had a derivatives market in the 19th century and particularly in commodities. The US courts tended to follow closely the decisions of the English courts at least, that is, up to the middle of the 19th century. However, several states did interpret derivatives contracts as wagers, i.e. gambling, making them unenforceable; and in some cases, banned forward contracts where the seller was not already in possession of the goods at the time the contract was entered (Parker and Parker, 2014).

One major development was the establishment of the Chicago Board of Trade in 1848, it still exists today, as part of the Chicago Mercantile Exchange Group (CME). Its website states that its market place now handles three billion contracts a year and another US$1 quadrillion of contracts annually (Parker and Parker, 2014).

The Chicago Board of Trade received its charter from the Illinois Legislature in 1859, and under this established trading rules as well as rules for standardising and grading commodity assets. It was these rules of standardisation which allowed a futures market to begin in a whole range of underlying commodity assets. By 1864 there was a series of trading pits operating at the exchange, trading commodities futures. Similar developments occurred with the establishment in New York of the New York Mercantile Exchange in 1872, which was founded by dairy merchants, and the Chicago Mercantile Exchange which was founded in Chicago by butter and egg merchants, in 1898 (Parker and Parker, 2014).

4.6.2 The “Gilded Age” (1870s~1900) and equity derivatives

Cornelius Vanderbilt, also known as “*The Commodore*”, created a tremendous fortune by putting together various railroad and shipping interests. He made so much money during his lifetime, ranking him the richest American who ever lived. He owned an eighty-seventh of the US gross domestic product at the time of his death. For Vanderbilt and others like him, an active liquid derivatives market would have been a necessity; in Vanderbilt’s case, an equities market (Parker and Parker, 2014).

4.7 The late 20th Century and the 21st Century – derivatives and regulation

During the late 20th and 21st centuries we have witnessed exponential growth in both derivatives products and derivatives regulation.

4.7.1 Derivatives in the USA after Vanderbilt

In the USA, futures exchanges started appearing around the country:

- 1861 – The Milwaukee Chamber of Commerce traded agricultural futures
- 1864 – The New York Gold Exchange traded gold futures
- 1871 - The New York Cotton Exchange (Parker and Parker, 2014).

Setbacks, especially the Civil War (1861-1865), caused considerable disruption in the financial industry. In addition to that, in 1871, a case in Massachusetts saw the banning of forwards and futures contracts where the sellers did not have ownership of the assets sold. This was followed by many other cases and legislative acts, at state level, outlawing speculative derivatives contracts. Mississippi, South Carolina, Tennessee and Arkansas, all made these contracts illegal or unenforceable. New York and Chicago, on the other hand, continued strong growth; with the New York produce exchanges and the New York coffee exchange performing well (Parker and Parker, 2014).

4.7.2 Regulation

In the 20th century, futures began to be regulated at a Federal level, starting with the Cotton Futures Act of 1916. The introduction of a series of levies, taxes and other miscellaneous restrictions made trading in cotton futures economically difficult. The Cotton Futures Act was followed, in 1921, by the Futures Trading Act, which placed a heavy tax on grain futures. However, this act was soon over-turned. In 1929, the Grain Futures Act was enforced (Parker and Parker, 2014).

Following the Great Depression (1929-late 1930s), Federal Regulation of derivative trading in the USA arrived with the Commodity Exchange Act of 1936. This introduced segregation of customer assets by futures commission merchants; registration of merchants and brokers; and a series of Federal oversight provisions. This Act was given further strength in 1968 (Parker and Parker, 2014).

Further regulatory powers came about in the Commodities Futures Trading Commission Act (CFTA), in 1974. Regulation of commodities futures was offered to the Securities and Exchange Commission (SEC), at this point, but the SEC declined to accept this mandate. So, a new body named the Commodities Futures Trading Commission (CFTC) was introduced. Its purpose was and still is the following (Parker and Parker, 2014).

> CFTC Mission Statements
>
> The mission of the Commodity Futures Trading Commission (CFTC) is to foster open, transparent, competitive, and financially sound markets. By working to avoid systemic risk, the Commission aims to protect market users and their funds, consumers, and the public from fraud, manipulation, and abusive practices related to derivatives and other products that are subject to the Commodity Exchange Act (CEA) (Cftc.gov, 2018)

4.8 The United Kingdom

Not much in the way of regulatory restriction in the same period, happened in the UK. However, the markets did continue growing quietly. Various regulatory changes did happen, but the City of London largely regulated itself with the support of the courts and English law (Parker and Parker, 2014).

5 Literature Review

This literature review is an effort to highlight how and why financial crises happen and how they affect everyone in various ways but more especially the unsuspecting ordinary man on the street: the single hard-working parent, the unskilled labourer, the old age pensioner amongst others.

5.1 Financial market realities

We are informed by Erik Banks (2011: 1) an experienced risk manager, that bubbles and controversies in the financial markets are nothing new. He explains how “things go wrong quite often”; that deals collapse, companies file for bankruptcy and markets go into free-fall on a regular basis. Sometimes happening rather spectacularly. Banks (2011:1) has 25 years’ experience as a risk manager in investment banking, international banking and hedge funds and has had to deal with, what he describes as “risk manager’s moments”, on several occasions. His examples include amongst others "…the 1980’s emerging markets debt crisis; the S & L crisis of the same period; the 1994 derivatives scandal; the 1994 Orange County debacle; the 1995 Barings collapse; the 1997 Asian crisis; the 1998 Russian default and LTCM debacle; the 2001 Enron collapse and the 2001-2002

dot.com bubble burst, and then last but not least the "*Mother"* of all; the 2007 Credit Crisis" (Banks, E., 2011).

The 2007-2009 global meltdown it is said, was caused by the hubris and arrogance that existed in the financial sectors in many countries of the world. The actors at the time became grossly enamoured with securitisations (derivatives). As my literature review unfolds the reader will come to understand how these *complex and toxic* derivatives, as they were labelled in the aftermath of crisis, were created and who were the major users.

Through his experience in the world of finance, Banks (2011:1-4) states that he was not shocked by the political games of the "participant legislators, or the blindness of regulators who aided and abetted and sometimes helped make things worse."

On the weekend of 15 September 2008 regulators and bankers were called together for an emergency meeting in the conference room of the US Treasurer, Henry Paulson. It was here that the very difficult decision was taken concerning Lehman Brothers. Even though Lehman Brothers was part of the "too big to fail" brotherhood, it was reluctantly agreed by all present that it would not be receiving a monetary bail out, thereby creating the world's largest bankruptcy. The effects of this decision had global repercussions due to Lehman's global network and lead to governments in many countries taking unprecedented emergency action, for example "*shot-gun marriages*, wholesale guarantees of national banking systems, de-facto nationalisations of many banks and the siphoning of lots of money into the markets." For all intents and purposes these emergency actions averted a global catastrophe (Banks, 2011: 2). But to what end, and at whose expense? The answer to this question will become evident as we progress through this paper.

5.2 Setting the stage

According to W. A. Allen (2013), "…the world financial crisis of 2008 threatened to destroy the international monetary system and would have done so if governments and central banks had not prevented it." Again, how and why?

Adrian Buckley (2011: 1), has this to say: "…the reality is that the foundation of the crisis was laid approximately 10 years prior to 2007 in the form of exceptionally low real interest rates." Cheap debt encouraged public expenditure which grew very rapidly.

Table 1 below illustrates how real interest rates in the USA were negative in three of the first seven years of the 21st century, and in one other year the rate was zero. Low real rates were in fact a phenomenon in many countries. Buckley (2011: 1) ponders whether this was agreed upon in those G6, G8 and G20 meetings.

Table 1: Real interest rates in the USA and UK

year	USA (%)	UK (%)
2000	1½	3.1
2001	3	3.2
2002	1½	2.3
2003	minus½	0.7
2004	minus ¾	1.5
2005	minus 1	1.7
2006	0	1.5
2007	1	1.2
2008	1	0.5
2009	½	0.5

Source: Buckley, A. (2011: 25, Table 2.1) *Financial Crisis: Causes, Context and Consequences*

Banks (2011: 5-6) explains that when Alan Greenspan was head of the US Federal Reserve (The Fed, the country's central bank), he sought to re-boot the US economy. This was just after the dot.com stock bubble had burst, and corporate scandals were rife. He postulated that the use of short-term interest rates would get the economy into gear. He envisaged an environment where individuals and companies would be encouraged to use cheap credit to invest and spend. So, between 2001 and 2003 the Fed lowered short-term rates from 6.5 per cent to I per cent.

Buckley (2011: 2) informs us that spending sprees ensued "on British high streets and on American main streets", governments all over the world were delighted that their economies were booming, which meant consumers (voters) were happy too. Real estate was the prime investment target.

5.3 New models of lending

Already in the mid-nineties Buckley (2011: 2) recounts, the US government was encouraging wider home ownership and followed through by establishing various agencies to

enable the process. The traditional bank lending model of "*originate-to-hold*" (OTH) was replaced by a new model of *"originate-to-distribute"* (OTD). Traditionally, Buckley (2011: 3) informs us, the OTH model was used by mortgage and commercial banks to lend using the home as security. The bank held onto the debt and received regular interest payments and at maturity the capital repayment. With the OTD model, banks loaned against the security of the home and sold the debt to another bank or to a specialist financial institution where similar loans purchased from various other mortgage banks were collected and packaged into what was called a mortgage backed security (MBS), a form of complex derivative. In so doing the bank's balance sheet showed increased liquidity which enabled it to sell more loans. This became an ongoing activity by most financial institutions. An alternative to the MBS was created in the form of hybridised packages which included other debt such as motor vehicle loans, credit-card debt, student loans, corporate loans, with the mortgages. This bundle, was then sold on as a collateralised debt obligation (CDO), yet another complex derivative. This process is known as securitisation (Buckley, 2011: 3).

5.3.1 Subprime lenders and borrowers

Buckley (2011: 61) and Gibson (2007) offer a more technical explanation on subprime lending and borrowing than does Banks (2011: 7). Banks (2011: 5) did mention in his introduction that he would steer clear of jargon and acronyms and attempt to accommodate the layman without over-simplifying incidences related to the 2007-09 crisis.

While there is no universally accepted definition for subprime lending, (Buckley: 61) states that it does refer to "lending by financial institutions in ways which do not meet prime lending standards. In the USA, subprime loans are usually classified as those where the borrower has a FICO score, variously reported as below 620 or below 640. FICO stands for the Fair Isaac Corporation … a publicly quoted US company that developed the most widely used credit score model."

A credit score as Buckley (2011: 61) explains, denotes a person's credit worthiness. It can predict bad debt risks and has thus made credit more widely available. It also helps determine interest cost and security. FICO scores range between 300 and 850 (higher being a good rating) and 60 per cent of scores fall between 650 and 799. This, he says puts the subprime score of 620 or 640 and below into context. Mortgages constitute the largest share. The total value of USA subprime mortgages as of March 2007, peaked at US$1.3 trillion, with the value of all outstanding residential mortgages at the time being

approximately UD$10 trillion. The share of new subprime mortgages relative to total new US mortgages was around 20 per cent from 2004 to 2006. An increase of 9 per cent from the previous decade (Buckley: 62).

These subprime mortgages had “innovative features” attached to them:

- Short term interest only payments, for five to ten years after which interest plus capital became due;
- Adjustable rate options, with borrowers being able to choose their monthly payments. This ranged from full payment, interest only, or a specified minimum payment;
- Hybrid mortgages started with low fixed interest rates that would eventually change to adjustable rates.

Hybrid mortgages became the most popular during the 1990s and the first half of the next decade (Buckley 2011: 62).

I will also mention at this point something readers might find interesting. Buckley (2011: 63) informs us about the “Community Reinvestment Act (CRA)” which became part of US federal law. Its purpose was to level the playing field for all citizens of the US regardless of race or religious orientation. The CRA encouraged commercial banks and lending associations to meet the needs of all borrowers.

One cannot, in my opinion fault the Clinton Administration for taking these steps, which they saw as a way of lessening the crime rate especially in low-income areas where people did not own their homes. The government was indeed trying to correct social injustices. But as we all know: “*The road to hell is paved with good intentions”.*

The financial institutions gave their full support to the government’s reasoning (Buckley, 2011: 63) and from 1995 they lightened their lending criteria. Deposit requirements of 3 per cent and eventually less on mortgages started appearing. This is also when securitisation of subprime loans began. The first was in 1997 with Bear Sterns. Buckley (2011: 63) wonders if it was at this time that the OTH model mutated into the OTD model (See Banks, 2011: 7).

Gibson (2007: 47) informs us that the growth of credit derivatives suggested that a wide variety of market actors found them useful for risk management. To gain a more accurate

perspective the reader is encouraged to draw inferences from reliable sources such as the International Swaps and Derivatives Association (ISDA) Market Survey and the Bank for International Settlements (BIS). Figure 7 below illustrates the growth trajectory for credit derivatives from two surveys. Gibson (2007: 47) recommends BIS as being a more accurate survey, because it "adjusts for double counting of *interdealer trades*[2]. However, a rapid growth pattern is apparent from both surveys. *Notional amounts*[3] of credit derivatives have doubled each year over a five-year period. Notional amounts, it should be noted are not an accurate measure of credit derivatives, but they are, for all intents and purposes, easier data to collect making them the most common data reported.

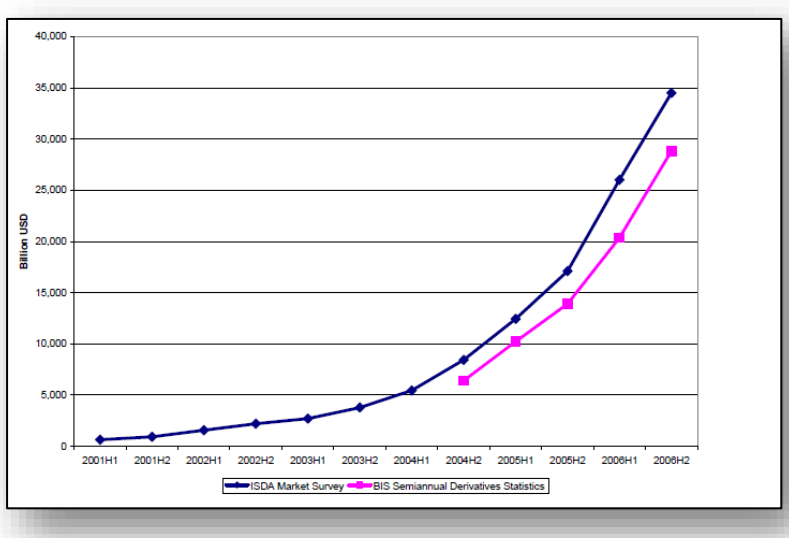


Figure 7. Notional amounts of credit derivatives outstanding (Gibson, M., 2007: 47)
Source: ISDA, BIS

[2] Involves bringing buyers and sellers together to execute a transaction in the financial markets. Brokers liaise between counterparties to establish a price and volume, find liquidity and make a deal.

[3] It is the total value of a position, how much value a position controls, or an agreed upon amount in a contract. This term is commonly used in the options, futures, and currency markets which employ the use of leverage, wherein a small amount of invested money can control a large position in the markets. Notional value helps distinguish the total value of a trade from the cost of taking the trade.

5.3.2 Repackaging mortgages

It was the rating given to the securitised mortgages by rating agencies – Moody's, Fitch and Standard and Poor's (S & P) that came under heavy fire in the aftermath of the financial crisis. Blinder (2013) described the performance of rating agencies as "abysmal" because they aided and abetted the process which stitched the "crazy-quilt", as he describes them, together.

Investors such as banks and hedge funds who bought the mortgage backed securities (MBS), received principal and interest payments from the underlying asset (Buckley, 2011). An example is offered:

> Assume that Wall Street firm 'X' has a USD 1 billion pool of subprime mortgages. This could be packaged, with a few high-quality loans too, into bonds. In so doing, the services of a rating agency would be engaged. The rating agency, for example, Standard and Poor's, undertakes an analysis focusing upon the quality and performance of the entire pool of mortgages. Their rating provides the would-be purchasers with a view of the risks associated with the MBS (Buckley, 2011:68)

The figure 8 below is a graphic representation of the above example. It indicates how tranches of MBSs grade downward from AAA (triple A) at the top, to the more risker grades below. We know that the riskier grades have higher returns. The bond is divided up according to risk and return (Buckley, 2011, p.68).

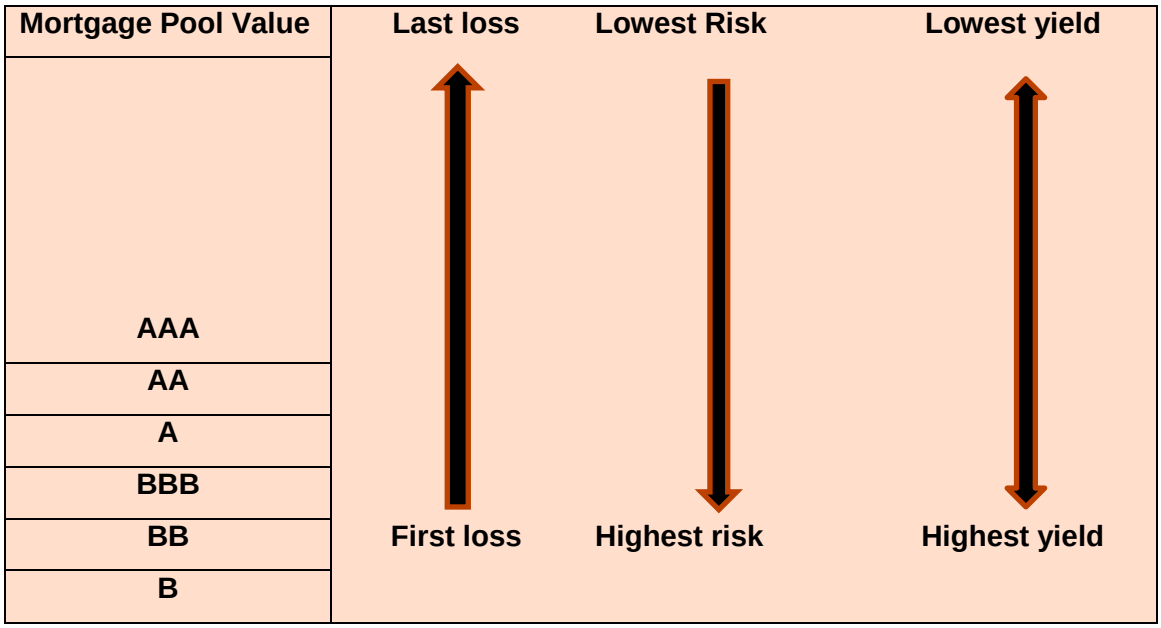


Figure 8. Tranche ratings, risk and return
Source: (Buckley, 2011: 68) Financial Crisis: Causes, Context and Consequences

By packaging mortgages into securities, illiquid assets that could not be sold on their own became liquid. With the existence of secondary markets to trade these high yield/high risk securities that had low interest rates and rising house prices, investor appetites peaked. Investors in MBSs experienced continual gains and so did banks that were packaging them and selling them on. This was until a reversal in housing prices happened (Buckley, 2011:65).

5.4 Dubious economics

Buckley (2011: 65) informs us that as the appetite for subprime loans grew so did the volume of securitised mortgages. Incentivised by hefty commissions sales personnel were driven to sell as many mortgages as they could, omitting borrower credentials from the equation.

Volumes of loans were securitised. Small lenders sold mortgages to large lenders who aggregated them. In the USA if a loan was conforming[4] or prime, it could be sold to Fannie Mae or Freddie Mac. These are government-sponsored-entities. These GSEs accounted for approximately half of all US mortgages and could create MBSs. When the mortgages failed to meet the established standards of the GSEs, lenders would use investment banks who then packaged them into "non-agency MBSs. Institutions that purchased these MBSs included "hedge funds, pension funds, other banks (including commercial and mortgage banks) and other investors". For these securities to be official and appealing to investors they had to pass ratings agencies' judgements about whether borrowers could be trusted to pay their level of interest in a timely manner and repay capital at maturity. Securities are rated according to their level of risk. See Figure 8 above. (Buckley, 2011: 65).

5.5 Rating Agencies

After 1970, the Securities and Exchange Commission (SEC) decided that the ratings agencies' business model should be changed to serve a public interest. Companies wanting a rating would therefore pay agencies to rate their debt (Buckley, 2011:70). Rating agencies have since held a very powerful position in financial markets. They assign ratings to every bond or public financing for a fee (paid by the issuer[5]). Their "credit opinion" must be attached to all bond and financing deals when it comes to the market otherwise investors either cannot or will not buy unrated paper (Banks, 2011: 20).

After the crisis, it became immediately apparent that all three ratings agencies: Moody's, Standard and Poor's and Fitch had overstated the ratings on MBSs and other structured products called collateral debt obligations (CDOs) that were held by banks and investors. However, the so called *black box* [6] model was flawed because it was assumed that the housing market would not contract too much and that subprime borrowers would not default as often as they did (Banks, 2011: 21).

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[4] In the United States, a conforming loan is a mortgage loan that conforms to GSE (Fannie Mae and Freddie Mac) guidelines

[5] Legal entity such as a corporation, investment trust, government, or government agency, that is authorized to issue (offer for sale) its own securities.

[6] Process, or system, whose inputs and outputs, and the relationships between them are known, but whose internal structure or working is (1) not well, or at all, understood, (2) not necessary to be understood for the job or purpose at hand, or (3) not supposed to be known because of its confidential nature.

Buckley, (2011:69) provides a quote from Frank Partnoy's memoir, called *F.I.A.S.C.O.,* "… at Morgan Stanley, we created dozens of CDOs, and we became quite skilled at persuading the rating agencies, and investors, that they should label an investment AAA, even if the underlying assets were risky." – It was all to do with the bottom layers of the tranche protecting the top and with low correlation. Figure 8 above illustrates this (Buckley, 2011: 69).

For the reader to gain a semblance of understanding, (Buckley, 2011: 69) explains the process of *slicing and dicing* a mortgage pool. This happens when mortgages are mixed with other debt obligations so that the original mortgages are distorted, making it an insurmountable task to judge the quality of the assets and their risk profile. Investors often did not know what they were buying and relied totally on the rating agencies' views.

With lax regulations and global connectivity big players in the subprime business on Wall Street, like Lehman's, Bear Sterns and Merrill Lynch had acquired subprime mortgages. They contributed to the process of repackaged securities and sold them via their global network. This process was happening in the UK too, but the USA was the biggest generator. Wall Street's focus was the bottom-line profit and the impact on bonuses, so very little or no attention was placed on the risk factors being taken on. The OTD model featuring below in Figure 9 was a great help in moving the loan asset to someone else's balance sheet (Buckley, 2011:69).

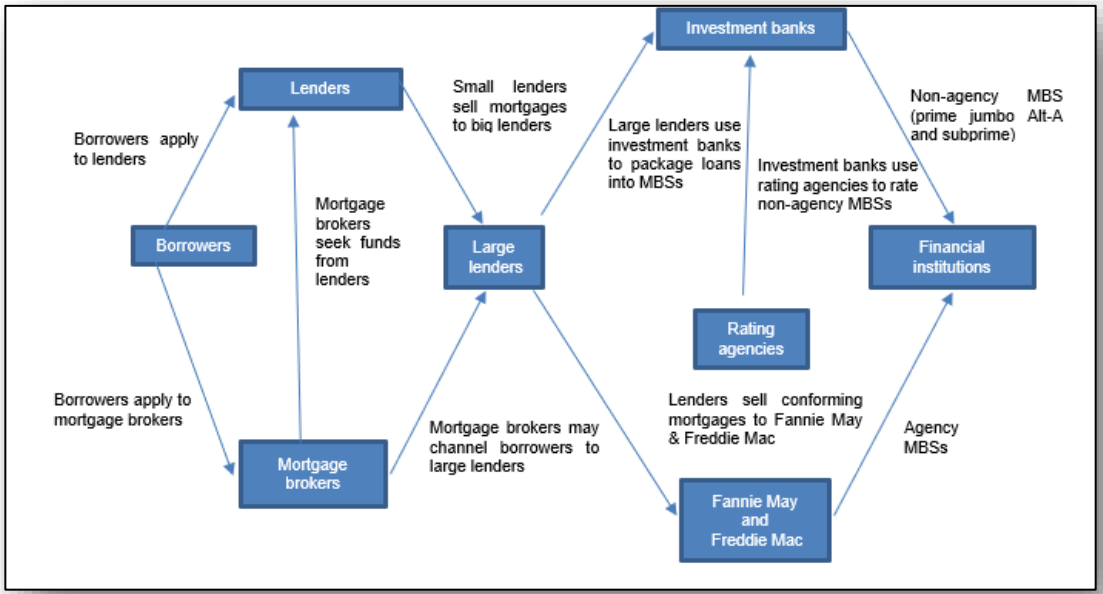

Figure 9: Mortgage Securitisation- The originate-to-distribute model (OTD)
Source: Buckley, A. (2011: 70)

5.6 Credit Default Swaps

"So, what is a CDS … and how does a CDS work?" Buckley (2011: 74-76).

There seems to be considerable doubt as to what they are. In the realm of financial derivatives, their function is to transfer risk to those who are in the best position to bear it. This in turn enables financial institutions to make loans they would not otherwise be able to make and reveals useful information about credit risk in their prices (Stulz, 2010).

Stulz (2010) goes on to explain "the other side …" which is an attempt at understanding the credit crisis. Many observers described CDSs as the arch villain. On a segment of the "60 Minutes" show in October 2008, CDSs on subprime mortgages were called the "bet that blew up Wall Street"; Google described them as the "worst Wall Street invention"; and George Soros, who is a highly respected hedge fund manager, amongst several others, denounced CDSs and demanded that they be banned.

Before getting ahead myself, I would like to focus on the fundamental mechanics of CDSs. They are similar in many respects to an ordinary insurance policy. When regarding them in this manner one uses the term "plain vanilla" or basic. So, in the same manner as an insurance contract, a CDS protects against the cost of default of a company, which is referred to as the "name" or the "reference entity" (Stulz, 2010). An example follows:

> Suppose that you hold Ford bonds and are concerned about Ford's default risk. You could insure your bond holdings with a credit default swap. As with a typical insurance contract, you pay premiums over time. If Ford does not default, you lose the premiums. If Ford does default, the credit default swap allows you to exchange the Ford bonds you hold, which are now worth little, for the principle amount of the bonds, or alternatively, depending on the details of the contract, for a payment equal to the principal amount of the bonds you hold minus their current value at the time of default. Your Ford bonds could lose value even if Ford does not default – for instance, if interest rates increase or Ford's credit falls without a default – but you only receive payment from a credit default swap in the case of an actual default (and in the event of a debt restructuring for some contracts) (Stulz, 2010).

However, insurance contracts and CDSs differ in two significant aspects. One being, that it is not necessary to hold the bonds to purchase a CDS on that bond, whereas to obtain

an insurance contract, it is a pre-requisite to have “direct economic exposure”. The amount insured with a CDS is called a notional amount. So, for a CDS taken on Ford for a notional amount $100 million for example, insurance would be on $100 million of the principle amount of Ford bonds (Stulz, 2010; Buckley, 2011: 74-75).

Secondly, insurance policies are not traded as opposed to CDSs which were being traded OTC, meaning a market where traders in different locations (around the world) make deals telephonically or electronically. Dealer trades were with end users as well as other dealers (Stulz, 2010; Buckley, 2011: 74-75).

Buckley (2011: 75) illustrates the concept of a CDS transaction which he hopes will help, if it is still “a little difficult to understand”.

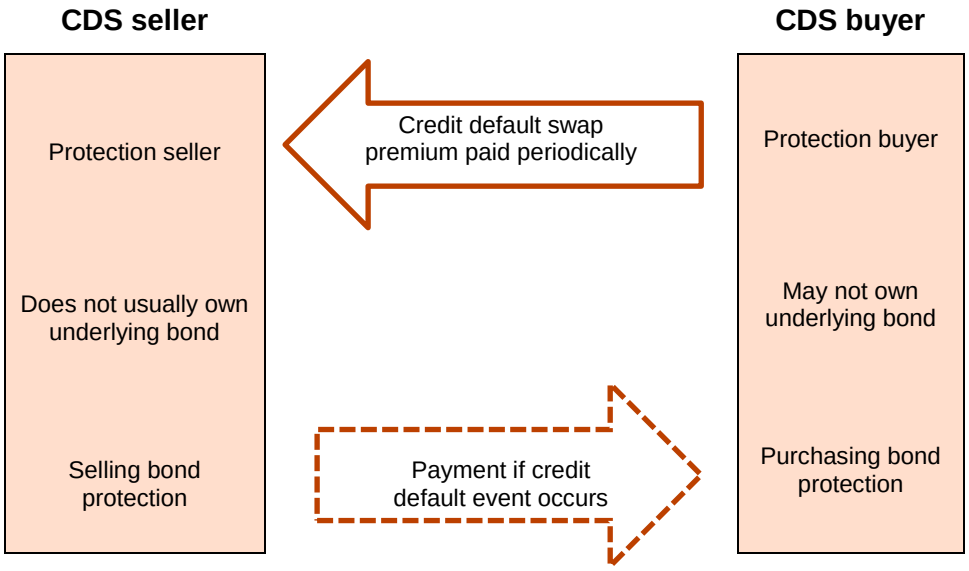

Figure 10. Credit default swap transaction
Source: Buckley, A. (2011: 75) *Financial Crisis: Causes, Context and Consequences*

According to Buckley (2011: 79), “the CDS market exploded from virtually nothing in the 1990s to UD$55 trillion in 2007”. The main reason for this explosion happened early in the 21st century when US investment banks were packaging subprime debt into MBSs. Big profits were being made for the banks and big bonuses for the managers. However, the US market for subprime mortgages reached its peak at only US$1.3 trillion in terms of outstanding debt as of 2007.

Investment bankers needed new products that would give them much better returns than the subprime mortgage market, and as the situation stood the finite amount of subprime

debt had reached its limit. Risky assets were no longer available. CDSs became the answer to the investment bankers' prayers. There was no limit to the amount of CDSs that could be written on a specific company's debt. They were now able to package CDS assets with subprime loans into collateralised debt obligations (CDOs). As Buckley (2011: 79) so aptly put it: "To many bankers, this was sheer alchemy…"

Buckley (2011: 79) then rewinds to MBSs and reminds the reader that these were created by adding to the mortgage pool other uncorrelated assets. The effect would be to enhance the quality of the asset pool, possibly justifying a higher credit rating. So, by adding a CDS to mortgage asset pools, a higher rating was also expected. The CDOs were eventually referred to as *toxic assets* when everything came crashing down.

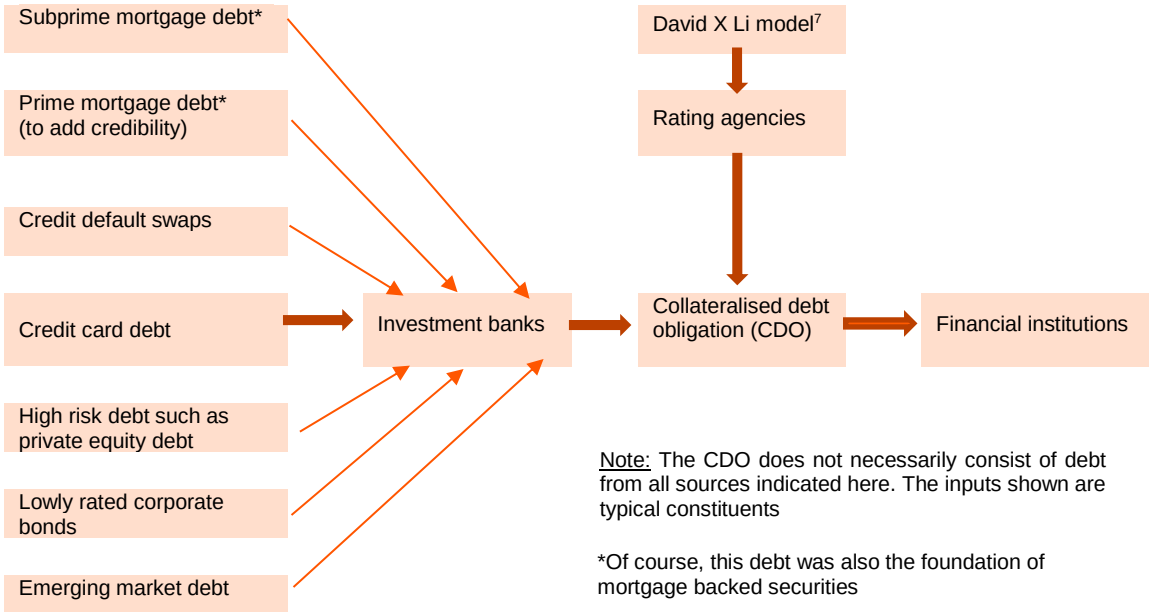

Figure 11: The collateralised debt obligation food chain

Source: Buckley, A. (2011:80), *Financial Crisis: Causes, Context and Consequences*

[7] Pioneered the use of Gaussian copula model for the pricing of collateralized debt obligations (CDOs) in the early 2000s. Widespread application of simplified Gaussian copula models to financial products such as securities may have contributed to the global financial crisis of 2008–2009.

5.7 Regulators

Banks (2011: 22) tells us that the duties of the regulators which are government institutions, set policies which are meant to oversee financial markets and ensure they maintain the established “rules of the game” so that stakeholders are protected. But for some reason, George Soros is quoted, “the authorities, the regulators – the Federal Reserves and the Treasury – really failed to see what was happening…” (Banks, 2011). Soros went on to say, “… [A] number of people could see it coming. And somehow the authorities didn’t want to see it coming. So, it came as a surprise” (Woodruff and Soros, 2008). Banks (2011: 23) reminds us once again that the same situation existed in the UK, Germany, France, Italy and other countries.

So, what really happened? Why did regulators fail to see what was happening? Banks (2011: 24) answers very clearly: “slow reaction time, bad communication, fractionalised structures, overlapping or underlapping responsibilities, inadequate skills, sometimes contradictory rules and regulations, a lack of scrutiny and complacency. This seems so ridiculous when one takes into consideration that the number of staff relegated to these duties numbered in the thousands.

5.8 Loop-holes

Buckley (2011: 3) explains how lax mortgage bank appraisals under the OTD model encouraged criminal behaviour. Examples involve mortgage brokers and builders – and occasionally lawyers. They would conspire to receive money from lenders above market value. “It often involved buy-to-let properties and off-plan homes where properties had not yet been let or sold respectively. Lenders were told that the house had been sold off-plan without any deal having been made – but with a fictitious purchaser invented as part of the scam.

It did not end there as we learn from Buckley (2011: 3). Other scams involved borrowers claiming that they would occupy a property when, in fact they were purchasing it as an investment to let, or to trade on, a process known as *flipping.* There was also the *liar loan* whereby mortgage brokers helped borrowers’ record false employment histories and income grades. Thus, critical information would be hidden. Self- certified income figures were also being accepted by lenders.

It is my opinion, that any human being would use the system to their own advantage if given the chance. We are all constantly looking for the loop-hole. Chancing upon it, we will sing praises to God because we believe we deserve those fortunate breaks in our unfortunate lives. In that way everything becomes justified.

5.9 Deciding whether derivatives are good or bad

The derivatives market is described by author Peery (2012) as being “the largest and most important financial market in the world…” He also mentions how absurd it is that as overwhelmingly important as they are to local and world economies and in turn to society, very little is known about derivatives as financial instruments. He is convinced that there is a dire need to develop an understanding of derivatives, given their widespread use and the prodigious amount of regulations which some, he glibly expresses, naively hope will smother them (p. xiii). Peery’s opinion corroborates Siems (1997).

Peery (2012) is sold on the idea of financial innovation and goes on to describe derivatives as instruments offering “creative, flexible and ingenious ways to make profit in markets fraught with volatility.

Peery (2012: xiii) informs us that in 2011, a few years after the financial crisis, the Emerging Portfolio Fund Research (EPFR) Global observed how, on a global scale, market participants seemed to be changing their investing habits from the traditional stock market and stated that a historic development was in the making as investors all over the world withdrew over $90 million from traditional equity investments. This, he says, implied a loss of faith in traditional markets and investment and a developing need by investors to use derivatives. A very interesting development considering that derivatives were to a large extent held responsible for the 2007-2009 financial crisis.

In a paper presented by Thomas F. Siems (1997) and published by the Cato Institute Policy Analysis, he described and showed support for derivatives. He chronicled and debunked ten myths about derivatives. They are too detailed to recount in this paper, however interested readers can download the paper from the internet.

Before he proceeded on to what he referred to as common misconceptions about financial derivatives, he did express scepticism at what critics at the time were foreseeing:

> Those who oppose financial derivatives fear a financial disaster of tremendous proportions – a disaster that could paralyse the world's financial markets and force governments to intervene to restore stability and prevent massive economic collapse, all at taxpayers' expense. Critics believe that derivatives create risks that are uncontrollable and not well understood. Some critics liken derivatives to gene splicing: potentially useful, but certainly very dangerous, especially if used by a neophyte or a madman without proper safeguards[8].
> (Siems, 1997)

It would be interesting to have a conversation with Thomas Siems today and discover his thoughts on the 2007-2009 financial crisis.

6 Socio-economic advantages and disadvantages of derivatives

The financial crisis of 2007-2009 was not as we have read limited to the U.S.A. It was an international phenomenon that spread from individual financial institutions to the world economy. It was a "double whammy" for countries of the world not directly complicit in the original financial problems because they suffered "collateral damage," as well as the ensuing downturn in economic activity which affected millions of "innocent bystanders". This was the result of global interconnectedness through trade, financial, and investment flows. The International Monetary Fund, World Bank and the Organization for Economic Cooperation and Development did monitor the global economy, but their focus was directed largely on macroeconomic flows and not on macro prudential regulation (Nanto, 2009).

[8] In May 1994 the General Accounting Office released a two-year study, "Financial Derivatives: Actions Needed to Protect the Financial System." GAO/GGD-94-133, which sounded a call for stiffer government regulation of financial derivatives markets. General Accounting Office, "Derivatives: Actions Taken or Proposed since May 1994," GAO/GGD/AIOMD-97-8, reviewed progress made by financial regulators and industry participants.

6.1 Financial economics

We understand that financial markets are an economic function and that they exist to increase the efficiency with which individuals can engage in mutually beneficial inter-temporal[9] exchanges with other individuals, therefore, economic analyses of financial markets are essential for their effective management (Bradfield, 2007: 19).

In our basic economics course, we learned about the allocation of scarce resources among alternative uses to maximise levels of lifetime satisfaction. To accomplish this, three kinds of trade-offs are essential (Bradfield, 2007: 20):

1. Each year allocation of resources must be made between producing goods and services for current consumption and producing goods for expanded future consumption. The latter kind of goods are referred to by economists as capital goods, which are goods that can be used as an input for future production. There are tangible capital goods, such as industrial robots, or intangibles, such as a computer software. Capital goods accumulation enables a society to increase and improve its standard of living over time (Bradfield, 2007: 20)

2. There is an obligation to allocate among the production of current goods and services the resources that have been reserved this year to support current consumption. This is, simply "the problem of maximizing utility by allocating a fixed level of current income between the purchases of Goods X and Y." This second kind of trade-off, in whichever way depicted, is not an intertemporal allocation, and thus it does not involve financial markets (Bradfield, 2007: 20)

3. Each person who provides resources to produce capital goods faces a trade-off created by the interplay of risk and expected future return (Bradfield, 2007: 20)

One of the requirements expected for economic efficiency is that individuals undertake mutually beneficial exchanges. Also, in societies with large populations and access to complex technologies, the costs involved in identifying and effecting all the possibilities for mutually beneficial exchanges are substantial. "An essential function of a system of

[9] Intertemporal choice is an economic term describing how an individual's current decisions affect what options become available in the future.

financial markets is to transmit information about investment projects and about the rates at which investors are willing to substitute present and future consumption." Financial markets are dubbed "informationally efficient" if the prices of financial securities contain all the information that investors need to identify and undertake all mutually beneficial exchanges (Bradfield, 2007: 104).

By providing an increasing variety of financial securities a system of financial markets becomes more informationally efficient in which it organises trading. The relative prices of these securities contain information for investors. Thus, all things equal, the "richer" the variety of financial securities on offer, the greater the extent to which all potential mutually beneficial exchanges will be undertaken (Bradfield, 2007: 104).

6.1.1 The problem of asymmetric information

I mentioned "all things being equal" in the previous paragraphs because as we shall learn, in finance, there can be "an asymmetry of information in a proposed exchange if one of the persons has better information than the other person about the likely outcome of the exchange." If the party with the superior information would willingly and truthfully reveal the information to the other party, both parties could create a mutually beneficial exchange. But if not, a potential mutually beneficial exchange will be foregone and, therefore, there will be an inefficient allocation of resources. This inefficiency arises not because the outcome of the proposed exchange is uncertain, rather, it is the asymmetry of information that can prevent what, under symmetric information, would have been a mutually beneficial exchange (Bradfield, 2007: 43).

6.1.2 The problem of agency

The asymmetry of information is not the only negative occurrence in the affairs of business and finance. There also exists the agency phenomenon better known as "The Principal Agent Problem" which occurs when one person (the agent) can make decisions on behalf of another person (the principal). This situation is the breeding ground for issues of *moral hazard* and *conflicts of interest"* (Bradfield, 2007: 51).

The basic tendency is that the agent usually has more information than the principal. This difference in information is known as asymmetric information. The consequence is that the principal does not know how the agent will act. Also, the principal cannot always

ensure that the agent acts in the principal's best interests. This departure from the principal's interest towards the agent's interest is called an "agency cost" (Bradfield, 2007: 51).

In many real-world examples, the agent will not prioritize the best interest of the principal but will instead pursue his own goals. Politicians (the agents) and voters (the principals) is an example of the Principal Agent Problem (Prateek Agarwal, 2018).

"Too Big to Fail" is an example of the principal-agent problem. The idea behind too big to fail is that some companies become so significant and critical to the economy, that no matter what they do, the government will bail them out. This situation creates a moral hazard, where the agents have no incentive to do the right thing since they know they won't be holding the blame at the end. This happened infamously during the Great Recession, where the American government bailed out companies and banks like AIG and JPMorgan Chase, two of which alone received nearly $100 billion in assistance from the federal government (Prateek Agarwal, 2018).

6.2 Efficient Market Hypothesis or Bounded Rationality

According to Bradfield (2007: 104), financial markets are dubbed "informationally efficient" if the prices of financial securities contain all the information that investors need to identify and undertake all mutually beneficial exchanges. This statement is upheld by the efficient market hypothesis (EMH), "… a market in which prices always 'fully reflect' available information is called efficient" (Bradfield, 2007 citing Fama, 1970:383).

Tseng (2006) informs us that EMH is based on three basic theoretical assumptions. First, the "perfect rationality" of market actors and their ability to "rationally" value securities. Second, if there exist a few irrational investors, their trading activities will either cancel out with one another or will be arbitraged away by rational investors (Tseng, 2006 citing Shleifer, 2000). "Finally, market participants have well defined subjective utility functions which they will maximize" (Tseng, 2006).

Tseng (2006) references Simon (1982: 408), who states that "[R]ationality denotes a style of behaviour that is appropriate to the achievement of given goals, within the limits imposed by given conditions and constraints. Theories of rational behaviour … prescribe how people or organizations should behave to achieve certain goals under certain conditions, or they may *purport* to describe how people or organizations do, in fact, behave."

6.2.1 Bounded rationality

Tseng (2006) continues to cite Simon (1982) whose argument was that by introducing risk and incomplete information about an alternative or high degree of complexity people or organizations start behaving different from rationality. This led to his well-known new concept called “bounded rationality”. The following quotation is from Simon (1997: 291)

> The term ‘bounded rationality’ is used to designate rational choice that considers the cognitive limitations of the decision-maker, limitations of both knowledge and computational capacity. Bounded rationality is a central theme in the behavioural approach to economics, which is deeply concerned with the ways in which the actual decision-making process influences the decisions that are reached.
>
> The theory of subjective expected utility (SEU theory) underlying neo-classical economics postulates that choices are made:
> (1) Among a given, fixed set of alternatives;
> (2) With (subjectively) known probability distributions of outcomes for each; and
> (3) In such a way as to maximize the expected value of a given utility function (Savage, 1954). These are convenient assumptions, providing the basis for a very rich and elegant body of theory, but they are assumptions that may not fit empirically the situations of economic choice in which we are interested. (Simon, 1997 cited in Tseng, 2006)

Tseng (2006) explains that new studies have developed in the areas of “behavioural finance, evolutionary finance and neuro-finance” all of which are challenging traditional finance. People, advocates Tseng (2006) are different in many ways; biologically, genetically, in educational training, experience, opportunities and many more aspects. Therefore, it is a reasonable hypothesis that market players and researchers have diversified backgrounds too. The controversy between proponents of EMH and behavioural finance focuses on the degree of market efficiency, investor rationality and interpretations of several empirical findings.

I thought it was a good idea to introduce the reader to the idea of the *inefficient market hypothesis, however* it is beyond the scope of this thesis to elaborate on it. My idea was for the reader to realise that there are alternative ideas in finance relating to the actions of market participants. These alternatives have become significant especially in the aftermath of the 2007-2009 crisis as people try to understand why it happened.

6.3 The advantages and disadvantages of spreading risk

Today's advanced global markets have assisted in the rapid growth in derivative instruments. Some of the wide variety of derivative instruments available to a traditional portfolio of investments can provide global diversification in financial instruments and currencies, help hedge against inflation and deflation, and generate returns that are not correlated with more traditional investments. The two most widely recognized benefits attributed to derivative instruments are price discovery and risk management (Investopedia, 2018).

6.3.1 Price Discovery

In the futures market pricing requires a continuous flow of information and a high degree of transparency from around the world. Supply and demand in commodities particularly, are impacted by factors such as climatic conditions, political situations, debt default, refugee displacement, land reclamation and environmental health. These, in turn produce the current and future prices of the underlying asset on which the derivative contract is based. The way in which people absorb various types of information renders commodity prices in a constant state of flux. This process is known as price discovery (Investopedia, 2018).

Options also aid in price discovery, but more in the way the market participants view volatility of the markets. Options are a different form of hedging in that they protect investors against losses while allowing them to participate in the asset's gains. An increase in the prices of options contracts will occur if investors think that the markets will be volatile. A CDS is a type of option (Investopedia, 2018).

6.3.2 Risk Management

The reader will recall from chapter three in the history of derivatives that risk management is the reason why derivatives were invented in the first place. It is “the process of identifying the desired level of risk, identifying the actual level of risk and altering the latter to equal the former. This process can fall into the categories of hedging and speculation” (Investopedia, 2018).

Hedging is a strategy for reducing the risk in *“holding a market position”* while speculation refers to “*taking a position”* in the way the markets will move. Nowadays, hedging and

speculation strategies are synonymous with derivatives, they are the tools or techniques that enable companies to more effectively manage risk (Investopedia, 2018).

6.4 Criticisms of derivatives

As a form of insurance or risk management, the cost of trading in derivatives "must be low or investors will not find it economically sound to purchase such *'insurance'* for their positions" (Investopedia, 2018).

While options are alluring in that they offer the potential for huge gains and huge losses, they are complex and therefore, makes them suited to high tolerance, sophisticated investor (Investopedia, 2018).

Derivatives have been blamed when investors failed to achieve their objectives. However, it is the investor who usually has not fully understood how it should be used with all its inherent risks, etc. While professional traders and money managers can use derivatives effectively, the odds that a casual investor will be able to generate profits by trading in derivatives are mitigated by the fundamental characteristics of the instrument (Investopedia, 2018).

6.4.1 Lifespan

"Derivatives are *time-wasting* assets. As each day passes and the expiration date approaches, you lose more and more *time premium* and the option's value decreases" (Investopedia, 2018).

6.4.2 Direction and Market Timing

As a profit-making tool, investors are required to make accurate predictions on the direction on whether the market or index will move up or down and the "minimum magnitude of the move during a set period." Mistakes guarantee substantial investment loss (Investopedia, 2018).

6.4.3 Costs

"The bid/ask spreads of more common derivatives such as options can be daunting. An option with a bid of 5.25 and an ask of 5.875 means an investor could buy a round lot

(100 units) for $587.50 but could only sell them for $525, resulting in an immediate loss of $61.50 before factoring in commissions" (Investopedia, 2018).

6.5 Greed and fear

Cate Reavis (2009) explains how Andrew W. Lo[10] believed that in addition to the economic forces at play in the 2007-2009 crisis, a human element was present too. Notably, emotions of greed and fear of the unknown. The following excerpt is taken from his House Oversight Committee testimony:

> During extended periods of prosperity, market participants become complacent about the risk of loss—either through a systematic underestimation of those risks because of recent history, or a decline in their risk aversion due to increasing wealth, or both. In fact, there is mounting evidence from cognitive neuroscientists that financial gain affects the same 'pleasure centers' of the brain that are activated by certain narcotics. This suggests that prolonged periods of economic growth and prosperity can induce a collective sense of euphoria and complacency among investors that is not unlike the drug-induced stupor of a cocaine addict. The seeds of this crisis were created during a lengthy period of prosperity. During this period, we became much more risk tolerant (Andrew Lo cited by Cate Reavis, 2009)

Lo stated that the underlying factor for this greed was "the profit motive, the intoxicating and anesthetic effects of success". However, when everything turned *pear-shaped* greed became fear. Lo argues that fear is commonly induced by the unknown, and in this case, questions such as "who and what we owed, what our assets were worth, and how bad things really were", arose. Banks also knew that by marking-to-market, the reality of their positions would be disastrous, it would be declaring bankruptcy. So, they buried their heads in the sand, and "chose to hold on to their assets, thinking either that they were worth more than the market thought or that they would come back" (Reavis, C., 2009). See appendix 2

[10] Professor of Finance, MIT Sloan School of Management; Director, MIT Laboratory of Financial Engineering

6.5.1 Corporate governance

In the UK corporate governance "stresses the importance of internal controls as well as the role of financial reporting and accountability. It focuses on the market-based process of self-regulation and thus, uses the "comply or complain" philosophy. In the U.S.A. the approach is the opposite, in that firms must abide by external regulation (Watson, D. and Head, A., 2013).

Since the high-profile collapse of Enron and World-Com, corporate governance has taken on a very significant role. The Sarbanes-Oxley Act, 2002 also known as 'SOX', had far-reaching legislation and mandated the overhauling of several financial systems including reporting standards. "The Act also created an overseer for all auditors (the Public Company Accounting Oversight Board), established auditor independence to limit conflict of interest, and restricted auditing companies from providing consulting services to their audit clients …" SOX was upheld by the Corporate and Criminal Fraud Act and the Corporate Fraud Accountability Act. This meant that severe criminal penalties would be unleashed on perpetrators (Watson, D. and Head, A., 2013).

SOX has had its fair number of detractors, who have argued that it has "eroded America's international competitive advantage. They say investment risk taken by individual investors diversifying their investments was more efficient than reducing risk by companies spending large sums of money and time on SOX compliance. (Watson, D. and Head, A., 2013).

In 2010, in the aftermath of the financial crisis, former President Obama signed in the Dodd- Frank Wall Street Reform and Consumer Protection (2010). At the time of writing states Watson and Head (2013), "39 companies (including Hewlett Packard) have had their executive pay packages rejected by shareholders"

Reavis (2009) cites Lo as stating that, the single most important implication of the financial crisis was corporate governance. He describes how several corporations' assessment and management of their risk exposures was performed abysmally. Some of the most sophisticated companies reported tens of billions of dollars in losses in a single quarter. A very pertinent question put by Lo was, "How do you lose $40 billion in a quarter and then argue that you've properly assessed your risk exposure? I don't think it's credible to say it was just bad luck." It is reported that companies had tried to explain away

2008 as a 'black swan"[11]. Lo however, does not buy into this concept and argues that if that is the case then "someone should take responsibility for creating the oil slick that seems to have tarred the entire flock." Lo adds, "[T]he current crisis is a major wake-up call that we need to change corporate governance to be more risk sensitive."[12]

6.6 Neoliberalism

According to Palley (2012), the market fundamentalist policy that has been in place now for over thirty years, is plagued by "economic weakness and contradiction" and has produced a bleak economic outlook in both the private sector and global economy. Debt saturation and low demand have become the order of the day. Such an environment is doomed to stagnation and the current policies of monetary expansion and fiscal policy are not the answer to sustainable growth with shared prosperity.

I would like to place emphasis on the concept of 'shared prosperity' as it is embedded in the bottom line of this thesis whereby I am trying to assess whether socio-economic benefits exist in the use of derivatives. Palley (2012) is of the opinion that shared prosperity is made and not found because when economic structures are combined with the right policies they will produce shared prosperity as happened in the generation after World War II. In a reversed scenario, exclusion and stagnation prevail, like in the Great Depression and more recently in the Great Recession.

The neoliberalist ideology which I have recently familiarised myself with has made me realise that over the past thirty plus years society has gradually been drawn into a life of materialism. The current culture of want over need has made us slaves to debt because our wants demand immediate satisfaction and cheap money is available everywhere. Palley (2012) very clearly explains the politics and its social ramifications.

As Palley (2012) puts it, a defective U.S. macro-economic paradigm that is rooted in neoliberalism produced the financial crisis of 2008. It was an intellectual paradigm with flaws contained in the growth model and which was relied upon after 1980. Firstly, debt

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[11] A black swan is an event or occurrence that deviates beyond what is normally expected of a situation and is extremely difficult to predict. **Black swan events** are typically random and unexpected.

[12] Andrew W. Lo, "Understanding Our Blind Spots," *The Wall Street Journal*, March 23, 2009

and asset price inflation were adopted to “drive demand instead of wage growth linked to productivity growth.” The other flaw was “the model of engagement with the global economy which created a triple economic haemorrhage of spending on imports, losses in manufacturing jobs and the off-shoring of investments”. This four-headed monster literally cannibalised the U.S. economy’s income and demand-generating process. This process had been a New Deal creation, after WWII (Palley, 2012).

Palley (2012: 10) explains neoliberalism as embracing both a political philosophy and an economic theory. The term “liberalism” is connected to 19th century economic liberalism in Manchester, England. The Manchester system signified *laissez-faire* economics in association with free-trade. Modern neo-liberalism has a European and American version. Europe is associated with the Austrian economists, Friedrich von Hayek and Ludwig von Mises, both having had a profound influence on Prime Minister Margaret Thatcher. They saw the economy as “historical and indeterministic” and said that “markets are essential but imperfect”. On the other side of the Atlantic, it was the Chicago School of economics whose exponents were Milton Friedman and George Stigler. Their neoliberal mantra was that “the economy is deterministic and well described by the mathematical formulations of neoclassical economics”. This idea mutated to market fundamentalism.

Palley (2012: 40) remorselessly accuses neoliberal economic policies of destroying the “stable and virtuous-circle growth model based on full employment and tied to productivity growth. Palley (2012) describes how the existing growth model is one of rising debt and asset price inflation. Business cycles since 1980 show successively higher debt-to-income ratios at the end of expansions. Asset price inflations are what spur the growth of aggregate demand, and the economy has become reliant on this.

After 1980, the new growth ideology “involved squeezing worker incomes, squeezing household saving rates, raising debt levels, producing persistent asset price inflation that exceeded CPI inflation, and a reliance on ongoing depressed nominal interest rates.” This became economically unfeasible with eventual constraints imposed by debt ceilings resulting in saving rates at zero, inflating asset prices to bubble levels and a collapse of the nominal interest rate (Palley, 2012: 43).

I now realise and support the view that it is a fundamentally unsustainable paradigm which as Palley (2012) writes, has endured longer than expected. The reason for this

was because of its potential to raise debt limits and depress saving rates while simultaneously hiking asset prices to inconceivable levels; and this was what financial innovation and deregulation were significant for (Palley, 2012:43). So, it is against this backdrop that one is able to see how derivatives benefitted the few at the expense of the rest.

As Palley (2012) argues, it was not financial innovation or deregulation that were the cause of the Great Recession, but the fact that the neoliberal paradigm was doomed to failure because of its internal contradictions. “Financial innovation and deregulation kept the model going longer”. There were other manifestations to this flawed model: one of them being the goods trade deficit, which reached a record level of 6.4 per cent of GDP in 2006. Other global economic engagements involved leakages out of the economy in the form of spending on imports by household income and borrowings which in turn provided incomes off-shore rather than in the country. This practice had adverse effects on jobs and incomes at home. Off-shore outsourcing reduced the number of high-paying manufacturing jobs which cut into household earnings. Finally, there were new off-shore investments incentivised by low foreign wages and foreign subsidies. This all resulted in reduced domestic investment which had a negative effect on the “capital goods sector and employment therein” (Palley, 2012).

7 Conclusion

I have come to the conclusion that financialisation of the global economy has widened the gap between the rich and the poor. It has led to corporate world actors having easy access to the offices of those in government departments dealing with monetary and fiscal policy. This became clearly evident in the aftermath of the global financial meltdown and the resultant bail outs. We have also witnessed how Wall Street CEOs became public officers the Department of Treasury, e.g. Henry Paulson. Crony capitalism has enabled the enactment of legislation to the benefit of large corporations whose executive management reap astronomical financial rewards.

Neoliberal policies have made it essential for everyone to be beholden to the banks through privatisation policies. A middle-class no longer exists because everyone is reliant on borrowing to meet their *every need*. This has resulted in everyone having to manage their risk exposures. However, derivatives as a risk management tools are too complicated and expensive for the ordinary man on the street. The big players are able to use hedging and speculation techniques to their advantage and gain huge profits at the

same time, however these profits do not translate into shared prosperity. With what little knowledge I have of Adam Smith's philosophy of the "invisible hand", my interpretation leads me to state that neoliberal politics has prevented such a process from happening.

It is important however, to acknowledge that financial crises are not uncommon. They occur randomly in various locations around the world. As each crisis arrives, policy makers express ritual shock and take the necessary steps in patching the wounds. But, when everything is calm again, instead of shifting the paradigm, participants pledge to hold firm the next time (Nanto, 2009).

Barberis (2011) states, and I agree, that proposals for financial reform have mostly been aimed at institutional failures. I also support his suggestion that psychological factors were central to the crisis and therefore sees the importance of thinking about reforms that can address both the institutional and psychological failures. In short, the challenge would be to design a financial system that could mute the impact of irrational thinking and prevent it from adversely affecting the real economy in the way that it may recently have done.

Rational choice is included in behavioural finance which is a subject I am drawn to with regards to the 2007-2009 crisis and other areas of political economy. People have been wondering why it happened and many have concluded that besides derivatives being a big culprit, greed and fear played a part too. What is the way forward? Further research and dialogue between the creators of regulations and those that supervise it is necessary.

Yes, derivatives morphed into complex financial instruments, but their handlers were not ready and educated enough to deal with them. Greed and short-term thinking did indeed kick in, but technology has taken the world by storm and indeed it has created new and unexpected dynamics, not only in finance but in all forms of social media. None of us are given time to lull over a new thought, a new algorithm, a rebellion, a tragedy. We are expected to act immediately, how we react is then scrutinised unscrupulously afterwards and most often players are either demonised or glorified for their actions depending on whose side one is. I believe that the Great Recession was a rude awakening to everyone. Civil society needs to unite in order to make a difference. At the moment there are too many isolated groups. They all have good intentions for the environment and society but are acting singularly.

In my opinion, the time for a shift in realities is now. Populism has gained a foot hold because elitism exists globally and money has been power at the expense of everyone and everything. It is natural for humans to seek familiarity in times of need, and unfortunately the world as we know it has been divided by nationality and skin colour. We all feel exploited. Social media has been the answer to global connectivity, but it needs to be used as tool for a better way of life for all. Who or what will rise out of the ashes? Is that what we are all waiting for?

Education is a very important supporting actor and there is a very real gap in the new financial democracy. The post-modern era pre-supposes financially literate citizens, and this undoubtedly presents a challenge for education systems. Financial literacy, has become a crucial form of literacy and will evidently have to be incorporated as an addition to linguistic, mathematical and computer literacy (Mraović, 2011).

We have come this far and will continue to be innovative no matter; therefore, we are compelled to implement more socio-economic benefits from the use of derivatives by upgrading our educational institutions and allowing everyone to participate.

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The Ascent of Money: A Financial History of the World by Niall Ferguson
https://www.youtube.com/watch?v=fsrtB5lp60s

Inside the Meltdown | Behind the Big Short
https://www.youtube.com/watch?v=0yZ5mjbB11I

BBC Masters of Money Karl Marx HD
https://www.youtube.com/watch?v=IyrhoHtSkzg

Four Horsemen
https://www.youtube.com/watch?v=5fbvquHSPJU

Rise of the Rothschilds: The World's Richest Family
https://www.youtube.com/watch?v=6sM3KOYPL_A

Niccolo Machiavelli - BBC Documentary
https://www.youtube.com/watch?v=wsMs-DuGy1o

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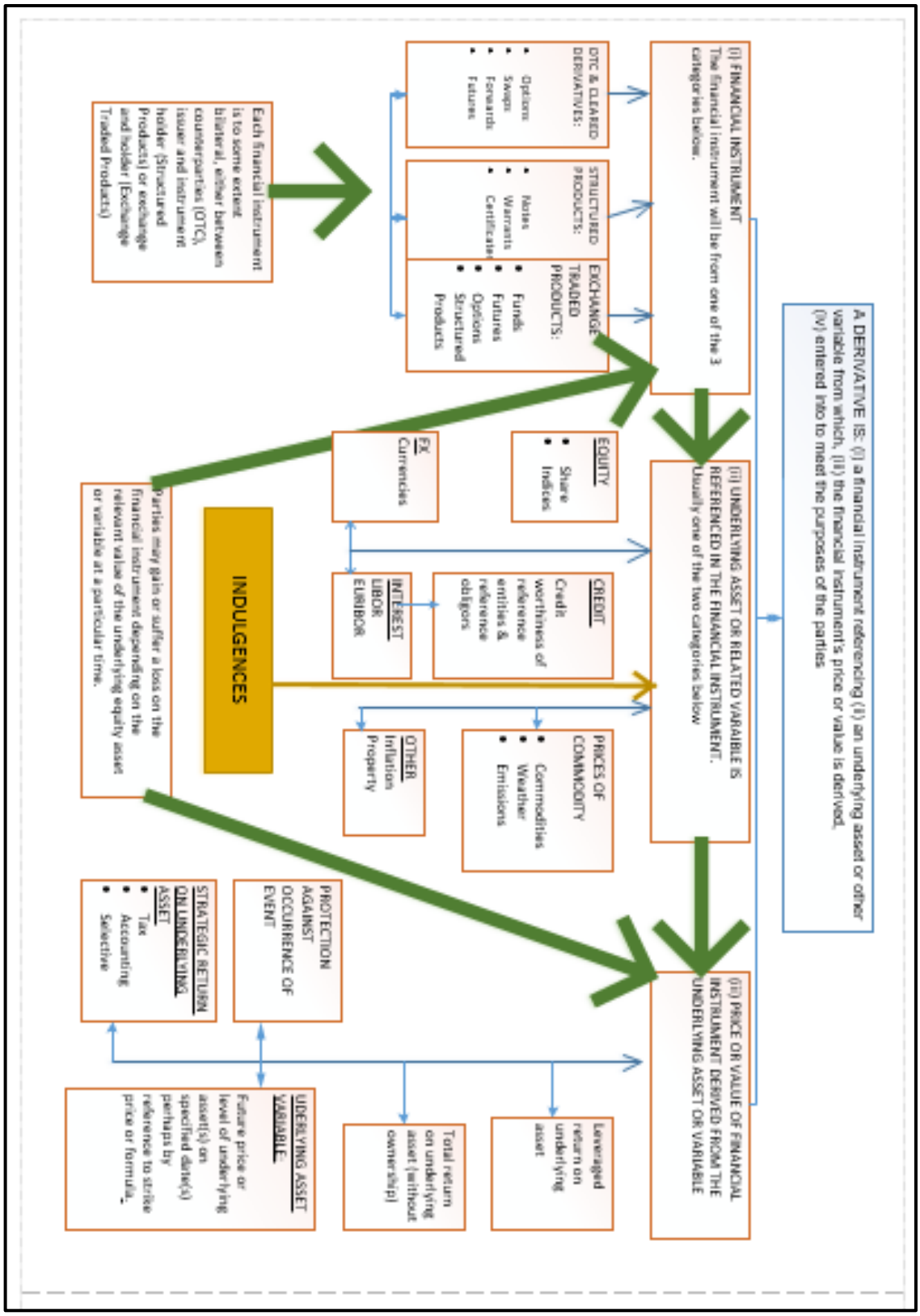
https://www.youtube.com/watch?v=q_RVG2qBB_U

Movies

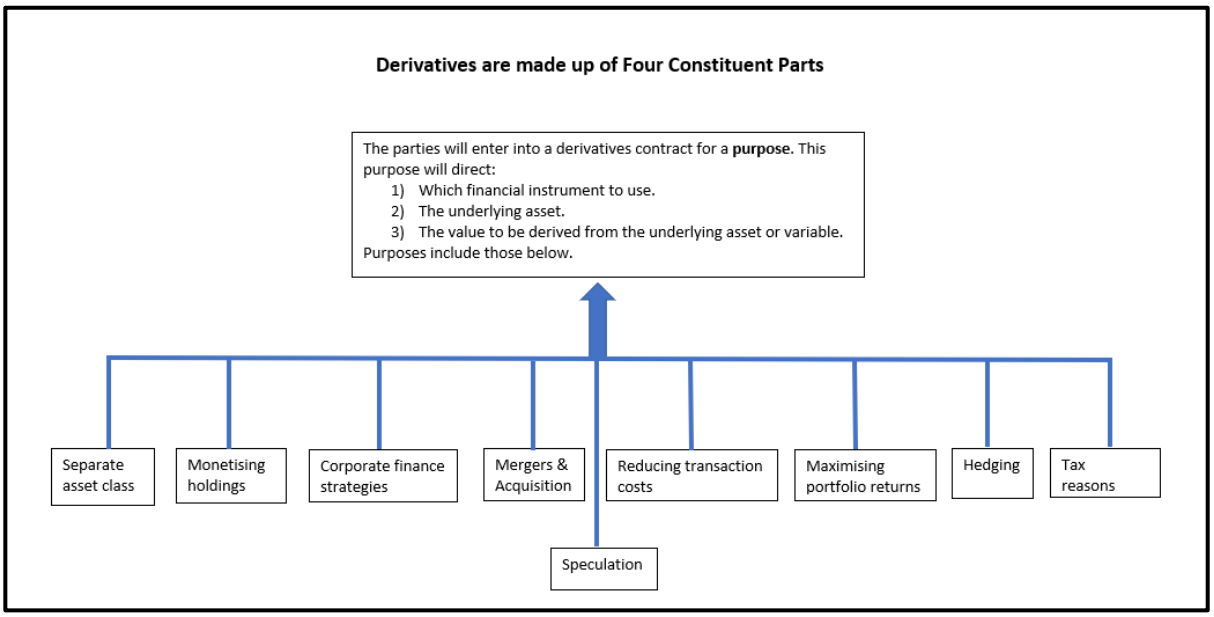
The Big Short
Wall Street
The Wolf of Wall Street

An Illustrated ISDA (2014) Definition of Derivation -1



Source: Parker & Parker (2014), Bayer-Brown, YouTube video

An Illustrated ISDA (2014) Definition of Derivation -2



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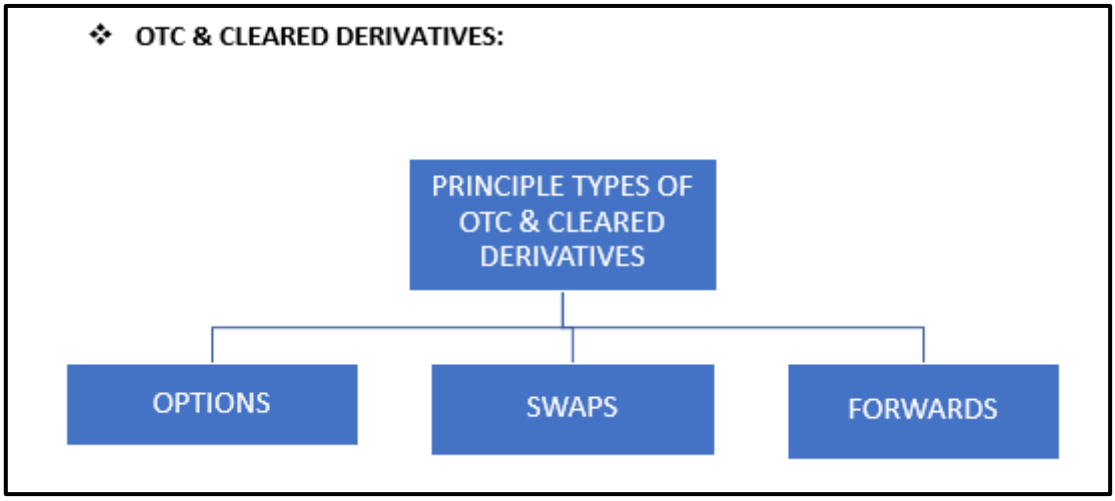
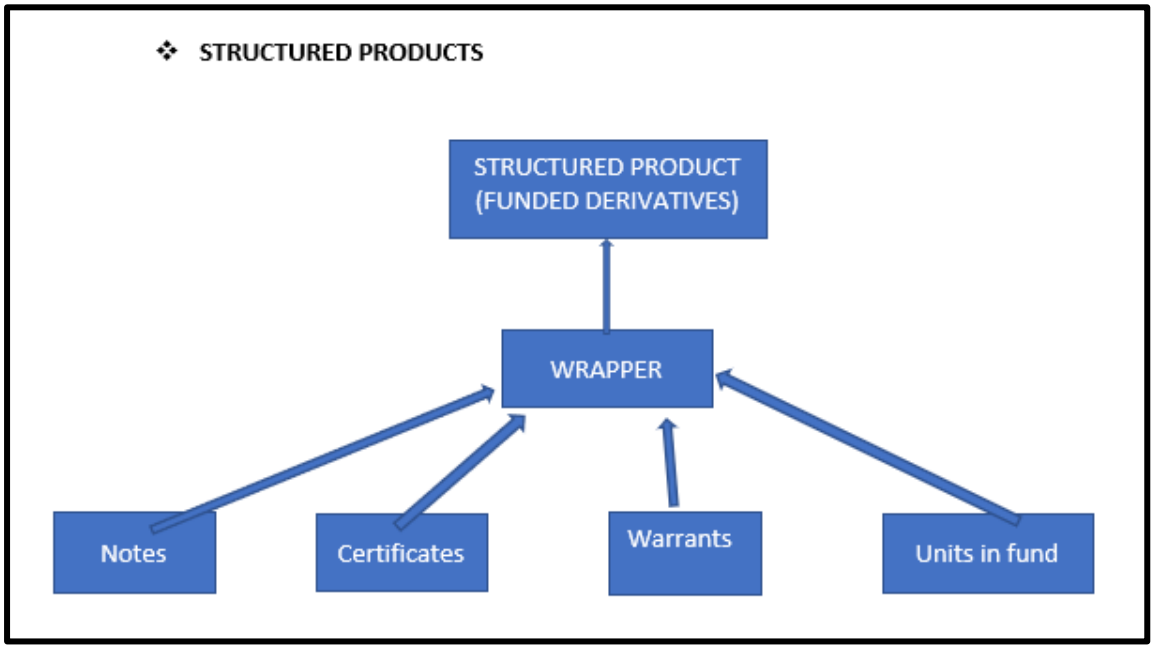


Source: Parker & Parker (2014), Bayer-Brown, YouTube video

An Illustrated ISDA (2014) Definition of Derivation -3



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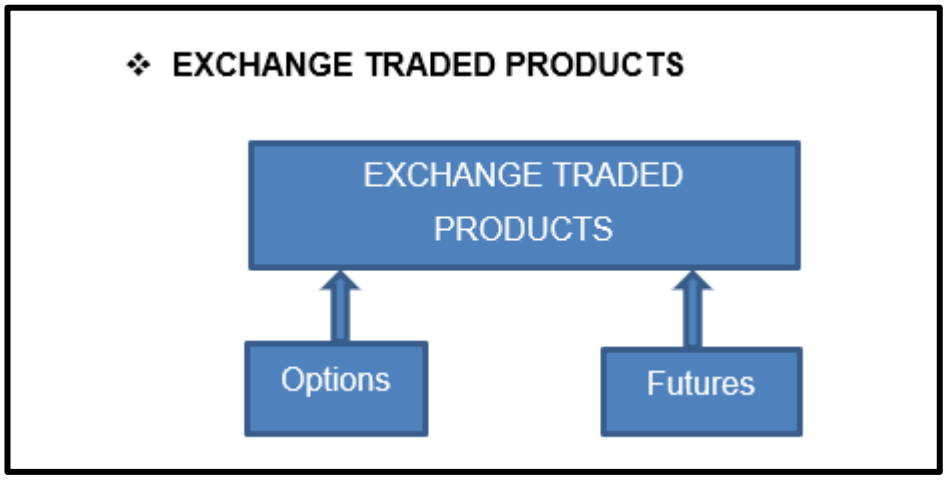
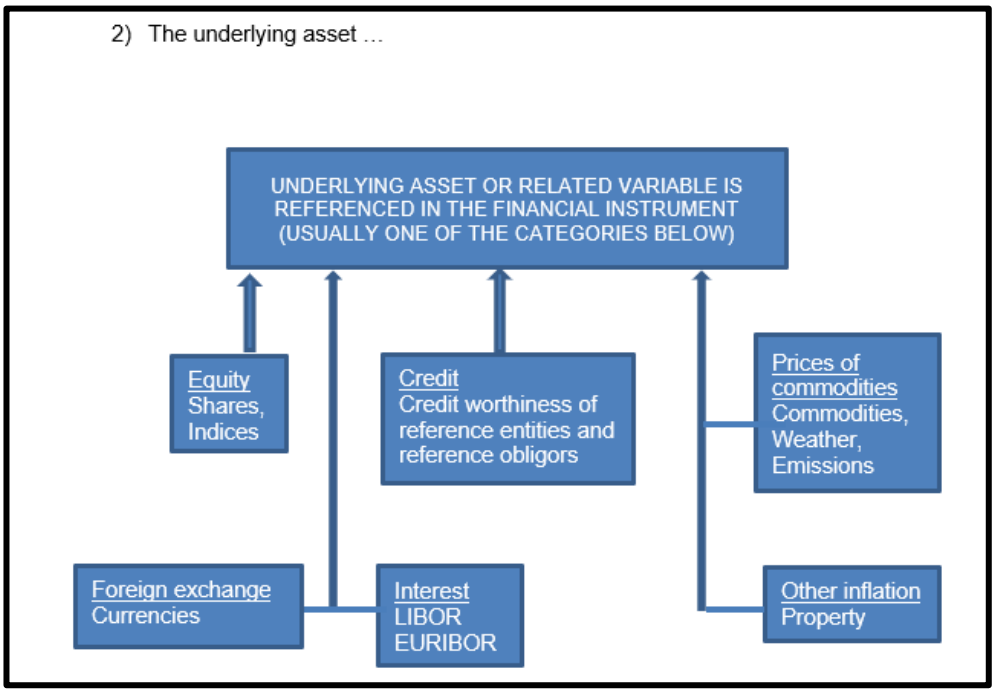
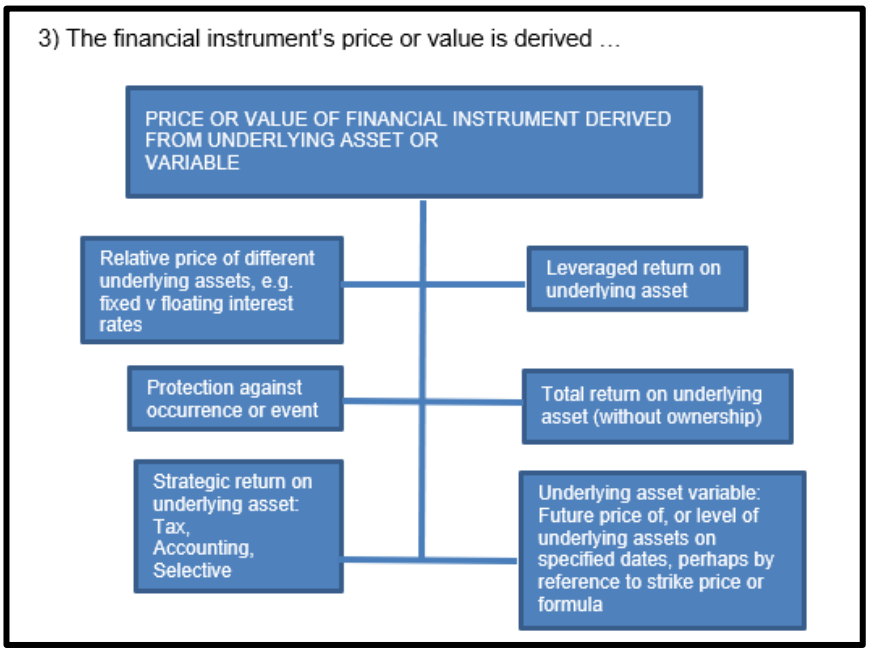


Source: Parker & Parker (2014), Bayer-Brown, YouTube video

An Illustrated ISDA (2014) Definition of Derivation -4



Source: Parker & Parker (2014), Bayer-Brown, YouTube video



Source: Parker & Parker (2014), Bayer-Brown, YouTube vide

Fear & Greed Index

(CNNMoney, 2018)

Breaking down 'Fear and Greed Index'

”The fear and greed index is a contrarian index of sorts, which is based on the premise that excessive fear can result in stocks trading well below their intrinsic values, while unbridled greed can result in stocks being bid up far above what they should be worth. According to some academics, greed, like love, has the power to affect our brains in a way that coerces us to put aside common sense and self-control and thus provoke change. While there is no generally accepted research on biochemistry of greed, no one can deny that when it comes to humans and money, fear and greed can be powerful motives” (Investopedia, 2018)

Fear and Greed Index as a Research Tool

”The fear and greed index can be seen as an indicator of a potential turn in equity markets. For example, the index sank to a low of 12 on Sept. 17, 2008, when the S&P 500 fell to a three-year low in the aftermath of the Lehman Brothers bankruptcy and the near-demise of insurance giant AIG. By contrast, it traded over 90 in September 2012 as global equities rallied following the Federal Reserve's third round of quantitative easing (QE3)” (Investopedia, 2018)

“Skeptics downplay the fear and greed index as a legitimate investment research tool, seeing it more as a barometer for the market-timing crowd. However, there is a strong case to be made for its merit. Many investors are emotional and reactionary, and fear and greed are heavy hitters in that arena” (Investopedia, 2018)

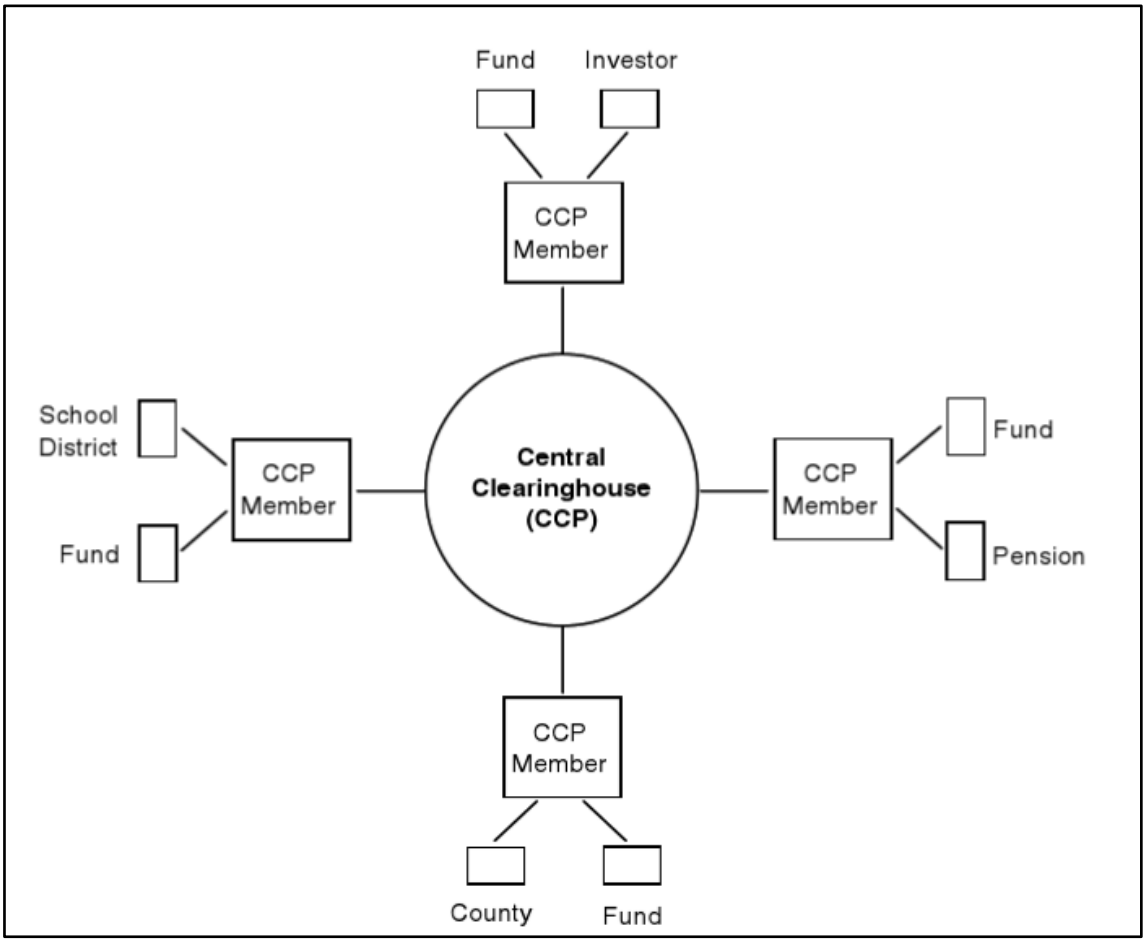
Remarks by Chairman Alan Greenspan at the annual dinner and Francis Boyer Lecture of the American Enterprise Institute for Public Policy Research, Washington DC, December 5, 1996.

The Challenge of Central Banking in a Democratic Society

Excerpt (Irrational Exuberance)

Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when *irrational exuberance* has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? And how do we factor that assessment into monetary policy? We as central bankers need not be concerned if a collapsing financial asset bubble does not threaten to impair the real economy, its production, jobs, and price stability. Indeed, the sharp stock market break of 1987 had few negative consequences for the economy. But we should not underestimate or become complacent about the complexity of the interactions of asset markets and the economy. Thus, evaluating shifts in balance sheets generally, and in asset prices particularly, must be an integral part of the development of monetary policy (Federalreserve.gov, 1996)

The Futures Market Structure



Source: Peery, G. F. 2012: 12. *The Post-Reform Guide to Derivatives and Futures*

"One critically important component part of the futures market stands in the middle of the entire market: the central clearinghouse. The central clearinghouse, or CCP, requires that only financially fit and risk-monitoring members transact directly with the CCP, and act as a buffer against risk-taking market participants, such as those depicted in in the diagram above"

Collateral Debt Obligation

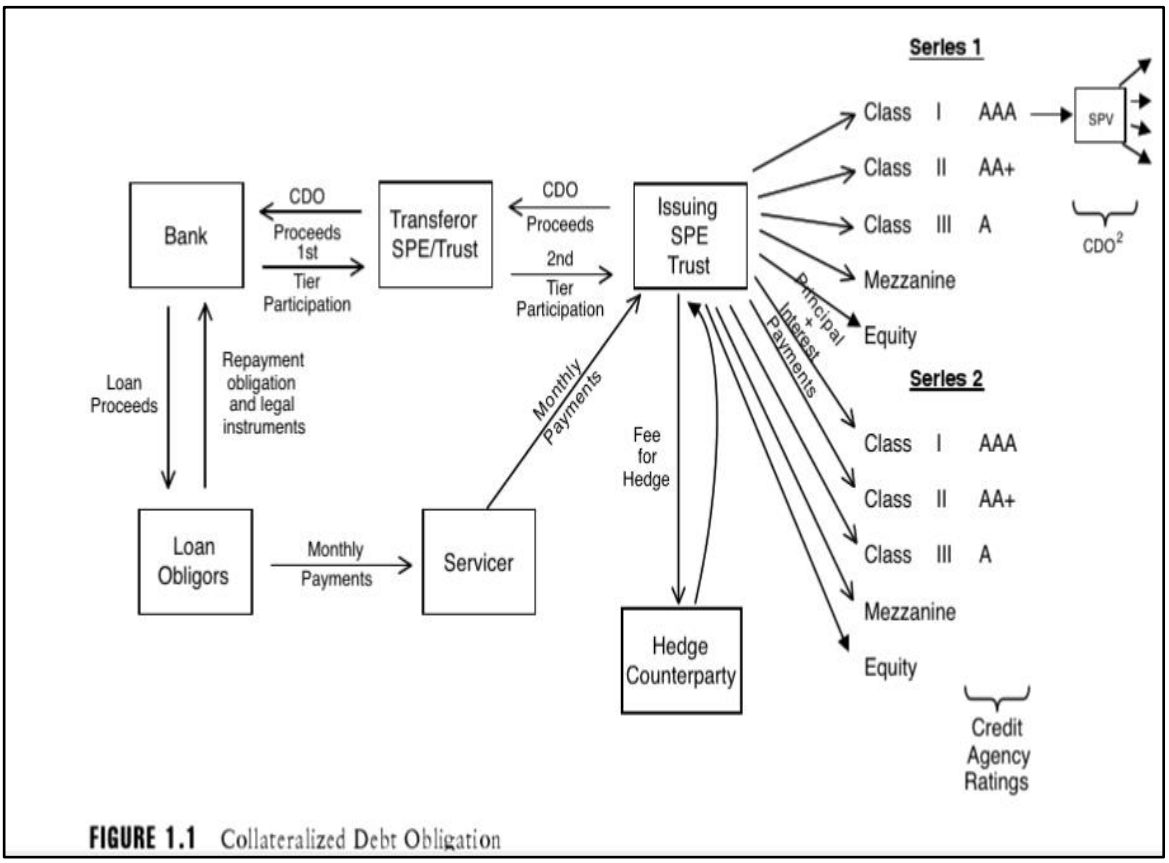


FIGURE 1.1 Collateralized Debt Obligation

Source: Peery, G.F. 2012: 24. *The Post-Reform Guide to Derivatives and Futures*

"The design and structure of the CDO are elegant and have evolved over time in the class of transactions that are labelled "securitization." Essentially, the design converts regular cash flows into securities (bonds), which are issued to investors, and the proceeds from those bond issuances are used to fund the assets (commercial or residential mortgages), which produce the cash flows that are used for repaying the issued bonds."

Swaps -1

Example 10.1

Two banks that are parties to a swap deal. Bank Exotica agrees to pay interest to Bank Halifax at the rate of 6.40 percent per annum on a principal of $2,500,000. In return, the counterparty agrees to pay Bank Exotica an amount that is computed on the same principal but that is based on the LIBOR prevailing at the outset of the payment period. This is a fixed–floating swap. We will assume that interest is payable at the end of every six months for a period of two years.

Assume that the observed values of LIBOR over a two-year horizon are as depicted in Table 10.1.

Table 10.1
Six-Month LIBOR as Observed at Six-Month Intervals

Time (Months)	LIBOR (per Annum) (%)
0	6.20
6	6.55
12	6.75
18	6.10

We will assume that the LIBOR used for computing the interest payable for a period will be the value observed at the start of the period, although the interest per se is payable at the end of the period. This is the common practice in financial markets and is referred to as a system of *determined in advance and paid in arrears*. Rarely are we likely to observe a case of *determined in arrears and paid in arrears*. The second method entails payment based on the LIBOR prevailing at the end of the period for which the interest is due.

Source: Parameswaran, S. 2012. *Fundamentals of Financial Instruments: An Introduction to Stocks, Bonds, Foreign Exchange, and Derivatives*

Swaps-2

The periodic interest payable by Bank Exotica is

$$\$2,500,000 \times 0.064 \times 0.5 = \$80,000.$$

This amount will be invariant for the life of the swap for two reasons. First, the bank is paying interest based on a fixed rate. Second, we are assuming that every six-month period corresponds to exactly one-half of a year. The gap between successive interest-payment dates may vary and depends on the day-count convention that is assumed.

The periodic interest that is payable by Bank Halifax will vary because the benchmark rate is variable. The interest payable by the bank for the first period is

$$\$2,500,000 \times 0.0620 \times 0.50 = \$77,500.$$

The net transfer at the end of the first six-month period is a cash flow of $2,500 from Bank Exotica to Bank Halifax.

The amounts payable by the two banks and the net payment at the end of every period are given in Table 10.2.

Table 10.2
Amounts Payable by the Two Counterparties

Time (Months)	Payment to Be Made by Bank Exotica ($)	Payment to Be Made by Bank Halifax ($)	Net Payment (to be made by Bank Exotica) ($)
6	80,000	77,500	2,500
12	80,000	81,875	(1,875)
18	80,000	84,375	(4,375)
24	80,000	76,250	3,750

Consider the last column of Table 10.2. It describes the net payment to be made or received by Bank Exotica. Positive amounts indicate that Bank Exotica will experience a *cash outflow*: what it owes is more than what it is owed. Amounts in parentheses indicate a net *cash inflow*: what the bank owes is less than what is owed to it.

Source: Parameswaran, S. 2012. *Fundamentals of Financial Instruments: An Introduction to Stocks, Bonds, Foreign Exchange, and Derivatives*

Options: Longs/shorts – Puts/Calls

A short-selling strategy can be used if one believes that the price of the underlying asset will decrease in the future and a profit can be made from this decline. An example of a short position would be when a company trades, i.e. at $100 per share and a trader believes there will be a price decline over the next six months. The trader short-sells 100 shares of the company and the transaction is initiated. The trader sees $10,000 cash posted in their account and a negative position in the company. Since the cash received is part of an open trade, it cannot be withdrawn and typically it cannot be used to borrow the shares for six months, the short-seller agrees to pay four per cent interest (annually). Six months later the shares are priced at $75 per share. The account appears as follows:

Short sale proceeds	= $10,000
Short position in Company	= $7,500
Margin interest due	= $200 [(4%/12) *6 months*$10,000]

At this point, the trader purchases 100 shares at market price and returns them to the broker. The trade is complete.

Profit	= $10,000 - $7,500 - $200
	= $2,300

In an opposing situation such as a price-incline, the trader would owe money as well as interest.

Share price incline is $110

Trader to pay $11,000, that is ($110*100 shares) for share buy back

Loss	**= $1,000**

As an extension to this losing short position, a trader may be required or asked to put up additional capital to cover the loss. The loss is not permitted to mount indefinitely. Being asked to outlay more capital to cover losses on a position is a "*margin call*".

This leads us to the next explanation which is that of the *long*, or long position.

Long (or Long Position) – A long position means purchasing a security such as a stock, commodity or currency with expectations that the asset will rise in value. In the context of options, long is the buying of an options contract. An investor that expects an asset's price to fall will go long on a put option, and an investor that hopes to benefit from an upward price movement will be long a "call option" (Investopedia, 2018).