

THE DEALING ROOM

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Tony Illis

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PREFACE

In the years 2007-2010 the world experienced the last banking crisis; the *Credit Crisis*. This crisis was not resulting from 'regular', traditional services of financial institutions such as the provision of savings products, lending or the mortgage business, but it came from the 'trading' business (in most financial institutions described as *Financial Markets*). To prevent something like this from happening again, there was a world-wide summit held in 2009: the G20 Pittsburgh Summit, also known as *The G-20 Summit on Financial Markets and the World Economy*. In that summit the causes of the credit crisis were evaluated and several regulations were agreed upon to protect the financial system(s) and its participants. The summit resulted in the staggering number of 16 world-wide regulations that came into effect between 2010 and 2020. But even all these new regulations together turned out not to be a 100% failsafe against banks defaulting and potentially endangering the financial system, as could be witnessed with the 2023 defaults Silicon Valley Bank and Credit Suisse. So exactly how complex and dangerous are these financial markets?

In Financial Markets banks trade on behalf of customers and on their own account in (complex) financial products. Many books have been written in literature on how these financial products work and these descriptions are often in a Wikipedia-style manner: be it how the owner (buyer) of the financial product earns or loses money on the product in question when the markets move, plus what the risks are. This book on the other hand has a completely different approach.

The Dealing Room is the first and only book that provides insight into how financial institutions (banks, hedge funds) make money trading complex financial products. It is therefore exposed from the point of view of the *trader*, not of the investor to whom or for whom the product has been sold or bought. The trader continuously buys and sells financial products and in both cases the trader earns money (commission, spread, scalp, etc.). In this book I will discuss how financial institutions make a profit by trading these financial products.

I started my career in 1996 as an equity derivatives trader at hedge fund and marketmaking company IMC (International Marketmaker Combination). After 5 years, I became head of the Equity Derivatives desk of RDT, a subsidiary of Fortis Bank that traded equity derivatives on behalf of Fortis bank. In 2003 I started a career in consulting and my former competitors became my clients when I started managing large projects for them. This varied from the (interim) management of departments, the marketing of new products, the implementation of trading systems and risk management systems, and the optimization of processes. Because of this I know the Dutch financial industry inside and out and I have become an expert in how these organizations work and how they earn their money.

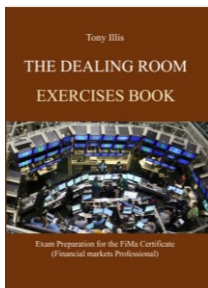
This book explains to you as a reader what the bank's trading strategies are, discusses all the components that make up the P&L (profit & loss), and explains how financial institutions process these transactions within the organization (trade processing, risk management, etc.). This book thus provides insight into a world that is normally a black box for outsiders. This is a status quo

that the financial world likes to maintain, because the less insight into what is happening within trading organizations, the less concrete the supervision can be performed by supervisors and the less assertive the clients of these institutions will be. After all, they don't understand most products anyway. With this book I try to change that and, although the subject matter is very complex, I will try to explain in the simplest possible way how financial institutions deal with these products.

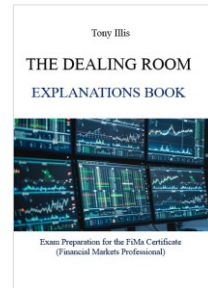
The structure of this book is an evolution from simple to complex. The first chapter is an introductory chapter covering most of the core concepts and jargon of Financial Markets. It discusses the different markets, the different parties within the markets and their roles, and the different asset classes. Then I discuss the organizational structure of an investment bank (wholesale or corporate bank); here I discuss all the divisions, the products they sell, the customer groups they have, and their way of doing business. After this helicopter view, the book zooms-in on the division that this book is mainly about which is Financial Markets: the Dealingroom. The chapters that follow explain the different asset classes and the products within that asset class, starting with equities (the simplest product), equity derivatives, interest products/derivatives and currency products/derivatives. For all these products it is discussed how they are processed within the trading organizations and how the bank makes its profit on these products. The book ends with the most important regulations and legislation that regulate the supervision of financial institutions in order to reflect the playing field within which Financial Markets organizations must operate.

This book also forms the basis for obtaining the *Financial Markets Professional* certification (FiMa). This certification is issued by the University of Amsterdam and is a globally recognized certification at postgraduate level for professionals working within Financial Markets. This international training course consists of 14 modules of 3 hours and is completed with an exam. Two additional books are available to prepare for the exam:

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I wish the reader lots of fun while demystifying the dealing room.

Tony Illis

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1. INTRODUCTION

An extensive terminology is used within Financial Markets. It is therefore essential to address this from the very beginning so that the use of the terminology is clear. It is also important to be able to fully understand the spirit of the times in the post-credit crisis era, as well as the many challenges that financial institutions face today. These largely determine their actions, the choice of products that they engage in and will develop in the future, and what decisions they will make in the future in terms of organizational structure and business model..

1.1 Changing Times

At the start of this decade, Idea Lab conducted research into which factors are responsible for the success of an organization or company. Their research found that the following five factors are the most determining factors in how successful a company is¹:



1.1.1 The Idea-factor

Sometimes a company can be built around a revolutionary idea, such as Philips with the light bulb or Ford with the car. More recent examples are, for example, Twitter, Kwik-Fit, or television show The Voice. If someone had asked me fifteen years ago if there would be a need on the part of people to share their ideas, opinions, thoughts or actions with strangers on the Internet, with a limitation of 140 characters, I would have dismissed that notion as ridiculous. However, Twitter has turned out to be a phenomenon that is used not only by famous artists, athletes and politicians, but also en masse by ordinary people like you and me. The Twitter company has since become a publicly traded company that once had a value of € 40 billion and currently has a value of €12 billion. The value of this company is purely a consequence of the originality and uniqueness of this medium the moment it went live.

However, a company does not necessarily have to be based on a unique idea. It can also be an evolution of an existing idea. Carglass once started out as a car window repair and replacement company, with one specialty: repairing car windows. This used to be done by garages and the activity already existed, but Carglass focused specifically on this one component and managed to turn it into a company with 50 branches in the Netherlands. Carglass has been owned by Belron since 2004, a global car window specialist that has more than 2,400 branches and 10,000

employees worldwide. This multinational is purely based on one specialization of a service that already existed for 100 years.

Existing companies can also conquer the market in which they operate with an (r)evolution of an existing own product. An example is the television program *The Voice*. Singing competition shows on TV have been around for years, think of programs in the 80s and 90s such as *Star Search* (US) and the *Soundmix Show* (NL), and *American Idol* in the 90s. These programs enjoyed enormous popularity, and after *American Idol* and all its global variants, a multitude of talent shows were invented and produced (*X-Factor*, *SoYouThinkYouCanDance*, *Got Talent*, etc.). In a time in which many different ideas and formats were conceived, Talpa succeeded in developing a format based on an existing concept (namely a vocal talent hunt) but with a few seemingly minute adjustments that have revived the format. The fact that the jury members sit with their backs to the candidate and therefore cannot be influenced by the appearance of someone; that it is only about the vote; that candidates have to "battle" each other in the second round a boxing ring; all of these things made *The Voice* a very exciting show that ultimately surpassed the success of all its predecessors. The comparison with Google, which was established when Yahoo and Altavista were already listed companies and which nevertheless took over the entire market, is justified. All in all, the "Idea factor" is one of the five determining factors for the success of a company.

1.1.2 The Capital-factor

Bill Gates said it in the 80s: "No future without funding". Without capital, a company has no future. There are countless examples of previously very successful multinationals that eventually went bankrupt because they had insufficient capital on the balance sheet at a certain point in time. A well-known recent example of this is the bankruptcy of Lehman Brothers. Lehman Brothers used a loophole in the US accounting law that allowed it to book a Repo transaction as a stock sale, provided that two and a half times as much collateral was included with the transaction than was customary in the market (this case will be discussed later in this book). The Repos chapter is extensively discussed and explained). The cause of the ultimate bankruptcy of Lehman Brothers lies in the fact that shares are sold at a Repo with the obligation to repurchase them at a later stage (the term is contractually determined). By selling the shares, cash-lean Lehman received the cash it needed to meet its current obligations. But when the terms of the Repo deals expired and Lehman was obliged to buy back the shares, they did not have the money to meet this obligation. And since confidence in the market was extremely low in September of 2008, Lehman was also unable to withdraw the money from the market, to borrow it or to raise it via other financial arrangements. As a result, Lehman Brothers had to file for bankruptcy in September 2008.

A comparable example is that of Fortis Bank. At the end of 2007, Fortis Bank, together with RBS and Banco Santander, decided to purchase the Dutch bank ABN AMRO. The acquisition price was set at € 72 billion, of which Fortis owed € 24 billion. Fortis was trying to raise this money in the course of 2008, but they did not succeed due to the emerging credit crisis. They were

therefore forced to sell their parts of ABN AMRO in the market. However, Fortis was unable to find a buyer. In October 2008, the Dutch state decided to buy the ABN AMRO parts of Fortis with the aim of making this into a state bank. In the weeks that follow it becomes clear that, despite the acquisition price of € 16.8 billion by the Dutch state, Fortis Bank still had liquidity problems, which ultimately resulted in the bankruptcy and takeover of all Dutch parts of Fortis Bank by the Dutch state and the takeover of the remaining parts including the branches of insurance by the Belgian and Luxembourg state.

However, it is not only banks that can go from being successful to bankruptcy. ERG, the parent company of video chain Videoland, had to file for bankruptcy in 2010. Videoland was the market leader in video stores, but did not keep up with the times and did not see the rise of (illegal) downloading of films, and the live stream possibilities of various video websites. In just a few years, Videoland's turnover was decimated and the parent company was left with more than 600 branches and the associated expenses including rent, energy costs and personnel costs, without the customers coming to rent DVDs.

1.1.3 The Timing-factor

Videoland was a large video rental chain, but was nothing compared to the American company Blockbuster in terms of size. The world's largest video store chain Blockbuster was founded in 1985 by David Cook. The company quickly gained a dominant market position in the video rental business in the United States and abroad, with more than 6,500 affiliates worldwide by the turn of the century. Blockbuster's primary business model was the rental of video tapes, later DVDs, and eventually video games.

Netflix was founded in 1997 by Reed Hastings, who came up with the idea of starting Netflix after he had to pay a \$40 fine to Blockbuster for a film brought back too late. The initial business model of Netflix was therefore the ability to rent DVDs indefinitely. In 2007, Netflix decided to change traditional video rental model (with physical DVDs) to deliver video on demand services. In the first instance with a pay per view business model, where after payment the film could be viewed on the Internet. Blockbuster had also started video on demand and had a natural advantage over Netflix, since it was the market leader, had much more capital, and had many more titles in the database. As a result, Netflix even approached Blockbuster on its own initiative and asked them if they were interested in taking over Netflix for the meager amount of 50 million dollars. Blockbuster declined this offer.

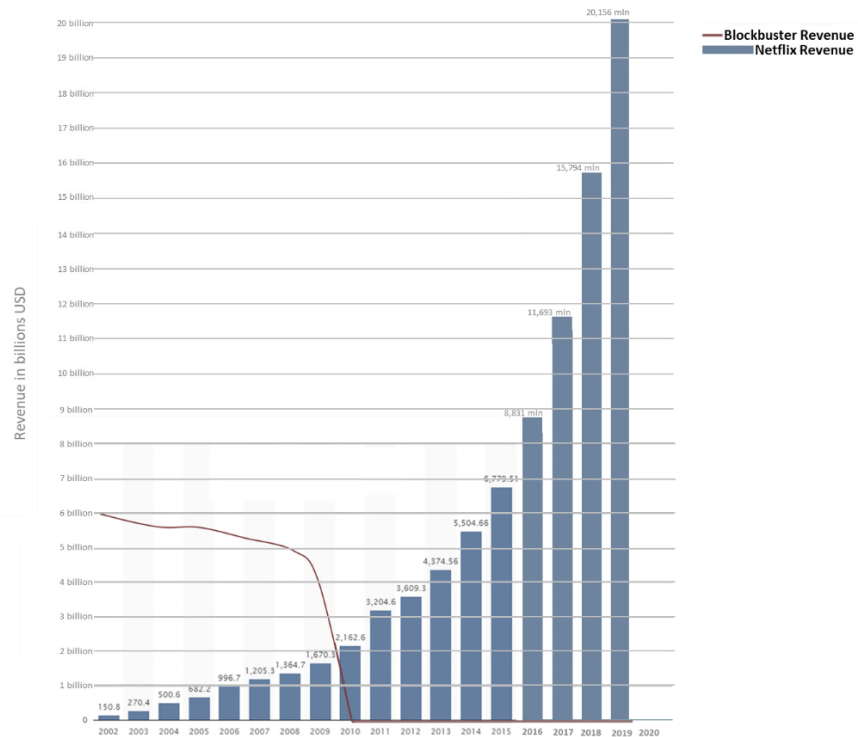
Just after the turn of the century, a proposal was made to the CEO of Blockbuster to switch completely to providing streaming services. The company's profitability had been deteriorating and the costs of operating the many branches could no longer be recovered. Carl Icahn, a corporate raider who had amassed a large part of the shares of Blockbuster with his company Icahn Enterprises, proposed to CEO Antioco to either sell Blockbuster to a large private equity party or to switch completely to streaming because competition from Internet streaming services was lurking.

Antioco had streaming investigated by its people, but the company came to the conclusion that the speed of broadband Internet and the availability of broadband internet in America was too slow to justify a change of the business model.

A few years later, Netflix did decide to switch completely to streaming as the spread of broadband Internet had made great leaps and the speed of broadband Internet had increased by a factor of eight in comparison to two years earlier. As a result, films no longer had to buffer during the films. This decision was also made to compete with Blockbuster, which had a much larger market share in video on demand.

Netflix also decided to switch to a new revenue model, namely the subscription model, where the customer pays a fixed subscription amount per month and can view all films in the database. This was a revolutionary new way of offering content and it caught on with the public that saw it as a alternative to illegally downloading movies from Torrent sites such as Napster, Kazaa, the Pirate Bay and Kickass Torrents.

The outcome is clear. Blockbuster went bankrupt in 2010, while Netflix is the world's largest provider of online entertainment, with a market value of € 117 billion, and 148 million subscribers worldwide (more than most countries in the world have as residents). See the graph below for the financial turnover trend for both Blockbuster and Netflix.²³



The success of Netflix lies purely in the aspect of “timing”. Blockbuster is investigating streaming when the technology is not yet ready for it, and Netflix is doing this two years later when the

technology is advanced enough. Blockbuster still thought in traditional revenue models (pay per product), while Netflix was already thinking in modern (er) revenue models, taking into account the competition from free (illegal) alternatives.

In the years 2015 to 2019 in particular, the turnover and the number of users of Netflix increased exponentially (by more than 30% per year). This coincides with the overall growth of social media and online viewing worldwide. It is of course very shocking that in 2007 Netflix was for sale for 50 million and ten years later in 2017 it was worth no less than 12 billion (in Jan-2020 even 20 billion). It is therefore evident that *timing* is an essential factor in the success and success of businesses.

1.1.4 The Personnel -factor

Henry Ford said it in the last century: "The best people make the best company". That is why for years the best companies in the world have been picking top talent from universities even before graduation. Two such companies are Goldman Sachs (banking) and Google (high-tech). Both companies compete with each other for top talent from top universities. It does not matter to both companies in which subjects the talents graduate, whether this is mathematics, statistics, physics, medicine or any other study; if the IQ is high and the creativity is high, then there is room at these companies. Furthermore, they do have a different approach to persuade applicants to choose them.

Goldman Sachs is the best-paying company in the world. Bloomberg⁴ launched an article on April 16th 2013 in which this had been calculated from the annual figures. It showed that the average salary for a Goldman Sachs employee was a whopping \$542,376 (then €475,000). In June 2019 this number had dropped to \$367.564 (€322.000) which is still an insane average salary⁵. In addition, they indicated that this amount is reduced by salaries of the secretaries, cleaners, canteen staff, and other support staff. Without these functions, the amount would be considerably higher. Future earnings like this are of course very attractive for a certain type of candidates, which means that Goldman Sachs International (GSI) receives more than 313,000 applicants per year. Only 9,700 employees are hired per year, a meager 3 percent. Fortune Magazine⁶, which has listed these numbers, states in their article of 9 February 2016 that it is virtually "impossible" to be hired at GSI ("rarer than receiving an acceptance letter from Harvard University"). Still, that doesn't stop thousands of applicants from trying.

Google, on the other hand, has a very different perspective on attracting talent. They do not want to compete on salary with parties such as Goldman, but try to attract talent based on other qualities. They focused very much on the philosophy of the company ("Do the right thing, don't be evil") and try to attract like-minded talent that can agree with the philosophy and objectives of Google. Google gives employees the opportunity to work 20% of their time (one day a week) on paid work on 'own' projects. The moment such a project is something that really benefits Google (think for example of Gmail that was invented in this way) then there is a significant bonus for the "inventor". Despite the fact that Google is in the middle bracket in terms of salary (on average \$ 141,000 a year), it still receives significantly more applications than Goldman,

approximately three million a year⁷. Of these, around 7,000 are hired annually, bringing the acceptance percentage to a measly 0.23%. One applicant for every 428 is offered a job.

Both philosophies (extremely high salary, or extraordinary benefits) ensure that both companies have the best people working for them and that both are at the top of their industry, mainly due to the Personnel factor.

1.1.5 The Leadership -factor

A strong leader can make a company very successful. There are plenty of examples of this: Bill Gates, Jeff Bezos, Mark Zuckerberg. Perhaps the best example is Steve Jobs. He turned Apple into a huge company, had to leave the company under pressure from the supervisory board, and was later, when the company was about to go under, brought in again to make Apple the largest company in the world⁸. The drive, creativity, and vision of a strong leader can make the difference between a mediocre and a successful business. Bad leadership can even cause companies to collapse. The opposite of the aforementioned characteristics, so no drive, no creativity, and no vision, has been the cause of the loss of market leadership of once leading companies such as the aforementioned Blockbuster. This also applied to companies like American Apparel (US) and Vroom and Dreesman (NL). Both did not anticipate the rise of online retailers like Ali Express. Nokia and Blackberry did not fully appreciate the potential development of the smartphone. Manfield, Schoenenreus and Taft Did not anticipate the success of Zalando. All these companies went bankrupt due to lack of foresight and adaptability. Good leadership is therefore essential .

1.1.6 Which is the Most Important Factor?

The question then arises: which of these five factors contribute most to the success of a company? Idea Lab's research shows this to be number 3: Timing.⁹

- Idea: 28%
- Capital: 14%
- Timing: 42%
- Personnel: 32%
- Leadership: 24%

As you've probably noticed, the percentages add up to 140% instead of 100%. This is because their algorithm found that things never “exclusively” lead to success, but are always correlated with each other. Of course, all factors are important, but for most successful companies, the time when they started, or when they changed businesses, is in most cases a crucial influence. That is why it is good to look at the current zeitgeist, and especially with a view to financial institutions and the business models of these companies. And then we see that financial institutions have come under quite a bit of fire since the credit crisis. Where in the past the banking profession was still considered an honorable profession, today it is synonymous with the image that traders had around them historically, that of fast guys, unreliable, only thinking

about their own profit, cowboys who use the money of the customer. take big risks. The credit crisis was caused by banks that took big risks with financial products (Repos), that sold worthless products as high-quality products (CDOs), and that, just after the credit crisis, turned out to be cheating with the benchmark interest rate on which all financial products and agreements based (LIBOR). This has not helped the image of bankers. The expertise of bankers was once looked up to, so their advice was never questioned. However, due to the credit crisis and the facts that have emerged about this, the untouchability of the bankers has disappeared and their know-how is openly questioned. Because how else could this crisis have arisen? There were also doubts about the sincerity of bankers, because was there not openly cheated by various large reputable financial institutions? There were also doubts about their sense of responsibility and that of the supervisors; because no one went to prison. This is also reflected in the trust that society has in banks. After the credit crisis, just under 40% of people indicated that they still had confidence in banks and bankers. It was only from 2016 that confidence slowly increased to 65% (in Jan-2020). Big names in the business world have even made statements that questioned the need for banks, such as Bill Gates who made the now famous statement in his 2015 Microsoft annual message "Banking is necessary. Banks are not. " This is a sentiment that has become increasingly true in recent years in areas that previously explicitly required banks. Consider, for example, the provision of loans; you used to go to the bank for this. The loan company now faces competition from private companies, pension funds, investment companies, and crowdfunding.

The mortgage business faces fierce competition from insurers and pension funds; they do not receive interest on the large amounts of capital they have with banks for years and in some cases even have to pay (negative) interest. By issuing mortgages, they suddenly get a solid return; and certainly in the Netherlands, due to stable house price developments and tighter regulations on the ratio between WOZ value and mortgage amount, issuing a mortgage loan has become a virtually risk-free exercise.

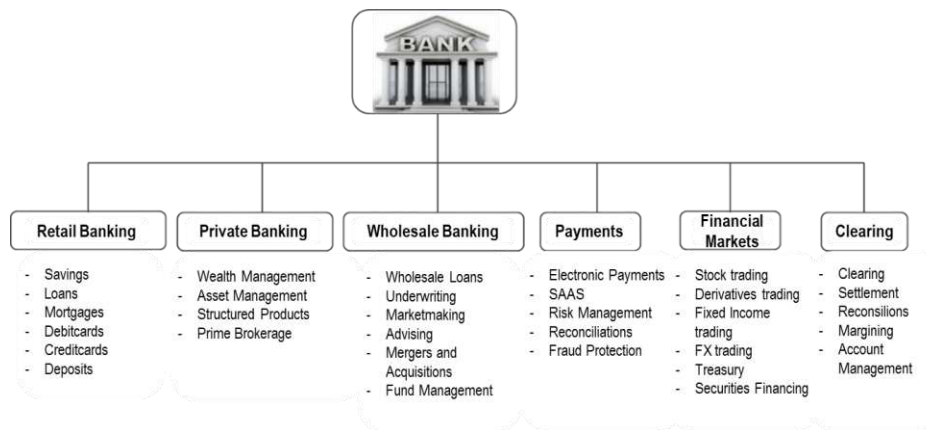
The exchange rate business (FX, foreign exchange) is now subject to competition due to the rise of crypto coins; think of Bitcoin, Ethereum and Ripple. These coins are not regulated (no supervision by supervisors), are not issued by central banks, transactions in these coins are checked locally for authenticity and completeness (no banks required), and are worth the same in every country in the world (since the most crypto coins are expressed in fractions of Bitcoin¹⁰). Banks are suffering from this in terms of business.

Even in areas where previously you were completely dependent on banks for the technological infrastructure required for this, fierce competition has emerged in recent years. Consider, for example, the payment company ("payments"). Some of these competing companies have been around for years, such as Amazon Payments and PayPal. Others have arisen from collaborations between multinationals hoping to introduce a new standard; think of ISIS Mobile Wallet, which is a collaboration between the telecom greats AT&T, Verizon and T-Mobile. In addition, various tech companies are knocking on their door; Apple with Apple Pay. Google with Android Pay. Alibaba with Alipay.com.



These companies are seen as formidable competitors to the current banks as these fintech companies have an important advantage over banks, namely they can offer the services for a much lower price. This benefit is due to the following reasons:

1. Fintech companies have less staff
2. Their employees are on average younger and therefore cheaper
3. They offer standard services that are often outsourced to low-wage countries
4. Physical location is unimportant to them as they are Internet-based



If you look at the typical banking business, it looks something like the above organigram. The question then arises as to which sectors of the banking sector are currently the most under attack due to increasing fintech competition. These are the following:

1. Competition for Retail Banking

- **Savings:** Many products are being offered by competitors. Consider the Icesave debacle; Icesave, a savings vehicle of the Icelandic Landsbanki, offered a savings rate in the Netherlands that was 1.25% higher than the highest rates offered by providers on the Dutch market. This attracted many savers away from the traditional large banks. Icesave went bankrupt in 2008.
- **Loans:** it is now possible to borrow money from a multitude of non-bank companies, which often only exist online. For example Geldonline.nl and similar websites. Because these companies do not have to comply with the regulations that banks do have to comply with (risk management aspects), these companies often care little for low credit ratings (In the Netherlands a negative BKR registration). They mainly serve two target groups: the bottom of the retail market (people who generally are unable to obtain a loan from a bank) and the contractor/freelance market (starting entrepreneurs who cannot obtain financing from a regular bank).

- Mortgages: due to the low interest rates, many institutions that depend on the return on their capital to be able to meet financial obligations have made the decision to offer mortgage loans. This includes insurance companies (Centraal Beheer) and pension funds (Philips Pensioenfond). Since these firms currently pay negative interest rates on capital above 1 million euros, they can offer these mortgages for a lower interest rate than banks, which has made them a direct competitor in this area.
- Credit Cards: In this area banks have been competing for years with Visa and American Express. In recent years additional competitors have been added. Think of the ANWB and De Bijenkorf in the Netherlands.

2. Competition for Private Banking

- Wealth Management: here, historically, banks already have competition from niche parties such as the small specialized asset management parties. Think in the Netherlands of Blackrock, Antaurus, and Van Lanschot. According to IEX.nl, there are currently more than 200 parties that offer asset management in the Netherlands.
- Asset Management: Pension Fund APG has been doing its own asset management for years. They no longer need a bank for this. The same applies to Royal Dutch Shell and an increasing number of multinationals. They provide the required knowledge themselves for this.

3. Competition for Payments

- Electronic payments: as stated earlier, the competition here is mainly from fintech companies, but also from purely payment-specialized companies such as Adyen and Secure // Trading.
- Fraud Protection: In this area banks are in competition with information security companies such as Cognosec and IBM Cyber Security.

4. Competition for Clearing

- All Clearing Activities: the clearing company of ABN AMRO (ABN AMRO Clearing Bank, the only Dutch clearing member) has a lot of competition from the "large" international clearing houses such as Euroclear, LCH Clearnet, Clearstream, EuroCCP and DTCC; but also clearinghouses established in the Netherlands such as ICE Clear (ICE).

The only sectors in which competition is not yet apparent are the Wholesale Banking sectors (the lending of large billion euro loans to multinationals, the listing of companies, the supervision

of mergers and acquisitions). Markets is another such sector (dealing in complex financial instruments for clients as well as for the Wholesale Banking domain. No competition from fintech companies or other financial institutions (such as pension funds or insurers) is expected in the coming years. There is currently little competition within (Financial) Markets, but there are various developments in the tech world that may make this possible in the future. In the Netherlands, competition mainly consists of De Giro, Binck and Ophen.

The combination of big data, artificial intelligence, and blockchain could in the future provide automated trading technology that allows fintech companies to compete with current algorithm-based trading (high frequency trading, also known as flash trading) currently done by banks and hedge funds. An indication that the major Dutch banks (and banks worldwide) are concerned about this is the fact that ABN AMRO has invested millions of Euros in a start-up fund to investigate the applications of big data, artificial intelligence and the blockchain. At the same time, ING Bank has joined technology startup R3, a joint venture of international banks (including Barclays, UBS, Goldman Sachs) that will jointly investigate how blockchain technology can be applied within the sector.

1.1.7 Conclusion

The financial landscape is extremely volatile. Banks must change, not only due to increased competition but also due to additional laws and regulations. This book focuses on one domain and that is Financial Markets. It explains how financial products work and how banks earn their money by trading these products. It discusses explains how the deals are structured, which parties are involved in the deals and the roles they play, what types of trading systems are used for which products, how the products are processed within the bank (trade processing, reconciliations), how products are assessed and assessed within the bank (risk management), and to which relevant laws and regulations banks are currently exposed to.

1.2 Terminology

An extensive terminology is used within Financial Markets. When writing a book like this, it is not possible to avoid this. This section briefly explains the most common definitions. Note that this is not an exhaustive list of all financial terms. For this I refer you to Investopedia.com, where you can find a total overview of the entire financial lexicon. This section only covers those concepts that will help you better understand the content of this book.

1.2.1 Market Types

The Financial Market (Financial Markets): this is a market where people and entities can trade financial products, securities, goods and other negotiable value items at low transaction costs and at prices that reflect supply and demand.¹¹

The Money Market (Money Markets): this is a market for short-term borrowing and lending of money, including trading in interest products with a term of one year or less.

The Capital Market (Capital Markets): this is a financial market for trading in long-term debts, interest products, and equity-backed securities.

The different markets have different products that are traded per market. The following are traded on the Financial Market: Shares; options, futures, forwards; swaps (interest, equity); leverage products (turbos, CFDs); and funds (ETFs, trackers). On the Money Market: treasury bills; commercial paper; certificates of deposit and repos. On the Capital Market: government bonds and corporate bonds.

1.2.2 Market Participants:

Investors:

There are different groups of investors. Individual investors are retail customers (<50K), preferred banking customers (50-500K), and private banking customers (> 500K) who invest their assets in securities, capital or money market products. Institutional investors are institutions whose activities give them the funds that must be invested¹². These activities mainly consist of insuring pensions and offering private investors opportunities to invest in accordance with a desired risk profile. Institutional investors include investment funds (such as Pimco), pension funds (such as APG), insurers (such as Delta Lloyd), governments (such as Municipalities), and charity funds (such as The Bill & Melinda Gates foundation). Brokers are intermediaries who enable trade between trading parties through advice or the provision of intermediary services. Professional investors trade either for customers or for their own account. Professional Trading Parties are Traders / Market Makers (e.g. IMC), Hedge Funds (e.g. Bridgewater), Speed Traders (e.g. Flow Traders), and Broker Dealers (e.g. Goldman Sachs International).

Exchanges:

An exchange is the place where companies can offer venture capital and investors have the opportunity to invest in it. Securities such as shares and bonds, as well as their derivatives (options, futures, turbos, trackers) can be traded. An MTF, a multilateral trading facility, is a trading platform that acts as a stock exchange but does not have a stock exchange license and is approved by the regulator. An example of a Dutch MTF was TOM (The Order Machine), an MTF founded by Optiver, IMC, ABN AMRO Clearing Bank, Binck bank and Nasdaq OMX. An OTF (Organized Trading Facility), also known as a dark pool, is a trading platform where the price is only communicated after the transaction, but not publicly published, such as an MTF. The advantage of this is that large parties can trade large blocks of shares with each other without any noticeable (up or down) price impact. An example of a darkpool is Baikal.

Custodians:

A custodian is an organization that securely preserves and protects securities on behalf of its clients¹³. This used to be physically done in a safe, but nowadays everything is automated. A

modern custodian, however, is more than a depository of securities. Reliably valuing the investment portfolios and reporting on this are becoming increasingly important.

Clearing houses:

A clearing institution (also known as a clearing member) contributes to the settlement of securities transactions that are carried out on a stock exchange. The clearing fulfills a buffer function for the traders, on the one hand, and the central counterparty, on the other, to mitigate settlement risks in particular (the risk that a party cannot meet its financial obligations and, for example, does not deliver the money or the securities). Examples of this are LCH Clearnet (Clearing house) and ABN AMRO Clearing bank (Clearing member). The clients of a Clearinghouse are the Clearing Members. The clients of the Clearing Members are the professional trading parties.

Central Securities Depositories:

A Central Securities Depository (CSD) or Central Securities Custody Institution (CEBI) is an institution that, mostly for a specific country, takes custody of securities with the aim of being able to automatically process transactions with those securities. In contrast to a custodian, a CSD will therefore not only hold securities but also handle the settlement of securities transactions between parties that hold an account with the CSD. When a CSD is not limited to a country but is active internationally, the abbreviation ICSD is used, where the "I" naturally refers to International¹⁴. Examples are SIX (CSD), Clearstream and Euroclear (ICSDs).

1.2.3 Trade terminology

There are different ways to do financial transactions. You can invest or trade (speculate). You can hedge. You can go long or short. Each of these ways has its own specific characteristics.

1.2.3.1 Investing versus Trading

Investing is a so-called buy and hold strategy (buy & hold). You buy something with the aim of later selling it for a better price. Investing is oriented towards the long(er) term and does not even have to be focused on price gains, but can also be focused on return on investment (return on investment). If you buy a random share for € 10.00 and the share pays out a dividend of € 0.50 each year, that is a return of 5% on an annual basis. This 5% return does not change as the price changes, whether the share goes to € 1.00 or to € 100.00; your one-time investment is made and always stays the same. As long as you hold the share (if the price falls below ten Euros) you do not suffer a loss and your return is positive (5% annually).

Trading employs a completely different approach. The short term applies here. Trading is buying and selling. You buy something with the aim of selling it immediately if you can make a profit. The margins are therefore small but the number of transactions is greater than with investing.

When trading, market parties speculate not only on a rising market but also on a falling market, as long as there is volatility in the market. Traders are by definition less risk averse than investors.

1.2.3.2 Hedging and Arbitrage

Hedging is the hedging of potential losses on financial instruments, possibly resulting from changes in market parameters (volatility in price movements, changing interest rates, other than expected dividend payments, etc.), through an investment in another (opposite) financial instrument. Hedging can be done by a bank for customers, but also for own book. Clients such as farmers who want to hedge against a disappointing harvest; suppliers of products to a foreign client who want to hedge against exchange rate fluctuations or airlines who want to hedge against a potential price increase of kerosene.

Similarly, pension funds may want to hedge themselves against lower dividend income on their share capital, as a result of which they would not achieve their coverage ratio. To hedge against these risks, they can purchase a product from the bank that hedges their existing position.

If the bank trades for its own account, then most banks hedge these trades to mitigate risk. For example, most banks in the Netherlands are so-called DeltaOne banks. DeltaOne (delta-1) refers to the phenomenon that the bank does not want to run a risk of losses as a result of changing prices of underlying values (shares, oil, gold, etc.). Later in this book the so-called Greeks will be addressed; these are parameters that reflect the sensitivity of certain products to changes in market conditions. For example, there are parameters that indicate the profit and loss (P&L) for changes in price (delta), time (thèta), interest (rho), volatility (vega), dividend (epsilon). Additionally, there are second-order derivatives such as gamma that indicates the change in delta if the underlying rates change.

It is important to note that, although Dutch banks have a business model that allows losses on their financial positions (due to changes in interest rates, volatility, dividend expectations, etc.), these losses will NOT occur as a result of changes in the underlying values. The delta (potential loss due to changes in the price of the underlying instruments) must be 100% hedged, hence the term Delta-1. This means that every trader is required to check his end-of-day delta position. This position is the result of all the financial instruments he has in his portfolio (shares, options, turbos, bonds). When the delta position is not zero, he must perform a net transaction to zero his delta position. (or close to zero, depending on the trader's mandate).

Arbitrage is closely related to hedging. It can arise in several ways. First of all, arbitrage is taking advantage of price differences in the same product in different markets. Euronext closes at the end of the trading day in Europe. The NYSE opens a few hours before Euronext closes. This means that small differences can occur between the stock exchanges of which one can take advantage. For example, on Euronext the Royal Dutch Shell share is € 20. The stock has \$ 22.11

on the NYSE. The exchange rate of the Euro-dollar is 1.00: 1.10. Conversely, the Shell share on the NYSE is therefore € 20.10. This creates the possibility to sell the shares on the NYSE for € 20.10 converted and to buy on Euronext for € 20.00 and thus earn a profit of ten cents per share. If, at the same time, the currency risk is hedged with a derivative, the profit is locked. This is arbitrage in its purest form. However, this is not the type of arbitrage that most major banks do in the Netherlands. Arbitrage at the major banks consists of creating a synthetic product by trading in derivatives (for example, a purchase), and hedging this product by doing an opposite trade in the actual product (for example, a sale). There must then be a profit between these two trades. This will be discussed in Chapter 2 in which we discuss shares. The crux lies in positioning opposing positions.

1.2.3.3 Long versus Short Positions

A long position is a situation in which the holder holds certain securities and therefore makes a profit if the price goes up. The opposite is a short position; it is created by selling securities without actually having them (they are usually borrowed). With a short position you make a profit if the price goes down. The tipping point is at the zero position.

Suppose you start with a zero position. When you buy 100 shares, then you are 100 shares long. When you decide to sell 50 of these shares: it called a "sell". Imagine, instead of selling 50 shares, selling 150: you go short, because you only owned 100 shares and now have to deliver 150 to your counterparty. So you are short, hence "going short." If you decide to buy 25 from your (now) 50 short position, this is called a "buy"; you still have a debt of 25 shares and you are therefore not in a long position. Imagine, instead of buying back 25 shares, buying 60. You then go from minus 50, plus 60 shares, to 10 long shares. The tipping point between long and short is therefore at the zero point. You then have a flat position.

1.2.3.4 Listed versus OTC

Shares are traded on the secondary market after the IPO. There are different types of markets. The best known is the stock exchange. After the IPO, a share receives a listing on one (or more) stock exchange (s) and the "listed" or "exchange-traded" trading takes place there. This trade is cleared by a clearing house. In addition to the listed trade, there is also the *over the counter* (OTC) trade. This is direct trade between counterparties without using the infrastructure of a stock exchange. The larger (potentially market-distorting) transactions take place in the OTC trade. Listed trading is less risky for both trading parties than OTC trading, since in listed trading the risk of a counterparty going bankrupt - and unable to meet its obligations - is mitigated by the Clearing House: in such a case it fulfills the obligations of the party that can no longer (partially or fully) fulfill its obligations.

1.2.3.5 Greeks and Position management

The desk heads of the various desks within a Financial Markets division (together with the Risk organization) determine how much risk the division wants to take in their daily activities. They also determine what the maximum level of losses are that the bank can absorb.

Both traders and desk heads manage the positions based on position management¹⁵, whereby the (joint) factors that determine the P&L are expressed in so-called “Greeks Letters” (risk parameters). These enable the bank to determine the risk of losses due to, for example, price volatility (delta), or losses due to interest rate volatility (rho), or losses due to intrinsic volatility in option prices (vega).

2. THE BANKING BUSINESS

The focus of this book is on the Financial Markets business, but it is important to know why banks have a Financial Markets division at all. What role does this business line play in providing services to customers? Which customers do they serve, and what products do they trade? That is why we focus primarily on the banking business as a whole and, in particular, on what functions exist within a bank and why these functions exist. That this is important is evident from the many bankruptcies that have arisen due to failing internal management and improperly set up functions. DSB Bank is a good example of this.

2.1 The DSB case

Dirk Scheringa was a former police officer who decided in 1975 to enter financial services. He started the Frisia company that focused on providing consumer credit. The company grew steadily and, after the turn of the century, Scheringa decides to take a bigger approach. In 2005 he applied for a banking license from De Nederlandse Bank (DNB) and started Dirk Scheringa Bank, or DSB.

Traditional banks usually earn their money by borrowing money at low interest rates (through savings from savings banks) and lending this money at higher interest rates to customers (through consumer loans and mortgages). DSB, however, earned its money primarily on selling or co-selling insurance products on consumer loans and mortgages, whereby commission amounts of up to 80% were sometimes achieved. Because they are engaged in different activities than the large banks, DSB managed to raise over € 4 billion in savings deposits at the beginning of 2009. The mortgage portfolio was around € 3 billion. In addition to savings, DSB also financed the mortgage portfolio with securitization programs in which incoming mortgage funds are packaged in bundles of securities and then resold to customers. The customers who have bought the securitized bonds receive interest on this. A construction that generates a lot of money, but it destroys the spread (the difference between interest paid and received). This makes DSB Bank even more dependent on the savings deposits of its customers.

In 2009 there is a shift in how the public views banks. The credit crisis is in full swing and there is worldwide outrage about how banks treat their customers and their customers' money. In the Netherlands, this is particularly evident in the indignation about predatory insurance policies (known as woekerpolissen). These were savings products such as annuities that over the life of the product provide the buyer with virtually no return because of the high costs for the "management" of these policies. The high commissions that DSB charges becomes known and widely reported on in the media. This forces Scheringa to professionalize the organization. Up until that moment, he had more or less run the company as a sole trader. Now he suddenly is forced to review his commission structure (if he wants to keep customers). This also meant that he had to switch to a different business model. In addition, there are various interest groups that unite victims of DSB and threaten claims. Scheringa was therefore forced to bring in "real" bankers who understood what a product portfolio of a bank should look like. A Compliance

department that oversees how business is done had to be set up; a risk management department that could monitor (in real time) how the bank is doing also was required as well as a Legal department that could challenge the claims in court. Scheringa started with the large recruitment of bank professionals and also appointed a number of prominent politicians to his board of directors and management team. Gerrit Zalm, Finance Minister and Deputy Prime Minister under Balkenende, became CFO (chief financial officer). He later left the bank to become CEO of ABN AMRO. Frank de Grave succeeded Zalm as CFO after Salmon but leaves DSB six months later. He commented that the organizational structure of DSB is chaotic and that the bank is completely managed by one man. Furthermore, Scheringa wanted to withdraw a large amount from DSB Bank by means of a dividend payment to its private holding DSB Beheer. De Grave wanted to block this as CFO because DSB Bank was in a bad position and it was financially risky to do this. He had to pay for this with his job.

Former politician Robin Linschoten also joined DSB as CRO (chief risk officer). He pointed out to Scheringa the risks, but he continues to run the company as a sole controller. All powers remain with Scheringa, so that he can continue to exchange funds without any problems between DSB Bank, paid football club AZ, the DSB skating team, the art museum, and other Scheringa hobbies. Both the AFM and DNB have problems with Scheringa's many responsibilities as well as the lack of a separation of duties and the inadequate internal organization that cannot keep up with rapid growth. There was also an exodus of sr. management personnel. Initially, this resulted in fines but when public opinion increasingly turns against DSB, the rigorous decision was taken that forced Scheringa to resign as a director. However, before this change can be implemented, DSB is already bankrupt.

Television programs provided a platform to duped customers of DSB, who then find each other within interest organizations such as Stichting Hypotheekleed. Pieter Lakeman, its founder, proactively approaches victims and encourages them to start a class action (joint claim). Lakeman's CV speaks for itself since he has previously launched several successful class actions against companies. It therefore takes him little effort to quickly attract many victims and to get the attention of the media (papers, radio and television). On October 1, 2009 Lakeman calls on savers (in television program Goedenmorgen Nederland) to withdraw their money from DSB because he expects DSB to fold. The resulting run on the bank results in hundreds of millions of euros being withdrawn. DSB's level of capital was insufficient to meet its financial obligations and the bank approaches the ECB for emergency assistance. As the bank is under investigation, only limited assistance was given. This was by no means sufficient for DSB to be able to meet all its obligations. On 12 October, through Financieele Dagblad reports that DNB is preparing to intervene at DSB and the bank run is complete. Everyone attempts to withdraw their savings and, at the end of the morning, all ATMs are empty and all accounts are blocked. It is no longer possible to make withdrawals with a DSB pass. The DSB website is down and telephones are no longer answered. Late in the afternoon of 12 October, DNB obtains an emergency arrangement from DNB and is placed under guardianship. A definitive bankruptcy is pronounced on October 19. Approximately 2,000 people lose their jobs. More importantly, of DSB's 250,000 account holders, anyone who had more than € 100,000 at DSB loses everything above that amount.

These are called the "distressing cases". The worst hit is the American company Dekania, which lost over € 31 million.

The bankruptcy of DSB could have been prevented if the organization had been set up as a "normal" bank, with the relevant business functions. This case shows what can happen when an organization is not organized in a professional manner.

2.2 The role of banks in society

Banks have a prominent role in society. It is where people can safely store their savings, and in return they even receive compensation (interest)¹⁶. Without banks, people would have to find a way to safeguard their (surplus) savings by themselves. This could entail great risks (such as a fire or being robbed at home). In addition, banks are (largely) responsible for the payment system¹⁷.

Electronic payments are becoming increasingly important in our society. Consider the fact that payments in stores are largely made with PIN and no longer with cash, and the fact that web stores (AliExpress, Zalando, Amazon, Bol.com) are increasingly taking business from the old-fashioned street shops. This means that banks are increasingly processing PIN, iDeal and credit card payments. Banks also play a major role in the growth of the economy. Entrepreneurs (SMEs and multinationals) provide the most jobs (at least in developed countries). Entrepreneurship should therefore be encouraged in every country, and start-up capital is needed to start a business. There are different ways to obtain capital (venture capital, crowdfunding, ICOs) but the most commonly used form is still a bank loan. Banks lend money to both individuals (for the purchase of a car or new kitchen) and to companies. Without banks, it would be difficult for people to buy a house, or to start a business, or for companies to invest in expansion. As an individual or as a company, you would have to find someone who has surplus savings in one way or another, and that person would also have to face the risk of lending this. For each transaction, a contract would have to be drawn up separately, the transaction should be insured, etc. This would be a near impossible task without banks.

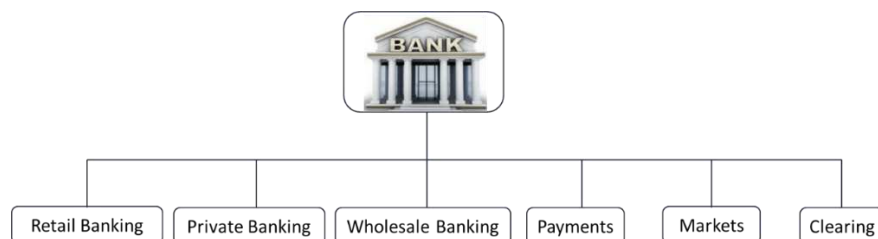
In addition to the primary role (saving, borrowing, paying), banks provide various additional services. For example, banks help companies with their more complex financing needs such as different forms of financing for investments, growth, exchange of currencies for international players, mergers and acquisitions, loyalty programs for company personnel, etc. Hence, the importance of banks is therefore very clear. Without these institutions, we would have to pay for everything in cash. Savers and borrowers would have to find and approach each other personally, which would make the costs of a single transaction very expensive (think of the costs of a lawyer and notary for each contract you take out, or the costs of the insurance you have to against the risk that the borrower cannot or will not pay back the borrowed loan). In addition, a bank is able to close timing gaps; savers usually want direct access to their savings (if they want to buy something); borrowers, on the other hand, want long-term commitments, so that they do not have to repay a loan (for example, for a house) when the saver (lender) wants to have his capital available again (the borrower wants to make sure that he does not have to repay the

mortgage loan for 30 years). Without banks, modern economies would come to a stop. That is also the reason why certain banking groups worldwide have been classified as “Too Big to Fail” (too important for the economy of the country in question to be allowed to go bankrupt). The three major banks in the Netherlands belong to this category, that is why they are called “system banks) (in Dutch: Grootbank). Note that, until recently, the Netherlands even had four system banks; Fortis Bank was the fourth largest bank and was so large that it took over (parts of) ABN AMRO together with two investment partners. Because Fortis was too big to fail for the Netherlands, the Dutch state at that time annexed the Dutch parts of Fortis Bank and thus also the Dutch parts of ABN AMRO that Fortis had bought¹⁸. ING Bank was also too big to fail and therefore had to be saved with a capital injection of € 10 billion. Only Rabobank (which was also too big to fail) did not need capital. It is therefore clear that the role of banks for the Dutch economy is a very essential one. The following sections will detail the tasks of the various divisions of the major banks.

2.3 The divisions within a system bank

In the Netherlands we have three “system banks”: ING Bank, Rabobank and ABN AMRO Bank. These are the largest three Dutch banks that serve almost all customer groups (retail customers, private banking customers, companies and financial counterparties). The major banks also offer virtually all forms of service to these customer groups, and offer all product types. The organizational chart below illustrates a possible large bank layout.

If you look at the organization charts of ING Bank, Rabobank and ABN AMRO Bank, you can see that all three are arranged differently. In general a system bank is organized as follows:



Rabobank, for example, has no clearing organization. ING Bank has placed Payments and Markets within the Wholesale Banking division; ABN AMRO has Retail and Private Banking within one division (R&PB). The above organization chart is therefore a possible representation of the divisions within a major bank. In the following sections I will discuss per business line which products and services the business line offers to the customer, which customer groups the business line serves, and which desks can be distinguished within the business line (plus subdivision of products and services per desk).

2.3.1 The division Retail Banking

The client groups within Retail Banking: Retail customers are generally customers with a maximum of € 50,000 in savings and/or invested capital (shares, bonds, etc.) of a maximum of €

50,000. This group purchases the normal standard products and services from a bank. Some banks recognize a kind of middle group above this group. This is a group that does not have enough savings and / or invested capital to get an asset manager from Private Banking, but does have enough capital to get a little more 1-on-1 attention. At ABN AMRO and Rabobank this group is called Preferred Banking and at ING Bank it is called Personal Banking. The financial frameworks are slightly different at each bank, but on average a savings capital of between € 50,000 and € 1,000,000 and / or invested capital of between € 50,000 and € 500,000 applies to this group. This group receives a "personal" Preferred Banker from the major banks, which you can approach for specific questions or wishes (so that you are not connected to a call center).

The product groups within Retail Banking: Internet banking to be able to arrange your banking affairs yourself. A debit card that you can use to withdraw from ATMs and in stores. A credit card to be able to pay on credit in stores or online. A mortgage with which you can buy a house. Other personal loans for personal expenses (new kitchen, car). Savings accounts on which you receive a higher interest rate than on your current account especially when you leave the money in the account longer. Investment products for which you (normally) achieve a higher return than you receive in your savings account in interest. Insurance (home, car, travel costs, household effects, etc.). Pension services, so that you do not have a pension gap when the time has come to retire. And Mobile banking, since the current generation likes to bank from the smartphone.

The Desks within Retail Banking: As a rule, customers are served by staff in the bank branches or, for Internet banking, by call center staff. Personal / Preferred Banking customers usually have a personal Preferred Banker, although it must be said that these departments usually consist of teams (per office), and the entire team serves all Preferred Banking customers of that office. So you do not "really" have a personal banker at your disposal, but a team.

2.3.2 The Division Private Banking & Wealth Management

The client groups within Private Banking & WM: Private Banking customers are generally customers with savings in excess of € 1,000,000 and/or invested capital (shares, bonds, etc.) in excess of € 500,000. This is the so-called "asset management" group that purchases more specialized products and services from a bank. For example, Prime Brokerage, where the securities that the customer owns are lent by the bank to interested parties, so that the return of these securities not only consists of price gain and dividend (or coupon), but also of additional interest income from the securities lending.

The product groups within Private Banking: Prime Brokerage (just mentioned). Custom investment advice and asset management (asset management). As well as tailor-made products and services for the private banking customer who also banks with his company at the bank (Asset Management), whereby both types of customers are taken into account (think of tax benefits for private versus business, etc.).

The Desks within PB&WM are Private Banking, Wealth Management and Asset Management.

2.3.3 The Division Wholesale Banking

The client groups within a Wholesale Banking division are: Corporates (large business), Small and Medium Enterprises (SMEs), Financial Institutions (other banks), Governments and non-governmental institutions, Foundations and charities.

The product groups within a Wholesale Banking division are: Loan services, Merger and acquisition services, and Issuer services (issuance of shares or bonds)

The desks within a Wholesale Banking division are: The Loans Desk (Corporates | Financial Institutions | Utilities | Oil & Gas Companies and Commodity Companies | Transport and Infrastructure Companies | Import and Export Companies | Real Estate Companies), the Merger and Acquisition Desk, the Stock Issuance Desk, and the Bond Issuance Desk.

The Loans Desk

The Loans desks are divided into sectors. For example, most banks have Loan Desks for Large Corporates, Financial Institutions, Oil Gas Energy and Utilities (incl. Sustainability Companies), Raw Materials Companies, Transport & Infrastructure, Import & Export Companies, and Real Estate Companies. A Loan desk primarily supplies simple standard core banking products to its business customers. Think of short- or long-term loans, current account loans, and overdraft loans. In addition, the desk also offers its clients more complex loan products such as multi-borrower credit structures, complex limit structures, multi-currency lending facilities, and daily collateral monitoring and position monitoring services.

The loans provided can be for various purposes, such as expansion (new factories, more staff), product development, or buy-out of previous more expensive loans. In addition, the companies in these sectors often need bridging loans for the different phases of their production process. When mining, for example, oil or raw materials, a company needs financing (for personnel, drilling platforms, technical equipment). When processing the oil or raw materials, financing is needed (for applying the necessary controls, for ensuring the storage of the products). The transport of the end product requires financial products (transport insurance, guarantees). And for the delivery to the end customer, financial products are needed (currency products, price fluctuation-mitigating products). A Loan Desk provides all these products (and services) to its customers within the relevant sector.

The Merger & Acquisition Desk

An M&A desk (Merger & Acquisition) offers its clients a range of strategic financial advisory services in the areas of friendly and hostile takeovers, mergers between two or more companies, management buyouts and leveraged buyouts, takeover defense mechanisms, and corporate restructuring. This includes both strategic advice and the necessary financing to implement the strategy.

The Equity Issuance Desk

In addition to borrowing money, a company can also choose to generate money, for example from its own investors or shareholders. Issuance of own shares by means of an initial public offering (IPO) or follow-on offering is extremely suitable for this. The Equity Issuance desk supervises these processes, but also does this for rights issuance, block trades, equity-linked transactions and capital reduction strategies (eg financing of share buybacks).

The Bond Issuance Desk

In addition to issuing new shares, a company can also choose to issue bonds. A bond issue desk advises on the desired capital to be generated, maturity, coupon size and collectability. In addition, the desk supervises the issuance of the bonds, collects the investment amounts, takes care of the coupon payments and makes the final principal payments.

2.3.4 The Payments Division

The customer groups within a Payments division: The first customer group is the Small and Medium Business (SME) category, also known as Mid Corporates; these companies have a maximum annual turnover of €300 million. The second customer group is the Large Business category, also known as Corporates. These are customers with a minimum annual turnover of €300 million. The other three customer groups have no turnover cut-off: the Financial Institutions (FIs) group consists exclusively of banks, insurers and pension companies; the Governments group consists of provinces, municipalities, Rijkswaterstaat, etc.; and the Non-Governmental Defense Organizations (NGOs) group consists mainly of foundations and large charities.

The product groups within a Payments division: these differ per desk. Each desk serves a specific customer group and each customer group has its own needs. In addition, a number of service-driven desks are identified within a Payments division. The Payments desk should help its customers manage Equity and Capital, according to the specific obligations of the company in question. In addition, the division must help customers to reduce or even fully mitigate the business risks they run. Customers also need electronic support in the execution of their banking affairs (such as SWIFT payments, Internet banking, etc.). A Payments division also assists customers in making outgoing payments and enables them to receive payments.

In order to be able to provide all these services, a Payments division distinguishes between different desks. For Equity Management: A Cash Desk. For payment risk management: a Trade Desk. For electronic/technical support: a Channels Desk. For optimization of outgoing payments: a Payments Desk. And for optimization of incoming payments: a Liquidity Management Desk. These are discussed below.

Cash Desk

A Cash desk helps its clients manage their capital. If the customer needs to increase the (working) capital, the desk helps customers to issue (extra) shares or bonds. As a transfer agent, a Cash desk keeps track of who owns shares in the company (or bonds) on behalf of its client, what outstanding amounts are in the accounts, administers transactions, issues and withdraws certificates when necessary, takes care of communication with the holders on behalf of the customer and in many cases also takes care of problem management. The desk assists clients who wish to share a portion of the capital with holders by issuing and paying dividends to shareholders and coupons to bondholders. The customer pays the Cash desk and they pay out to the shareholders and bondholders. In addition, the Cash desk also provides tax reclaim services: customers who receive dividends on shares owned must pay dividend tax on this. However, this tax can be reclaimed from the government. A Cash desk takes care of this for those customers who do not have the necessary infrastructure themselves. In addition, the desk assists customers who want to share part of their capital with their staff by issuing options or shares (as a loyalty bonus).

Trade Desk

Customers whose business consists of importing and exporting goods face a number of risks ranging from customers not paying, products arriving damaged or lost, or breach of contract. A Trade Solutions desk supplies products that reduce the risks for these customers and thus optimize the speed at which business is done. Examples are bank guarantees and letters of credit.

Channels Desk

Corporate customers must be able to control their cash position, cash flows and integrated positions, preferably in one simple overview. A Channels desk at the major banks fulfills this by offering its customers secure e-banking solutions, in which those customers can arrange their payment transactions in a user-friendly manner. In addition, the desks provide technological solutions for their customers to make outgoing payments; think of file transfer services, SWIFT connections, accounts-payable and -receivable information, and payment confirmations.

Payments Desk

The main task of the Payments Desk is to optimize outgoing payments. Being able to make payments and have insight into the payment processes through account reports is of fundamental importance for the business continuity of the customer. Especially considering that it often involves large sums of money, time-sensitivity when international trade is conducted across different time zones, and the fact that the computers of the international trading partners often have different file types and standards than those of the customer. It is therefore the task of this desk to ensure that the customer is not hindered by all these potential factors. The Payments desk also issues credit cards for customers to facilitate international payments by its own staff.

Liquidity Management Desk

The main task of a liquidity management desk is to optimize incoming payments. The customers must be able to manage their cash flows, manage their liquidity (cash inventory), and overcome any currency challenges (fluctuations). Services offered by the desk include cash balancing, maximizing interest income and minimizing interest payments, cash pooling, cash netting, and virtual cash management. The desk is responsible for merging all bank accounts of the bank into one overview. This is not always easy because a parent company can have different subsidiaries or (international) branches, all of which have multiple accounts themselves. This regularly presents currency and consolidation challenges. A liquidity management desk also provides reconciliation services to its clients.

2.3.5 The Clearing Department

The *customer groups* within a Clearing division: All market parties (only companies, so no private persons) that trade via a stock exchange. These are market makers, hedge funds, trading companies, prime brokerage parties, asset managers, and other financial institutions.

The *product groups* within a Clearing division: clearing securities (shares, bonds). Clearing Derivatives. Creation and redemption of ETFs. Contract coverage. brokerage services. Custodian services and settlement agent services

The *desks* within a Clearing division: Securities clearing desk. Derivatives clearing desk. ETF desk. Brokerage desk. And a Custodian desk.

2.3.6 The Division Financial Markets

The customer groups within the Financial Markets division: The Markets division roughly consists of two components: Trading and Sales. Trading actually has no customers, but mainly counterparties. These counterparties can be other banks, but also hedge funds, brokers or private equity companies. Sales does have real customers and these are all companies (multinationals, foundations, charities, governments, national organizations) and therefore no private persons.

The product groups within the Markets division: The products differ per desk. Each desk trades in its own products and there is largely a product mandate per desk. This means that a product may only be traded by one desk and that if other desks need that product for a specific trade, they must obtain this product from the desk that has the product mandate. We will discuss all products in the discussion of the desks in the following chapters.

The desks within the Markets division: The desks within a Markets division are usually classified according to specific investment categories, also known as asset classes. An asset class is a group of securities that share the same characteristics in terms of price elasticity, P&L, and factors

influencing P&L. Three overarching investment categories can be distinguished: Cash instruments, also known as Treasury; Shares, also known as Equity; and Fixed Income & Currency, also known as Fixed Income. The classification of this book is therefore based on these three investment categories. Within each asset class we will discuss different products or product groups, how they make money and with which trading strategy. In the next chapter we discuss the desks in more detail and we analyze a (typical) organizational structure of a Financial Markets division.

3. THE STRUCTURE OF FINANCIAL MARKETS ORGANIZATIONS

In Chapter 2 we discussed the desks of all divisions within a major bank except the desks of the Financial Markets division. The structure of Financial Markets organizations is generally the same at all banks. They are organized according to customer segment and/or product/service, and often in combination. Here too it is important to organize the departments, the desks, the processing business units, and the internal supervisors such as Risk Management, Compliance and Legal, in a way that guarantees the safety and survival of the organization. If this does not happen, things can go wrong, as in the example of Enron.

3.1 The Enron case

Ken Lay didn't start his career in business, but with the US government in the Federal Power Commission. In 1974 he decided to enter the business world where he quickly started to make a name for himself in the energy world. He held various management and later directorships within various gas companies and in 1984 became CEO of Houston Natural Gas company (HNG). A year later, he merged HNG with competitor InterNorth and changed the name to Enron. With Lay as CEO, Enron quickly conquered the market. In 1991, six years after the name change, Enron became America's largest energy company. Ten years later, it was in the top 5 largest companies in the world. This enormous growth was inextricably linked with the arrival of Jeff Skilling.

Jeff Skilling began his career as an analyst at First City Bancorporation. This bank sent him to Harvard to get an MBA where he finished in the top 5% of his class. McKinsey & Company offered him a job where he became one of the youngest partners ever. In 1987, Skilling was commissioned as a consultant to create a forward market for natural gas for Enron. He made such an impression on Ken Lay during this project that he snatched him from McKinsey in 1990 and made him CEO of the Enron Trading Company (later Enron Finance Corp). In 1991, he was promoted to CEO of the entire Enron Gas Services Co. company, and Lay moved from CEO to Chairman of the Board.

Skilling's main job was to create value. He did this in several ways. The first focus was on revenue growth. That growth was achieved in a creative way. Energy companies operate gas factories, manage power plants, maintain natural gas pipelines, and are responsible for gas storage. Under Skilling, Enron started to trade in financial products fanatically and Enron also started to perform more brokerage activities. As a broker you bring the producers and buyers of gas together. The commission you receive on the deal is usually a percentage of the total value of the deal. As a McKinseyaan, Skilling knew that there were two types of revenue accounting: the broker model (agent model) and the merchant model (merchant model). If you use the broker model, you book the commission as turnover. If you use the merchant model, you can book the entire trade as turnover. Suppose there is a deal for the purchase/sale of €1 million worth of gas with a commission of 2%, then the turnover under the broker model is €20,000 (namely the commission) and the costs are €0.00; but under the merchant model, the turnover is \$1,000,000

and the cost is \$980,000. With the second model, revenue grows exponentially and for many rating agencies, revenue growth is the leading factor in determining the credit rating. In addition, Skilling started a proliferation of SPVs (special purpose vehicles). These small BVs were used to divide a large cost component (such as the aforementioned \$980,000) into several small components (e.g. a hundred times \$9,800) across different SPVs, putting them out of sight from the supervisory auditors.

In addition, Skilling introduced mark-to-market (MTM) accounting. MTM is a method within financial institutions for valuing financial products. Enron became the first non-bank to introduce MTM accounting. The financial products Skilling had designed for Enron (when he was still working for McKinsey) were previously valued as the delta between buying and selling price. MTM valuation looked at what the average would be between the bid and ask prices of different reference parties. These reference parties are other companies that rate the same product. This allowed Enron to price any product it wanted at any price, provided it could find reference parties that supported that price. This resulted in strange things like Enron's Blockbuster deal. As reported in Chapter 1, Blockbuster wanted to conquer the streaming market years before Netflix was founded. Enron signed a financing contract with Blockbuster to provide broadband streaming within the US for 20 years. After the pilot, Enron claimed a profit of \$110 million on the contract. Blockbuster questioned this valuation because they hadn't had the system up and running yet. When, after several pilots, it turned out that the technology had not yet progressed far enough, Blockbuster withdrew from the contract. The strange thing is, in the years that followed, Enron continued to claim profits on this contract and had the contract in the books at an insanely high value, despite the plug having been pulled years ago.

In the years 1996 through 2000, Enron's revenue grew exponentially from \$13 billion to over \$100 billion, a 65% year-over-year growth. In 2001, Enron even claimed sales of nearly \$140 billion. The share price rose through the roof during that period, as did the bonuses for the directors. Where in 1999 the hundred top executives of Enron still received an average of \$1 million in bonuses, this had increased to an average of \$7 million per person two years later (in 2001). In addition, Lay and Skilling had been awarded stock options worth \$660 million for Lay and \$174 million for Skilling, respectively.

Everyone got rich. This also applies to the accountant who had to prepare the annual figures for Enron. Big Four accounting firm Arthur Anderson earned more than \$50 million in fees annually from Enron. In addition, Enron had hired an army of freelance accountants on an ongoing basis at huge rates, all of them formerly employed by the FSAB (the Financial Accounting Standards Board). These people had been partly responsible for the drafting of the United States Generally Accepted Accounting Principles (USGAAP) and therefore knew all articles that were worded "blurred" or multi-interpretable. They also knew what loopholes there were and advised Enron how to take advantage of them.

In September 2000, a Texas Journal reporter wrote an article about MTM accounting and how it had entered the energy world. He described in detail how MTM accounting made it impossible to check a company's actual sales and profits. Enron was cited by him as an example. Jim Chanos,

CEO of trading company Kynikos Associates, happened to read this article and decided to check Enron's annual results. He marveled at the valuations given to certain portfolios (such as the aforementioned broadband portfolio), he marveled at the rapid growth of debt, and at the alarming amount of stock Enron executives themselves had sold that year. He decided to short the stock. That was the beginning of Enron's decline.

Chanos sent his findings to Bethany McLean, a Fortune Magazine reporter, who went on to write the article: *Is Enron Overpriced*. This was picked up by Wallstreet Journal journalist Richard Grubman who confronted Jeff Skilling about Enron's strange valuation methodologies in a taped interview. Skilling replied at one point with the now legendary words *"thank you very much...we appreciate it...asshole"*. This was publicly reported in the media, causing more sources to look at Enron's annual figures and the irregularities therein.

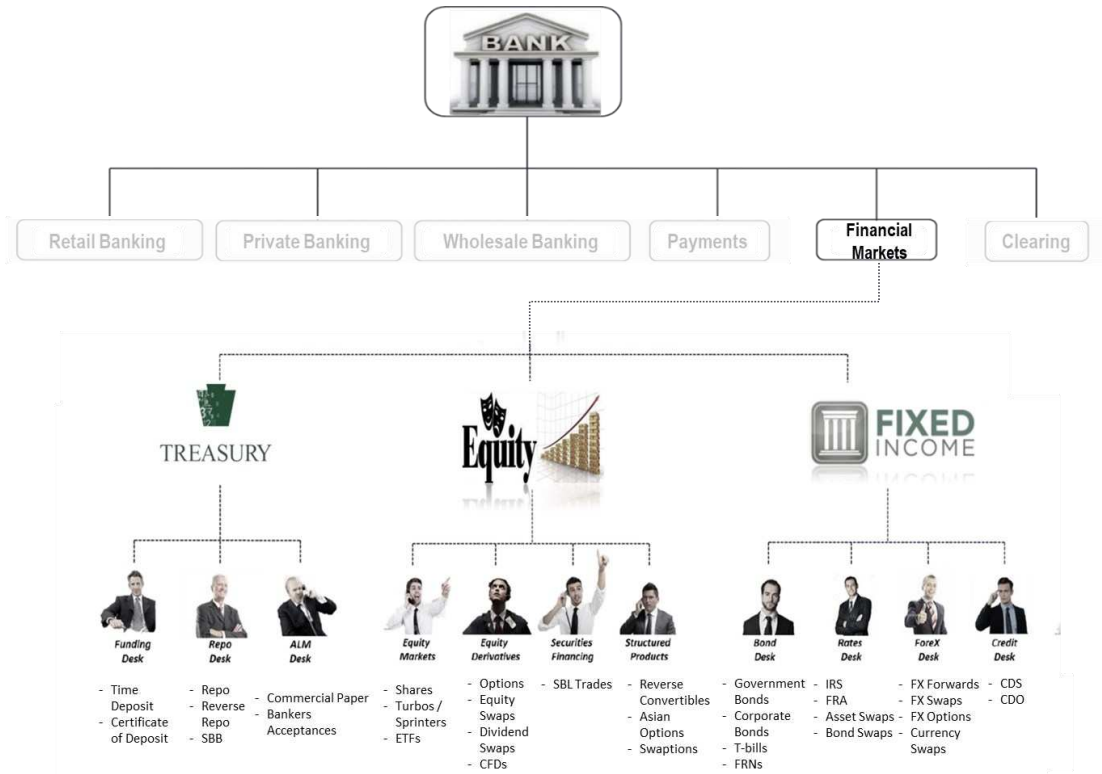
In mid-2001, the share price began to fall. After the terrorist attacks of September 11, 2001, the price plunge accelerated. Moody's and Fitch threatened to downgrade the credit rating and other financial institutions put Enron on the no-trade list: this means they no longer extend credit to Enron, nor can Enron make deals with them where Enron is the cash-receiving party. In November 2011, Enron threatened to default and Lay attempted to merge with branch partner Dynergy; but it was canceled at the last minute. On December 1, 2011, Enron was declared bankrupt.

The investigation that followed uncovered all the financial malpractices: More than \$60 billion in pension money had evaporated as most employees had agreed to take Enron stock as a pension instead of money. More than \$23 billion in outstanding receivables turned out to be uncollectible by creditors. More than 15,000 Enron employees lost their jobs. Arthur Anderson was convicted of fraud and destroying evidence; their license was revoked and the company went bankrupt. Jeff Skilling was sentenced to 24 years in prison, but that sentence was later reduced to 14 years. He will be free again in 2020 at the time of writing this book. Ken Lay was sentenced to 45 years in prison after a 5-year trial, but died of a heart attack in 2006 before the conviction was handed down.

One of the consequences of the Enron case was the drafting of the Sarbanes-Oxley Act; a piece of legislation that enforced far-reaching accounting transparency and established rules on how an organization should be set up, how valuations should take place and how this should be reported. A good structure is especially important within a trading organization. Hence this coming chapter on structure.

3.2 Organizational Structure and Mandates within a Financial Markets division

A Financial Markets organization is generally structured as shown in the organizational chart below, consisting of the divisions Finance Products (Treasury), Equity Products, and Fixed Income Products (Fixed Income):



Finance Products (Treasury)

The *Treasury* division is responsible for the bank's proprietary asset and liability management (ALM), as well as financing trades made across Financial Markets. The Funding Desk borrows money on the money markets or capital markets and lends it to desks within the bank's own Financial Markets (FM) department. The same thing happens with money coming into the bank from FM; that is immediately turned off at Treasury. Funding/financing can also be done with collateral. The most commonly used instrument for this is the sale & repurchase agreement (Repo), which is basically a loan with collateral, which significantly reduces the interest rate¹⁹. That is why the desk that trades these products is often called the Repo Desk. In addition to Repos (borrowing and lending), the desk also trades Sell-Buybacks.

The *ALM desk* is responsible for managing the bank's net liquidity position and managing liquidity risks. In addition, they are responsible for meeting all legal obligations regarding liquidity requirements, such as under Basel 3 the LCR (liquidity coverage ratio).

Equity Products (CE & EQD)

The *Equity Products* division generally consists of three or four desks: Equity Markets, Equity Derivatives, Securities Financing, and possibly a Structured Products desk.

The Equity Markets desk (EM) is responsible for trading stocks and leveraged products such as Turbos (synthetic stocks). The EM desk is a market maker in equities and also acts as a hedge

desk for the Equity Derivatives desk. In addition, the EM desk trades Turbos and other equity-based leveraged products.

The Equity Derivatives desk (EQD) trades synthetic equities that are hedged with physical equities. The desk mainly offers large corporate clients a range of equity and commodity derivatives products, as well as hedging solutions. This is to enable customers to optimally manage their balance sheet. The desk's own primary revenue model consists of interest arbitrage and dividend arbitrage²⁰. The main products of this desk are options, futures, equity swaps, synthetic forwards (put-call combinations), CFDs (contracts for difference) and ETFs (exchange-traded funds).

The Securities Financing desk is responsible for the borrowing and lending of securities (shares and bonds). On most exchanges it is not allowed to go “naked” short, which means that the securities have to be borrowed before they can be sold in the market. This is to prevent market disruptions caused by large short-funds²¹. These so-called SBL contracts (securities borrowing & lending) are an important foundation for the financial markets business, as they prevent deliberate market disruptions.

Finally, there is the Structured Products desk. She structures products specifically according to the needs of customers. These are often derivative products with specific exposure and specific return profiles based on equity, equity baskets or equity indices.

Fixed Income Products

The Fixed Income division usually consists of several desks. Usually there is a desk that trades bonds, a desk that trades interest rate swaps (IRS) (as a hedge for bonds), a desk that trades currencies (FX) including currency derivatives (for traders who trade abroad or have foreign branches) , and a desk that securitizes all these products.

The Fixed Income division is responsible for both the trading and risk management of fixed income products. The division provides cash and derivatives solutions to optimize customer cash position, help the customer manage the balance sheet, and help the customer meet hedging needs. The bond desk provides institutional clients (such as the large insurance companies and pension funds) and large corporate clients (such as Shell, Philips, etc.) with liquidity in bonds and loans, as well as the hedge on these products (interest rate swaps); the hedge is traded on the Rates Desk.

Customers with offices abroad or who do business with foreign customers often receive cash in the local currency, but must make payments in the currency of the foreign trading partner. The FX desk helps these clients convert those currencies into local currency cash, where FX stands for Foreign Exchange.

In addition, there is a desk that securitizes all these products. For example, this desk structures different types of bonds in one new product, such as a Collateralized Debt Obligation (CDO), or structures insurance products for the existing portfolio, for example by means of Credit Default Swaps (CDS)²². This structuring is usually done within the Credit Desk. This desk has this name

because they bundle credit products into more tradable securities. The main objective is to offer value-added solutions to clients in the Investments and Assets & Liability segment.

Sales

In addition, the three FM divisions mentioned (Treasury, Equity and Fixed income) all have a sales desk per division in addition to the trading desks. These sales desks serve all institutional (and in some cases private banking) customers and sell them the products traded (and manufactured) by trading.

3.3 The roles within Financial Markets

Before a product from a bank reaches a customer, a number of processes take place to make this possible. These are discussed below.

3.3.1 Client onboarding

A customer always comes in through Sales. This is possible because Sales actively approaches the customer, or because Sales itself is approached by a customer. Sometimes a customer ends up at a bank through an e-commerce channel. An e-commerce channel is, for example, Internet Banking of the relevant bank, or the trading channel of the bank such as ABN AMRO “Tradebox” and ING “INGtrade”. Sales is responsible for finding out what the customer wants or needs after the customer has indicated that they want to become a customer. He must find out the client's requirements in terms of investment goals and risk profile. In addition, he must determine the financial capacity of the client and the feasibility of the client's goals in relation to his capital. The following process is usually set up for these matters:

Sales contacts the customer onboarding department (COD) of the bank and they do an initial registration of the customer with the bank. The customer is then assigned a unique internal identifier and this is recorded in the CRM system. The COD then collects the required data from the customer. These are of course the name and address details of the company, the names of the contact persons, but also all necessary data to perform Know Your Customer (KYC) verification. The COD is responsible for this KYC, a set of obligations composed of requirements from various laws and regulations.

1. The customer due diligence is determined with the CDD test. Due diligence roughly translates to “thorough vetting” and contains facts about the customer that should enable the bank to assess the extent to which the customer is exposing the bank to a variety of risks. The main risks that a bank is afraid of, and against which it must legally protect itself, are fraud, money laundering and terrorist financing. With an LDD test, a so-called *local due diligence* test is performed. This determines to what extent a customer must comply with regulations that only apply to customers from that specific country. Countries such as Russia, the United States, but also some Asian countries have rules that are stricter than the global or Eurocontinental regulations such as MiFID 2 or Basel 3. The COD department must therefore check which local regulations the service to the relevant customer must comply with.

- The FATCA test obliges banks to check for all their customers (regardless of origin or location) whether there is an obligation to report the assets that the customer has with the bank (money, securities) to the American tax authorities IRS. FATCA stands for Foreign Account Tax Compliance Act.
- A comparable test is available for the other countries in the world (outside the US). The Common Reporting Standard (CRS) has been drawn up for this purpose. The CRS test requires the same as FATCA, but then the assets must be reported to the customer's home country, provided that the country concerned is affiliated with the CRS countries.

When all information to perform the above checks has been collected, a quality check is performed on the data to ensure that no pollution is created in the bank's systems. When this is all done, the file goes to Credit Risk Management to create the customer's credit limits. The customer then returns to Sales who then gives the customer the necessary classifications based on the data received. This includes classifications for MiFID (retail, professional, ECP) and for EMIR (FC, NFC⁺, NFC⁻). The customer then returns to Credit Risk Management, which together with Sales determines the necessary master agreements (ISDA, GMRA, CSA, etc.) and the agreements to use, for example, portals and e-channels. CRM draws up the master agreements and the Legal Affairs department checks the agreement. Sales then has the agreements signed by the customer: this is called contracting the customer.

After the customer has signed and returned all master agreements, consent statements and regulation-related documents, it must be set up in the IT systems. After completing the KYC, the customer already exists in the CRM system, but must also be entered in the trading systems, the back office systems, the risk systems, and in the accounting ledger (the general ledger). The setup in these systems is usually done by the Static Data Management department of the bank. Once this has been completed, the customer can start trading and only then can the bank approach the customer for deals.

3.3.2 Sales & Account Management

Before the onboarding process has been completed, the customer may not be offered any products, services or deals. Sales must ensure that the bank has all required legal documentation from the customer, that a full customer due diligence has been performed, that the customer is classified for the relevant regulations, and that only products are offered that match the risk profile of the customer, the customer classification, the financial capacity and the customer's product knowledge.

The Sales organization is supported by account managers who literally manage the account (customer). The account management team is usually organized hierarchically with the most senior account managers managing the main entities (the parent company, e.g. Royal Dutch Shell NV), the medior account managers serving the subsidiaries (e.g. Shell Pension Fund, Shell Asset Management, etc.) and the junior account managers manage the subsidiaries of the subsidiaries (for example, the various equity funds owned by Shell Asset Management).

It is the task of Sales to know the customer (KYC), the capacity in which the customer acts and the products that match. Based on that knowledge, Sales should also be the sanity check for trading when it comes to what is offered to the customer and how it is priced. Sales is also responsible for customer business development. This means that, for example, they try to persuade customers who only purchase fixed-income products to also buy products from the other product categories.

In addition, it is Sales who must ensure that the products sold are actually appropriate for all regulations of all regions in which the customer does business. This means short lines with Compliance and Legal. Above all, before entering into a deal, sales must check whether the customer has a sufficient line of credit with the bank, as well as what the pre-settlement limit is.

A pre-settlement limit protects the bank against the risk that a counterparty or customer will not be able to meet its financial obligations when settling a transaction, and the bank will incur costs to settle the position in the open market. Even for businesses that do not require credit limits, such as the DVP (delivery versus payment) business, Sales must ensure that activity levels are appropriate to the customer's financial position.

3.3.3 Trading

Sales and Account Management have a relationship with the customer, but do not have a trading mandate themselves. The products they sell must be supplied and traded by Trading. It is the job of the trader to develop and structure products, to buy and sell, and to price the products. These may only be permitted products, within the parameters of the book in which these deals are traded (e.g. a book with only options and shares), and in accordance with the overarching strategy of the desk (e.g. DeltaOne) strategy.

The traders manage the trading risks, the trading strategies and the pricing models. They are also responsible for setting parameters as input for the valuation models (yield curves, volatility curves, dividend expectations) and for the overall valuation of the assets, liabilities, books and positions. In addition, they must continuously orientate themselves in the market for new, faster and more precise trading systems, better pricing models, more complete market data feeds, and new innovations in the trading field.

Trading is also responsible for developing the range of products in response to market needs and in line with the bank's risk management strategy. Above all, Trading is responsible for realizing the P&L.

3.3.4 Risk Management

Banks have three so-called defense layers (lines of defense). These three layers together form the risk management framework of a bank. The departments work closely together to prevent, control and, if necessary, mitigate all risks that threaten the bank's strategy. In addition, they have their own specific responsibilities.

First line of defense

The first line of defense is formed by the front office (sales, trading), mid office (customer onboarding, front office support) and back office (trade processing, recons). Collectively, these form “the business” in banking terms. The business is responsible for implementing the risk policy in accordance with all applicable rules and legislation. In doing so, they apply the risk management rules to their daily activities. So traders make sure they trade within the applicable limits and in line with the desk's strategy, the desk head ensures that the traders are indeed not breaking the limits by implementing necessary “controls” and he reports to what extent those rules are adhered to senior management. The desk heads jointly determine how much risk the division will (may) take in their daily activities, as well as the allowable losses that the bank can absorb. Both the traders and the desk heads manage the positions on the basis of position management²³, whereby the (joint) factors that determine the P&L are expressed in so-called “Greeks” (risk parameters).

Second line of defense

The second line of defense is formed by the official risk management functions within the bank. Think of the Risk Management department (and sub-departments such as Market Risk, Credit Risk, Legal Risk and Operational Risk), the Legal or Legal Affairs department, and Finance & Control (including Tax). They monitor the bank's risk appetite and the extent to which traders remain within that risk appetite. These departments analyze and report on the trading behavior of the business, transpose commercial strategies into applicable methodologies and policies, and translate that into risk vs. return reports. These departments jointly supervise the bank's solvency, as well as balance sheet utilization.

One of the things that banks try to avoid is “marking”. In marking, a trader adjusts his parameters in the valuation model in such a way that long positions have a higher valuation and short positions a lower valuation. P&L is determined in the ledger (accounting book) on the basis of the parameters and valuation of the front office systems, not on the basis of the risk management systems. That is why the Risk Management department has to approve all models that are used in the front office systems. If a trader “markets” then a risk manager will point out to him that he must adjust his parameters so that the valuation in the bank's systems corresponds to the mark-to-markets (MTMs) of the products on stock exchanges (the closing prices). . This is one of the most important tasks of Risk Management.

Third line of defense

The last line of defense is formed by Audit. They must monitor independently and determine to what extent the chosen policy is bearing fruit, to what extent the controls in place are effective, and to what extent the first and second line actually carry out risk management in accordance with the rules.