

MOORAD CHOUDHRY

**AN INTRODUCTION TO
BANKING**

SECOND EDITION

**Principles, Strategy
and Risk Management**

Foreword by Steen Blaaflak
Group Chief Financial & Risk Officer
Saxo Bank A/S

WILEY

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AND RISK MANAGEMENT**

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Moorad Choudhry

*With contributions from Ed Bace, Polina Bardaeva,
Kevin Liddy, Jamie Paris, Soumya Sarkar and Chris Westcott*

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For Lindsay
Ultimate Yummy Mummy

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FOREWORD

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Steen Blaafalk

I know Moorad Choudhry as an experienced professional and very strong personally, and it is with great pleasure that I accept to write a short foreword for the new edition of *An Introduction to Banking*.

A key role for a bank is to transform short-term deposits from businesses and households into long-term loans to businesses and households that want to borrow for investments or consumption. In this way, banks support growth and wealth in society – not only by creating jobs in the banking sector – but also by supporting growth in many sectors of the economy.

An integral part of banking is taking calculated risks. A professionally run bank will reserve enough capital to absorb expected as well as unexpected losses on the lending book to continue its business, even in a recession.

Another risk is maturity transformation – borrowing short and lending long. On the one hand, it is a source of income for the bank. On the other hand, it is a threat to the survival of the bank if it is funding itself too short or through unstable funding sources that disappear when a crisis occurs.

In the years leading up to the 2008 global financial crisis, banks had become significantly less consolidated as the capital rules allowed them to have a very high gearing of the balance sheet. Moreover, many banks had funded themselves very short in the capital markets since liquidity was ample and spreads were very low – building up huge customer funding gaps. At the same time, the banks had competed fearlessly on margins in order to attract new business. A cocktail that would be doomed to go wrong at some point in time.

When the global financial crisis culminated in September 2008 with the collapse of Lehman Brothers, all confidence in and among financial institutions disappeared. This resulted in liquidity drying out very fast, and institutions with a short/unstable funding profile found themselves unable to refinance their debt. Additionally to this, many banks found themselves too thinly capitalised to absorb the loss incurring during this next period.

The global financial crisis spilled over into the real economy since many banks were not able to fund the loan demand of their customers and they did not have

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the excess capital to grow their balance sheets. The authorities reacted to the situation by demanding significantly higher capital and liquidity ratios, which of course in the situation catalysed the crisis in the real economy.

An Introduction to Banking describes getting the right balance between running a safe bank and optimising the use of capital and liquidity to the benefit of the shareholders of the bank for the long run.

In the first part of the book, Moorad introduces the reader to the basic concepts of running a bank. I can recommend this part of the book to bankers who need a broader insight into the institutional setup and basic terms in banking. Understanding the basics of banking helps you to get the full benefit when it becomes more detailed, dealing with asset and liability management (ALM) as well as capital and liquidity management later in the book.

Asset & Liability Management is the very essence of banking. To be successful as a bank you need to have professional asset and liability management processes, starting from the top management and flowing down to the different business areas of the bank, including proper Funds Transfer Pricing (FTP) for capital and liquidity, to understand and make transparent the drivers for various banking products.

As a Group Chief Financial and Risk Officer, I have had great professional benefit from the description of the role of the Asset & Liability Committee, the risk policy, reporting, and stress testing, as well as the description of the day-to-day management in the risk and treasury departments. It was also rewarding for me to read the final chapters about best practice in capital and funding management and corporate governance, which we should not forget when we enter into the next period of bull markets.

Moorad manages to describe a comprehensive and complex area of banking in a lively and readable language.

I can highly recommend the book as a handy reference work for anyone who is involved in banking strategy, ALM, and liquidity risk management.

Steen Blaafalk
Group Chief Financial and Risk Officer
Saxo Bank A/S
Copenhagen
10 March 2015

PREFACE



Who among the world's population of authors would not love to write a timeless work? Ideally, a timeless work of fiction, but failing that, something factual that remains the undisputed benchmark for its subject. Somewhat paradoxically, I hold that the latter is actually harder to accomplish. Please don't get me wrong, only a very small minority of us (of which I am not one) have it in them to produce *Hamlet*, or *Dune*, or *The Iliad*, or *The Assistant*, or *Crime and Punishment*, or *The Adventures of Sherlock Holmes*, or *The Crab With The Golden Claws*, or *Seven Pillars of Wisdom*, or *Peanuts, Featuring Good Ol' Charlie Brown*, or countless other such immortal works. But once one has produced classic art, it lives forever. There is no need ever to update or modify it.

Practitioner textbooks, on the other hand, are rarely timeless. In almost every field of learning, society develops and adds to its knowledge base, such that a work of non-fiction rapidly becomes out of date. To maintain currency requires constant updates and further editions, which means more work. An author ambitious of producing a literary masterpiece should avoid the factual learning genre.

But there is an apparent paradox when it comes to works of fact concerning banking: in theory, unlike in so many commercial disciplines, the main principles have not changed since the first modern banks came into being in the fifteenth century. Much of what held good for banks in 1808 and 1908 would have remained fine for banks in 2008, if certain senior bank executives had been competent enough to remember them (or even bothered to learn them in the first place).

The traditionally staid and "conservative" field of banking has experienced considerable development and change of late. However, if anything, this "development" has not been all positive. While lauding the introduction of tools and techniques that have enabled borrowers to reduce their risk and assist economic growth worldwide, most of us are now rightly wary of ever-more sophistication and complexity in finance. It really is time for banks, and banking, to revert somewhat to the basics of finance and look to deliver genuine good customer service, and roll back the ever-increasing

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complexity in the industry. Why? Because such sophistication often ended up doing more harm than good.

Finance is as much art as science anyway. So much of it is expectations based on assumptions, despite what the financial market “quants” would tell you. That this is not known universally is itself worrying, with bankers the world over convinced that the stated gross redemption yield of a bond purchased in the secondary market is actually what they will receive for holding said bond. The valuation of equities, the calculation of default probability, the expected life of a loan, the “risk weighting” of a loan asset, the “expected shortfall” risk exposure of a trading portfolio ... these are all so much estimations based on assumptions. Which person in their right mind, trying to do the right thing for everyone, would wish to build sophistication on such a foundation?

In any case, in many countries banks have managed to transform their image from perceived bastions of stability and good social standing into seeming snake-oil selling hucksters of low repute and lower intentions. This is a pity, because without banks performing their vital roles as secure stores of money and maturity transformation specialists, economic and social development would take place at a much slower pace. So while it is almost unarguable to state the importance of banks and the good they do for society, it is also unarguable to state that the work undertaken by banks must reflect sound risk management principles as well as scrupulous ethics and good intentions.

Hence, it becomes necessary to update the first edition of this “introductory” book about banking. The first edition isn’t necessarily out of date, at least not all of it anyway – more that it doesn’t emphasise the principles of banking as strongly as it should have. And of course it was never going to be timeless ... works of fact so rarely are. But this second edition, requiring readers to shell out their hard-earned cash for a second time, is needed so as to emphasise more of the *principles* of banking as well as update some of the technical content.

In any case, any author would do well to remember the words of Sir Arthur Conan Doyle from the preface to *The Sherlock Holmes Stories* (1903):

“... all forms of literature, however humble, are legitimate if the writer is satisfied that he has done them to the highest of his power. To take an analogy from a kindred art, the composer may range from the oratorio to the comic song and be ashamed of neither, so long as his work in each is as honest as he can make it. It is insincere work, scamped work, work which is consciously imitative, which a man should voluntarily suppress before time saves him the trouble.”

So that is the ultimate objective of this revised second edition: not to attempt to achieve timelessness and immortality, which would reflect only a monstrous and insufferable arrogance and egotism on my part, but rather simply to be viewed by readers as a work of honesty that was done to the best of the author’s ability and that, if the market allows it, can remain of value

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on the bookshelf for many years to come. Irrespective of whether this last ambition is achieved, I hope at least that this book has served its purpose for today. And as Ian MacDonald so memorably said in the preface to his last update of the majestic *Revolution In The Head*, no further editions will be forthcoming.

LAYOUT OF THE BOOK

This book is comprised of 17 chapters, grouped in three parts. There is some rhyme and reason in the split: Part I may be considered a primer on the basics, not just of banking, but also the interest-rate markets, customer service, and credit assessment – essentially, the basics of financial markets. Part II looks at the balance sheet in general, and asset–liability management in particular, while Part III covers strategy, regulatory capital, and operational risk.

For newcomers to the market there is a primer on financial market arithmetic in Appendix A at the back of the book.

New material in this second edition includes:

- Case studies on problem solving involving several real-world risk management issues (and solutions) the author has been involved with;
- A chapter on liabilities strategy setting, as part of the balance sheet optimisation process;
- A detailed look at the importance of understanding net interest margin (NIM);
- Best-practice ICAAP and ILAAP process principles;
- Various reasonably important sundries such as strategy and operational risk management.

As ever, the intention is to remain accessible and practical throughout, and to provide information of value to the practitioner in banking – we hope sincerely that this aim has been achieved. Comments on the text are welcome and should be sent to the author care of John Wiley & Sons Ltd, Chichester, England.

PREFACE TO THE FIRST EDITION

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Banking is a long-established and honourable profession. The provision of efficient loan and deposit facilities is an essential ingredient in human development and prosperity. For this reason, it is important that all banks are managed prudently. The art of banking remains unchanged from when banks were first established. At its core are the two principles of asset–liability mismatch and liquidity risk management. The act of undertaking loans and deposits creates the mismatch, because while investors like to lend for as short a term as possible, borrowers prefer to borrow for as long a term as possible. In other words, the act of banking is the process of maturity transformation, whereby banks “lend long” and “fund short”. Banks do not “match-fund”, because there would never be enough funds available to match a 25-year maturity mortgage with a 25-year fixed deposit. Thus, banking gives rise to liquidity risk, and bankers are therefore required to take steps to ensure that liquidity, the ability to roll over funding of long-dated loans, is continuously available.

We define banking as the provision of loans and deposits; the former produce interest income for the bank, while the latter create interest expense for the bank. On the bank’s balance sheet the loan is the asset and the deposit is the liability, and the bank acts as the intermediary between borrowers and lenders. The fact that all banks, irrespective of their size, approach, or strategy, must manage the two basic principles of asset–liability management (ALM) and liquidity management means that they are ultimately identical institutions. They deal within the same markets and with each other. That means that the bankruptcy of any one bank, while serious for its customers and creditors, can have a bigger impact still on the wider economy because of the risk this poses to other banks. It is this systemic risk which posed the danger for the world’s economies in 2008, after Lehman Brothers collapsed, and which remains a challenge for financial regulators.

This book introduces the fundamental art of banking, which is ALM and liquidity risk management. It does not describe the different types of banks and their organisational structures that exist around the world. Neither does it describe the wide range of bank products that are available or the great variation in financial markets and instruments that can be observed.

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These topics are covered abundantly in existing textbooks. The object of this book is to present bank ALM and liquidity management at an introductory level, something that is not so common in textbooks on finance. These topics deserve to be understood and appreciated by everyone involved in banking, because it was unsound practices in these fields that helped to create the banking crisis in 2008, and made its impact so much worse than it need have been. Proper respect for the art of ALM will mitigate the impact on banks of the next financial crash.

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Love, thanks, and respect, as always, to the Raynes Park Footy Boys and The Pink Tie Brigade. *A Solid Bond in Your Heart*. Thanks to Juan Carlos Sihuinchu for the great photograph!

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Thank you. I won't forget it.

A handwritten signature in black ink, appearing to read 'Moorad Choudhry', with a long horizontal flourish extending to the right.

Moorad Choudhry
Surrey, England
24 June 2017

ABOUT THE AUTHOR

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Professor Moorad Choudhry lectures on the MSc Finance programme at the University of Kent Business School. He was latterly Treasurer, Corporate Banking Division, at the Royal Bank of Scotland, Head of Treasury at Europe Arab Bank, Head of Treasury at KBC Financial Products, and Vice-President in structured finance at JPMorgan Chase Bank. He was a gilt-edged market-maker at ABN Amro Hoare Govett Securities Limited. He began his City career at the London Stock Exchange in 1989.

Moorad is a Fellow of the Chartered Institute for Securities & Investment, a Fellow of The London Institute of Banking & Finance, and a Fellow of the Institute of Directors. He is a member of the Editorial Boards of *Journal of Structured Finance*, *Qualitative Research in Financial Markets*, *International Journal of Economics and Finance*, and *American Securitisation*. He was born in Bangladesh and lives in Surrey, England.

I have a problem with psychometric testing: it is to my mind a spurious device used by large corporations to ensure that anyone with a semblance of wit or independent thought doesn't get anywhere near securing a job. If the entire country were subjected to psychometric testing and all those who failed it humanely put down, we'd be left with a rump of deathly, grey-faced middle managers.

—Rod Liddle, *The Sunday Times*, 18 August 2013.

Mid **PART** FDFD Index

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Bank Business and the Markets

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Low 10/12/05	2.5000

Part I of this book introduces the subject of banking, with a look first at the main products, and then proceeds to discuss all the key aspects of a bank business: namely, customer service, credit assessment, trading and hedging techniques, the yield curve, regulatory capital, and the money and capital markets. This part is the “primer” on banking and is essential reading for all practitioners.

We begin with a look at the fundamentals of banking business, products and customer service, and the different elements of bank capital. This is essentially an introduction to the nature of banking. We then consider further elementary finance background, with a look at the basics of financial statements. The contents of this chapter may appear more at home in a textbook on accounting, but an understanding of ratio analysis is vital for the bank practitioner, who is concerned with issues such as return on capital as well as balance sheet sustainability.

This is followed with more detail on credit risk and credit assessment, and the basics of trading and hedging.

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Chapter

1



**BANK BUSINESS
AND CAPITAL**

Banking has a long and honourable history. Today, it encompasses a wide range of activities of varying degrees of complexity. Whatever the precise business undertaken by specific individual banks, the common denominator of all banking activities is that of bringing together those who require funding with those who possess surplus funding, and acting as a transmission mechanism for the processing of payments. That is in essence all that banks do, and while it isn't a complex service provision, it is nevertheless an important one. Societal and economic development worldwide relies on efficient banking service provision.

In this introductory chapter we describe the financial markets, the basic banking business model, and the concept of bank capital. We begin with a look at the business of banking. We then consider the different types of revenue generated by a bank, the concept of the banking book and the trading book, financial statements, and the concept of provisions. We also introduce the different products offered by banks to their customers.

THE BASIC BANK BUSINESS MODEL

The basic bank business model has remained unchanged ever since banks became an integral part of modern society.¹ Of course, as it is more of an art than a science, the model parameters themselves can be set to suit the specific strategy of the individual bank, depending on whether the strategy operates at a higher or lower risk–reward profile. However, the basic model is identical across all banks. In essence, banking involves taking risks, followed by effective management of that risk. This risk can be categorised as follows:

- Managing the bank's capital;
- Managing the liquidity mismatch – a fundamental ingredient of banking is “maturity transformation”, the recognition that loans (assets) generally have a longer tenor than deposits (liabilities).

If we wished to summarise the basic ingredients of the historical bank model, we might describe it in the following terms:

- Leverage: A small capital base is levered up into an asset pool that can be 10 to 30 times greater (sometimes even higher);
- The “gap”: Essentially, funding short to lend long is a function of the conventional positive-sloping yield curve and is dictated by recognition of the asset–liability mismatch noted above;
- Liquidity: An assumption that a bank will always be able to roll over funding as it falls due;
- Risk management: An understanding of credit or default risk.

¹The oldest bank still operating, Monte Dei Paschi di Siena, was set up in 1472. Berenberg Bank claims it is the oldest bank still operating in its original form: it was formed in 1509.

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These fundamentals remain unchanged. The critical issue for bank management, however, is that some of the assumptions behind the application of these fundamentals *have* changed, as demonstrated by the crash of 2007–2008. The changed landscape in the wake of the crisis has resulted in some hitherto “safe” or profitable business lines being viewed as risky. Although favourable conditions for banking may well return in due course, for the foreseeable future the challenge for banks will be to set their strategy only after first arriving at a true and full understanding of economic conditions as they exist today. The first subject for discussion is to consider what a realistic, sustainable return on the capital target level should be and to ensure that it is commensurate with the level of risk aversion desired by the Board. The Board should also consider the bank’s capital availability and what amount of business this could realistically support. These two issues need to be addressed before the remainder of the bank’s strategy can be considered.

Strategy

The most important function that a bank’s Board can undertake is to set the bank’s strategy. This is not as obvious as it sounds. It is vital that banks have a coherent, articulated strategy in place that sets the tone for the entire business from the top down.

In the first instance, the Board must take into account the current regulatory environment. This includes the requirements of the Basel III rules. A bank cannot formulate strategy without a clear understanding of the environment in which it operates. Once this is achieved – before proceeding with a formal strategy – the bank needs to determine what markets it wishes to operate in, and establish what products and what class of customer it wants to service. All its individual business lines should be set up to operate within the main strategy, once markets and customers have been identified.

In other words, a bank cannot afford to operate by simply meandering along, noting its peer group market share and Return on Equity (RoE) and making up its strategy as it goes along. This approach, although it would never be admitted, is evidently what many banks do indeed follow – however inadvertently – and results in a senior management and Board that is not fully aware of what the bank’s liabilities and risk exposures are.

The first task is to understand one’s operating environment. The bank also needs to incorporate a specific target market and product suite as the basis of its strategy. Concurrent with this, the bank must set its RoE target, which drives much of the bank’s culture and ethos. It is important to get this part of the process right at the start. Prior to the crash, it was common for banks to seek to increase revenue by adding to their risk exposure. Assets were added to the balance sheet, or higher risk assets were taken on. In the bull market environment of 2001–2007 – allied to low funding costs as a result of low base interest rates – this resulted in ever higher RoE figures, to the point where it

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was common for even Tier 2 banks to target levels of 22–25% RoE in their business appraisal. This process was of course not tenable in the long run.

The second task – following on immediately from the first – is to set a realistic RoE target and one that is sustainable over the entire business cycle. This cannot be done without educating Board directors as well as shareholders, who must appreciate new, lower RoE targets. Managing expectations will contribute to a more dispassionate review of strategy. Just as importantly, risk-adjusted RoE should also be set at a realistic level and not be allowed to increase. Hence, the Board and shareholders must accept that lower RoE levels will become the standard. This should also be allied to lower leverage levels and higher capital ratios.

Concurrently with the above process, a bank must ask itself where its strengths lie and formulate its strategy around that. In other words, it is important to focus on core competencies. Again, the experience of the crash has served to demonstrate that many banks found themselves with risk exposures that they did not understand. This may simply have been the holding of assets (such as structured finance securities) whose credit exposures, valuation, and secondary market liquidity they did not understand, or embarking on investment strategies such as negative basis trading without being aware of all the measurement parameters of such strategies.² To implement a coherent, articulate strategy properly, a bank needs to be aware of exactly what it does have (or does not have) expertise for undertaking, and not operate in products or markets in which it has no genuine knowledge base.

Allied to an understanding of core competence is a review of core and non-core assets. Bank strategy is not a static process or document, but rather a dynamic one. Regular reviews of the balance sheet need to be undertaken to identify any non-core assets, which can then be assessed to determine whether they remain compatible with the strategy. If they are not, then a realistic disposal process would need to be drawn up. In the long run, this is connected with an understanding of where the bank’s real strengths lie. Long-term core assets may well differ from core assets, but this needs to be articulated explicitly. The decision on whether an asset is core or non-core, or short-term core or long-term core, is a function of the bank’s overall strategy – based on its expertise – and what markets and customers it wishes to service. This will be embedded in

²Without naming the banks, the author is aware of institutions that purchased ABS and CDO securities under the belief that the senior tranche, rated AAA, would not be downgraded even if there was a default in the underlying asset pool, presumably because the junior note(s) would absorb the losses. Of course, this loss of subordination does erode the initial rating of the senior note – with a consequent markdown in market value. Another institution, according to anecdotal evidence received by email, entered into negative CDS basis trades without any consideration for the funding cost of the trade package. This resulted in losses irrespective of how the basis performed. In this case, it is clear that the trading desk in question entered into a relatively sophisticated trading strategy without being sufficiently aware of the technical and risk implications.

the strategy and the bank's business model. This drives the choice of products and business lines to which the bank feels it can add value.

BANKING BUSINESS

Banking operations encompass a wide range of activities, all of which contribute to the asset and liability profile of a bank. Table 1.1 shows selected banking activities and the type of risk exposure they represent. The terms used in the table, such as "market risk", are explained elsewhere in this book. In another chapter we discuss the elementary aspects of financial analysis – using key financial ratios – that are used to examine the profitability and asset quality of a bank. We also discuss bank regulation and the concept of bank capital.

All readers should be familiar with the way a bank's earnings and performance are reported in its financial statements. A bank's income statement will break down earnings by type, as we have defined in Table 1.1. So we need to be familiar with interest income, trading income, and so on. The other side of an income statement is costs, such as operating expenses and bad loan provisions.

Table 1.1 Selected banking activities and services

Service or function	Revenue generated	Risk
Lending		
– Retail	Interest income, fees	Credit, market
– Commercial	Interest income, fees	Credit, market
– Mortgage	Interest income, fees	Credit, market
– Syndicated	Interest income, fees	Credit, market
Credit cards	Interest income, fees	Credit, operational
Project finance	Interest income, fees	Credit
Trade finance	Interest income, fees	Credit, operational
Cash management		
– Processing	Fees	Operational
– Payments	Fees	Credit, operational
Custodian	Fees	Credit, operational
Private banking	Commission income, interest income, fees	Operational
Asset management	Fees, performance payments	Credit, market, operational
Capital markets		
– Investment banking	Fees	Credit, market
– Corporate finance	Fees	Credit, market
– Equities	Trading income, fees	Credit, market
– Bonds	Trading income, interest income, fees	Credit, market
– Foreign exchange	Trading income, fees	Credit, market
– Derivatives	Trading income, interest income, fees	Credit, market

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That the universe of banks encompasses many different varieties of beasts is evident from the way they earn their money. Traditional commercial banking institutions, perhaps typified by a regional bank in the United States (US) or a building society in the United Kingdom (UK), will generate a much greater share of their revenues through net interest income (NII) than trading income, and vice versa for a firm with an investment bank heritage such as Morgan Stanley. In fact, the vast majority of the world’s banks do not even run a “trading book”, which is a business activity with a specific accounting definition and treatment. Such firms will earn a greater share of their revenues through fees and loan interest income. The breakdown varies widely across regions and banks.

Let us now consider the different types of income streams and costs.

Interest income

Interest income, or NII, is the main source of revenue for the majority of banks worldwide. It can form upwards of 60% of operating income, and for smaller banks and building societies it reaches 80% or more.

NII is generated from lending activity and interest-bearing assets, while “net” return is this interest income minus the cost of funding loans. Funding, which is a cost to the bank, is obtained from a wide variety of sources. For many banks, customer deposits are a key source of funding, as well as one of the cheapest. They are generally short term, though, or available on demand, so must be supplemented by longer term funding. Other sources of funds include senior debt in the form of bonds, securitised bonds, and money market paper.

NII is sensitive to both credit risk and market risk. Market risk, which we look at later, is essentially interest-rate risk for loans and deposits. Interest-rate risk will be driven by the maturity structure of the loan book, as well as the match (or mismatch) between the maturity of loans against the maturity of funding. This is known as the interest-rate gap.

Fees and commissions

Banks generate fee income as a result of providing services to customers. Fee income is very popular with bank senior management because it is less volatile and not susceptible to market risk like trading income or even NII. There is also no credit risk because fees are often paid upfront. There are other benefits as well, such as the opportunity to build up a diversified customer base for this additional range of services, but these are of less concern to a bank’s asset-liability management (ALM) desk.

Fee income uses less capital and also carries no market risk, but does carry other risks, such as operational risk.

Trading income

Banks generate trading income through trading activity in financial products such as equities (shares), bonds, and derivative instruments. This includes acting as a dealer or market-maker in these products, as well as taking proprietary positions for speculative purposes. In some cases, running positions in securities (as opposed to derivatives) generate interest income; some banks strip this out of the capital gain made when the security is traded to profit, while others include it as part of overall trading income.

Trading income is perhaps the most volatile income source for a bank. It also generates relatively high market risk, as well as not inconsiderable credit risk. In the era of Basel III, banks will be migrating from the use of Value-at-Risk (VaR) methodology to measure the risk arising from trading activity to the use of the Expected Shortfall (ES) method, which gives a statistical measure of expected losses to the trading portfolio under certain market scenarios. This is dictated by the Fundamental Review of the Trading Book (FRTB) rules implemented under Basel III. A discussion of this topic is outside the scope of this book but further detail can be obtained from the author's book *Moorad Choudhry Anthology*.

Costs

Bank operating costs comprise staff costs and operating costs, such as provision of premises, information technology, and office equipment. Other significant elements of cost are provisions for loan losses, which are charges against the loan revenues of the bank. Provision is based on subjective measurement by management of how much of the loan portfolio can be expected to be repaid by the borrower.

SCOPE OF BANKING ACTIVITIES

The different aspects of banking business vary widely in nature. For our purposes we may group them together as shown in Figure 1.1. Put very simply, "retail" or "commercial" banking covers the more traditional lending and trust activities, while "investment" banking covers trading activity and fee-based income such as stock exchange listing and mergers and acquisitions. The one common objective of all banking activity is return on capital. Depending on the degree of risk it represents, a particular activity will be required to achieve a specified return on the capital it uses. The issue of banking capital is vital to an appreciation of the banking business; entire new business lines (such as securitisation) have been devised in response to the need to make the use of capital more efficient.

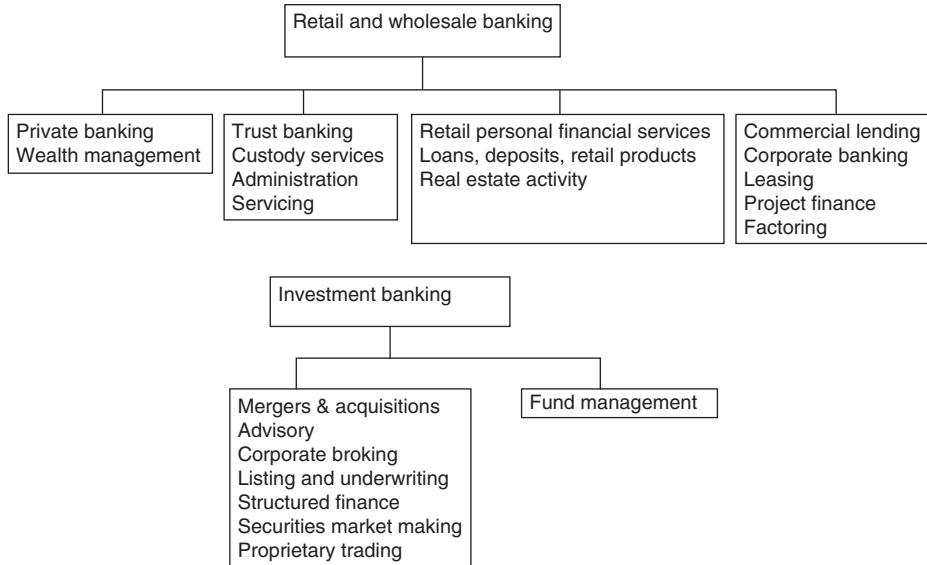


Figure 1.1 Scope of banking activities

As we can see from Figure 1.1, the scope of banking business is wide. Activities range from essentially plain vanilla activity, such as corporate lending, to complex transactions, such as securitisation and hybrid product trading. There is vast literature on all these activities, so we do not need to cover them here. However, it is important to have a grounding in the basic products; subsequent chapters will introduce these.

ALM is the discipline in banking risk management that is concerned with the efficient management of the mismatch between assets (loans) and liabilities (deposits), and with management of the bank's capital. It therefore concerns itself with all banking operations, even if day-to-day contact between the ALM desk (or Treasury desk) and other parts of the bank is infrequent. The ALM desk will be responsible for the Treasury and money market activities of the entire bank. So, if we wish, we could draw a box with ALM in it around the whole of Figure 1.1. This is not to say that the ALM function does all these activities; rather, it is just to make clear that all the various activities represent assets and liabilities for the bank, and one central function is responsible for this side of these activities.

For capital management purposes, a bank's business is organised into a "banking book" and a "trading book". We consider these next; first though, a word on bank capital.

Capital

Bank capital is the equity of the bank. In other words, it is a liability. This is important to remember because frequently in the business media one comes

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across commentary that banks have to “set aside” capital in order to undertake lending, as if it is some sort of asset. One does not set aside capital; however, depending on the riskiness of the lending, one has to have a minimum of the balance sheet funded by equity liabilities, as opposed to debt liabilities such as deposits or bonds.

Capital is the cushion that absorbs unexpected losses that the bank incurs when loan customers default on their borrowing. By acting as this cushion, it enables the bank to continue operating and thus avoid insolvency or bankruptcy during periods of market correction or economic downturn. When the bank suffers a loss or writes off a loss-making or otherwise economically untenable activity, the capital is used to absorb the loss. This can be done by eating into reserves, freezing dividend payments, or (in more extreme scenarios) a writedown of equity capital. In the capital structure, the rights of capital creditors, including equity holders, are subordinated to senior creditors and deposit holders.

Banks occupy a vital and pivotal position in any economy as the suppliers of credit and financial liquidity, so bank capital is important. As such, banks are heavily regulated by central monetary authorities, and their capital is subject to regulatory rules compiled by the Bank for International Settlements (BIS), based in Basel, Switzerland. For this reason its regulatory capital rules are often called the “Basel rules”. Under the original Basel rules (Basel I), a banking institution was required to hold a minimum capital level of 8% against the assets on its book.³ Total capital is comprised of:

- Equity capital;
- Reserves;
- Retained earnings;
- Preference shares;
- Subordinated debt.

Capital is split into Tier 1 capital and Tier 2 capital. The first four items in the bulleted list comprise Tier 1 capital or “additional tier 1” (AT1) capital, while the remaining item is Tier 2 capital.

The quality of the capital in a bank reflects its mix of Tier 1 and Tier 2 capital. Tier 1 or “core capital” is the highest quality capital, as it is not obliged to be repaid. Tier 2 is considered lower quality capital as it is not necessarily “loss absorbing”, although legally it is required to be; it is repayable and also of shorter term than equity capital. Assessing the financial strength and quality of a particular banking institution often requires calculating key capital ratios for the bank and comparing them with market averages and other benchmarks.

Analysts use a number of ratios to assess bank capital strength. Some of the more common ones are shown in Table 1.2.

³There is more to this than just this simple statement, and we consider it in detail in Chapter 15.

Table 1.2 Bank analysis ratios for capital strength

Ratio	Calculation	Notes
Common equity capital ratio	Tier 1 capital/Risk-weighted assets	A key ratio monitored, in particular, by rating agencies as a measure of high-quality, non-repayable capital, available to absorb losses incurred by the bank
Tier 1 capital ratio	Eligible Tier 1 capital/Risk-weighted assets	Another important ratio monitored by investors and rating agencies. Represents the amount of high-quality, non-repayable capital available to the bank
Total capital ratio	Total capital/Risk-weighted assets	Represents total capital available to the bank
Off-balance-sheet risk to total capital	Off-balance-sheet and contingent risk/Total capital	Measure of adequacy of capital against off-balance-sheet risk, including derivatives exposure and committed, undrawn credit lines

Banking and trading books

Banks and financial institutions make a distinction between their activities for capital management purposes, including regulatory capital. Activities are split between the “banking book” and the “trading book”. Put simply, the banking book holds the traditional banking activities such as commercial banking, loans, and deposits. This would cover lending to individuals as well as corporates and other banks, and so will interact with investment banking business.⁴ The trading book records wholesale market transactions, such as market-making and proprietary trading in bonds and derivatives. Again, speaking simply, the primary difference between the two books is that the overriding principle of the banking book is one of “buy and hold” – that is, a long-term acquisition. Assets may be held on the book for up to 30 years or longer. The trading book is just that, it employs a trading philosophy so that assets may be held for very short terms, less than 1 day in some cases.

⁴For a start, there will be a commonality of clients. A corporate client will borrow from a bank and may also retain the bank’s underwriting or structured finance departments to arrange a share issue or securitisation on its behalf.

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The regulatory capital and accounting treatment of each book differs. The primary difference here is that the trading book employs the “mark-to-market” approach to record profit and loss (P&L), which is the daily “marking” of an asset to its market value. An increase or decrease in the mark on the previous day’s mark is recorded as an unrealised profit or loss on the book: on disposal of the asset, the realised profit or loss is the change in the mark at disposal compared with its mark at purchase.

The banking book

Traditional banking activity – such as deposits and loans – is recorded in the banking book. The accounting treatment for the banking book follows the accrual concept, which accrues interest cash flows as they occur. There is no mark to market. The banking book holds assets for which both corporate and retail counterparties as well as banking counterparties are represented. So it is the type of business activity that dictates whether it is placed in the banking book, not the type of counterparty or which department of the bank is conducting it. Assets and liabilities on the banking book generate interest-rate and credit risk exposure for the bank. They also create liquidity and term mismatch (“gap”) risks. Liquidity refers to the ease with which an asset can be transformed into cash and to the ease with which funds can be raised in the market. So we see that “liquidity risk” actually refers to two related but separate issues.

All these risks form part of ALM. Interest-rate risk management is a critical part of Treasury policy and ALM, while credit risk policy will be set and dictated by the credit policy of the bank. Gap risk creates an excess or shortage of cash, which must be managed. This is the cash management part of ALM. There is also a mismatch risk associated with fixed rate and floating rate interest liabilities. The central role of financial markets is to enable cash management and interest-rate management to be undertaken efficiently. ALM of the banking book will centre on interest-rate risk management and hedging, as well as liquidity management. Note how there is no “market risk” for the banking book in principle, because there is no marking to market. However, the interest-rate exposure of the book creates an exposure that is subject to market movements in interest rates, so for regulatory purposes the banking book is exposed to market risk.

Trading book

Wholesale market activity, including market-making and proprietary trading, is recorded in the trading book. Assets on the trading book can be expected to have a high turnover, although not necessarily so, and are marked to market daily. Counterparties to this trading activity can include other banks and financial institutions such as hedge funds, corporates, and central banks. Trading book activity generates the same risk exposure as that on the banking book, including market risk, credit risk, and liquidity risk. It also creates a need for cash management. Much trading book activity involves derivative

instruments, as opposed to “cash” products. Derivatives include futures, swaps, and options. These can be equity, interest rate, credit, commodity, foreign exchange (FX), weather, and other derivatives. Derivatives are known as “off-balance-sheet” instruments because they are recorded “off” the (cash) balance sheet. Their widespread use and acceptance have greatly improved the efficiency of the process behind risk exposure hedging for banks and other institutions alike.

Off-balance-sheet transactions refer to “contingent liabilities”, which are so called because they refer to future exposure contracted now. These are not only derivatives contracts, such as interest-rate swaps or writing an option, but also include guarantees such as a credit line to a third-party customer or a group subsidiary company. These represent a liability for the bank that may be required to be honoured at some future date. In most cases, they do not generate cash inflow or outflow at inception – unlike a cash transaction – but represent future exposure. If a credit line is drawn on, it represents a cash outflow and that transaction is then recorded on the balance sheet.

BANKING PRODUCTS

We provide a summary description of the main products offered by banks to their customers, grouped into liabilities and assets.

Interest-bearing and non-interest-bearing current account

This is *the* principal banking product and the one that has been a significant factor in global economic development. Sometimes referred to as a money transmission account (MTA) or an “operational deposit”, these are also known as cheque accounts or (in the US) “checking accounts”. They are the simplest form of short-term deposit or investment instrument. Customer funds may be withdrawn instantly on demand, either by cheque, cash machine (“automated teller machine” or ATM) card, or electronically via telephone or internet mobile app. They may also be set up with regular payments to third parties such as standing orders and direct debits.

Banks generally pay interest on surplus balances, although not always. Current accounts are a cheap source of funding for banks, as well as a stable one, because their balances, although variable on a monthly basis, are viewed as behaviourally long term.

The current account product defines a bank. Many so-called “challenger banks” or digital mobile app-only banks do not offer such a product, which means that their customers will need to obtain MTA services from another bank.

The other side of the current account, the on-demand instant overdraft facility, is also a very important product.

Demand deposit

Also referred to as a savings account, sight deposit, or call account, these are similar to cheque accounts but are always interest bearing and may not be used for making payments to third parties. The funds are available on demand, but cannot be used for cheques or other similar payments.

Time deposit

Time or term deposits are interest-bearing deposit accounts of fixed maturity and, often, fixed interest rate. They are usually offered with a range of maturities ranging from 1 month to 5 years, with longer dated deposits attracting higher interest. This reflects a positive yield curve, which indicates the funding value to the bank of longer term liabilities. Most time deposits pay a fixed rate of interest, payable on maturity. Accounts of longer than 1-year maturity often capitalise interest on an annual basis.

Fixed term deposits are sometimes called “bonds” or “savings bonds” but are not tradable instruments, so this term is not to be confused with capital market bonds or fixed income securities.

Savings deposit (non-instant access)

A notice account is a savings deposit account that pays a higher rate of interest to a standard demand deposit, provided the customer gives 30, 35, 60, 90, or 180 days’ notice before withdrawing funds. Banks also incentivise customers with a higher interest rate when they arrange to pay in a fixed amount each month over a 12- or 24-month period, so-called “monthly saver” accounts. Such deposits are treated as behaviourally stable funds for regulatory purposes.

In some jurisdictions, interest on deposit accounts is paid net of a withholding tax. Some accounts may be set up to pay gross interest, or may be arranged to be tax-free interest-bearing accounts, provided they meet certain stipulated conditions.

Structured deposit

A structured deposit is a deposit whose payoff or return profile is structured to match a specific customer requirement. The structuring results from the use of an embedded derivative in the product, which links the deposit to changes in interest rates, FX rates, stock market indices, or other market rates. There is a wide range of different products available that fall in the class of “structured deposit”.

An example is the following: a customer places funds on deposit at a specific interest rate and fixed term. Under the agreement, if the central bank base

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interest rate remains between 4 and 5%, then return is enhanced by 100bp. If the rate moves below 4% or above 5%, then the deposit forfeits all interest for the remaining term of its life. This is an example of a “collared range accrual” deposit. It’s a pretty superfluous product and asks the customer to speculate on interest rates, which makes it more of an investment product than a pure bank deposit.

Personal and corporate loans

The basic customer product of a bank is the retail or corporate customer loan. This may be secured on collateral or unsecured, and may be set with a fixed-rate or variable floating-rate of interest. The loan term is usually fixed, and the repayment may be “bullet”, meaning the initial borrowed amount is paid in one go on maturity, or it may be amortising, meaning the borrower pays down a regular portion of the loan during its life.

On-demand overdraft

The basic current account is usually, although not always, able to go “overdrawn” if payments are made through it that are of higher value than its credit balance at the time. Typically, the customer will have arranged such an overdraft in advance, because unarranged overdrafts are charged at a higher interest rate. There is no repayment date on an overdraft, but a bank may withdraw the facility at 30 or 60 days’ notice, which would require the overdraft to be repaid in that time. In general, overdraft facilities are renewed on an annual basis.

Liquidity facilities

Liquidity facility is the generic term for a standing loan agreement, against which a borrower can draw down funds at any time up to the maximum value of the line. The borrower pays a fee, called the standing fee, even if the line is not used and then pays the agreed rate of interest on any funds that it does draw.

We distinguish between the following:

- *Back-up facility*: A facility that is not used in the normal course of business. It is generally drawn down if the borrower is experiencing some difficulty in obtaining funding from its usual sources;
- *Revolving credit facility (RCF)*: A commitment from a bank to lend on a revolving basis under prespecified terms. Under an RCF there is usually a regular drawdown and repayment of funds during the life of the facility;
- *Overdraft*: See above;
- *Credit card*: See below.

Liquidity facilities require full regulatory capital backing, as the capital treatment is to assume that they are being used at all times.

Credit card

A credit card is a form of liquidity facility because it references a line of borrowing approved in advance by the bank, which the customer can draw down on at any time and on demand. There is usually a credit limit set when the card is issued to the customer. Credit cards, which are used by both retail and corporate customers, are very useful products because they enable the borrower to purchase goods and services over all communications media, from face to face over the counter to digital and mobile app.

Trade finance: letter of credit

A letter of credit (LoC) is a standard vanilla product available from a commercial bank. It is an instrument that guarantees that a buyer's payment to a seller will be received at the right time and for the specific amount. The buyer is the customer of the bank. If the buyer is unable to make payment on the due date, the bank will cover the full amount of the purchase. The bank therefore takes on the credit risk of the buyer when it writes an LoC on the buyer's behalf. The buyer therefore pays a fee for the LoC that reflects its credit standing.

LoCs are used in domestic and international trade transactions. Cross-border trade transactions involve both parties in issues such as distance, different legal jurisdictions, and lack of any available due diligence on the counterparties. An LoC is a valuable tool that eases the process for the buying and selling parties. The bank also acts on behalf of the buyer (the purchaser of the LoC) because it would only make payment when it knows that the goods have been shipped. For the seller, an LoC substitutes the credit of the buyer for that of the bank, which is an easier risk exposure for the seller to take on.

LoCs represent fee-based income for a bank and are sometimes referred to as "off-balance-sheet" because no actual funded lending is involved.

Commercial letter of credit

A commercial LoC is a contract issued by a bank, known as the issuing bank, on behalf of one of its customers, authorising another bank, known as the advising or confirming bank, to make payment to the beneficiary. The issuing bank makes a commitment to guarantee drawings made under the named credit. The beneficiary is normally the provider of goods and/or services. An advising bank, usually a foreign correspondent bank of the issuing bank, will advise the beneficiary, but otherwise has no other obligation under the LoC.

An LoC is generally negotiable; this means that the issuing bank is obliged to pay the beneficiary but – should the issuing bank so request – any bank nominated by the beneficiary could make the payments. To be negotiable, the LoC features an unconditional promise to pay on demand at a specified time.

Standby letter of credit

A standby LoC is a contract issued by a bank on behalf of a customer to provide assurances of its ability to perform under the terms of a contract between it and the beneficiary. In other words, a standby LoC is more of a guarantee, as both parties to the transaction do not expect the LoC will be drawn on. It essentially provides comfort to the beneficiary, as it enhances the creditworthiness of its customer.

Syndicated loan

To raise debt capital, companies may issue bonds or loans (as well as other debt-like instruments), both of which are associated with a certain seniority or ranking. In a liquidation or winding up, the borrower's remaining assets are distributed according to a priority waterfall: debt obligations with the highest seniority are repaid first; only if assets remain thereafter are obligations with lower seniorities repaid. Further, debt instruments may be secured or unsecured: if certain of the borrower's assets are ring-fenced to serve as collateral for the lenders under a particular obligation only, this obligation is deemed to be "secured". Together, seniority and collateral determine the *priority* of an obligation. As illustrated in Table 1.3, bonds and loans issued by investment-grade companies, as well as bonds issued by sub-investment-grade companies, called "high-yield bonds", are typically senior unsecured. However, loans issued by sub-investment-grade companies are typically senior secured. Often, these are called "leveraged loans" or "syndicated loans". The market often uses both terms interchangeably.

The definition of "leveraged loan" is not universal, however. Various market participants define a leveraged loan to be a loan with a sub-investment-grade rating, while other users view it as one with a certain spread over Libor (say 100bp or more) and sometimes a certain debt/EBITDA ratio of the borrower. S&P, for instance, calls a loan "leveraged" if it is rated sub-investment grade or if it is rated investment grade but pays interest of at least Libor + 125bp. Bloomberg uses a hurdle rate of Libor + 250bp. Essentially, the market refers to leveraged loans and high-yield bonds as "high-yield debt".

Leveraged loans may be arranged either between a borrower and a single lending bank, or, more commonly, between a borrower and a syndicate of

Table 1.3 Typical priorities of corporate bonds and loans of investment grade and sub-investment-grade borrowers

	Investment-grade borrower	Sub-investment-grade borrower
Bonds	Senior unsecured	Senior unsecured (high-yield bonds)
Loans	Senior unsecured	Senior secured (leveraged loans/syndicated secured loans)

Source: Choudhry (2010).