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Asset Liability Management Optimisation

*A Practitioner's Guide to Balance Sheet
Management and Remodelling*

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BEATA LUBINSKA

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Asset Liability Management Optimisation

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Asset Liability Management Optimisation

*A Practitioner's Guide to Balance Sheet
Management and Remodelling*

BEATA LUBINSKA

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To my Family.

*With special gratitude to Lidia, the best daughter I can
imagine and to Daniele, my husband, who has a special place
in my heart*

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Foreword

Banking is an age-old art. As a commercial discipline, modern banking dates from the fifteenth century but there is evidence of practice uncannily similar to ‘modern’ banking dating from Roman and even Babylonian times. If by banking we mean an independent enterprise that accepts deposits from customers, which it promises to keep safe and repay (with interest) on demand, whilst at the same time lending funds to borrowers who agree to repay (with interest) at a set date in the future, then banking is indeed an ancient art.

Of course, that makes asset liability management (ALM), as a discipline linked hand-in-glove with banking, a fairly time-honoured practice as well. Because to practise banking is to practise ALM. Every bank operates an ALM function, for the simple reason that to undertake banking requires the institution to manage its assets and liabilities efficiently. An ALM desk is as vital to a bank as the engine and wheels are to a motor car. Deposits and loans have different cashflow profiles, they behave differently at different times, and they represent different risks on the balance sheet. Managing these various differences is what banking and ALM, or at least long-term sustainable banking, are all about.

It seems, however, that ALM as a formal discipline, codified into formal text, is a rather more recent thing. I can find no trace of the use of this expression, in the context of banking, in any academic or practitioner text that dates before the early 1970s. This is curious, to put it mildly, because it is such a vital part of the art of banking. I surmise that the reason for this is twofold: one, as a process, it was traditionally part of the Treasury function, a desk well-known for its ‘learn on the job, in-at-the-deep end’ approach to its duties; and two, it is an area of finance that has never attracted overmuch attention from academia. And if academics aren’t writing technical papers about your art, then usually precious few Treasury practitioners are going to either.

No matter, one of the many impacts of the 2008 global financial crash was the new emphasis on ALM, or I should say the importance of ALM. No longer was it the chap at the conference in the dull grey suit who stood in the corner looking at his (it was generally a he, in the UK anyway) shoes. Now it was the rock star, a prime focus for attention. Why? Because capital and liquidity were now, for banks, more constrained, more expensive. Having too much of either was unbearably inefficient, whilst having insufficient of either was now going to bring the wrath of the regulator down on one’s head. However relaxed one might have been about ALM before, overnight it became urgent business, deserving of the C-suite’s undivided attention.

Thus, the buzzword since 2008 has been balance sheet *optimisation*, what I've been calling *strategic ALM* for as long as anyone has cared to listen. I like to think of ALM optimisation as meaning structuring the balance sheet, at the loans and deposits origination stage, in a way that meets the competing needs of regulator, customer, and shareholder as efficiently and as effectively as possible. This is, in essence, strategic ALM. Considering the needs of all three key stakeholders and practising proactive, as opposed to reactive, ALM.

The author of this fine book defines optimisation slightly differently, although to me her definition follows on logically from mine. Whereas I define the 'what?', Ms Lubinska defines the 'how?'; to wit, optimisation is '*a process which involves the application of optimisation techniques (described in this book) and definition of the optimisation criterion (which metric do we want to prioritise), objectives (what do we want to optimise), and constraints (conditions which need to be taken into account in the optimisation process).*'

As she notes further,

One of the objectives of this book is to walk the reader through the optimisation process in detail, from the practical perspective, in order to quantify the economic benefits coming from this exercise.

This is, quite simply, solid gold. In the post-crash era of onerous banking regulation and constrained capital and liquidity, undertaking a more disciplined, formal approach to ALM becomes as important as cyber security, as important as treating customers fairly, of pursuing the right strategy to compete. It is the key to a sustained and viable balance sheet over the long term. And as I am fond of saying, the balance sheet is everything.

This is a book to be studied carefully, to read and re-read and then to assess for application to one's own bank. The tools described herein, illustrated with case study examples, are not necessarily transferable verbatim to every bank. Rather, it is the discipline that is being demonstrated that needs to be adopted, and the techniques tweaked, to ensure that the right approach is tailor-made for each specific case. This isn't a trivial subject. But if one gets it right, the simultaneous reward for all of a bank's stakeholders will be plain to see.

Professor Moorad Choudhry
Surrey, England
31 October 2019

About the Author

Dr. Beata Lubinska is a financial engineer with over 15 years of practical experience gained in international financial institutions such as GE Capital, Deloitte, and Standard Chartered Bank based both in Milan and London. Currently, she leads BL Advisory & Consulting, a small boutique consulting company based in London.

Previously, she was a Head of Market Risk Department in MeDirect Group in London with the main focus on IRRBB, Market Risk and Balance Sheet Management. Aside from being a member of BTRM Faculty, which was founded by Professor Moorad Choudhry in London, she also provides trainings for professionals from banking industry across the globe (including Kuwait, London, USA, Oman, Qatar, and Turkey).

Her main areas of specialisation include: Funds Transfer Pricing, Interest Rate Risk in the Banking Book, Asset Liability Management, and Balance Sheet management through FTP and optimisation.

Beata holds a PhD from Wroclaw University of Economics in Poland. In her PhD thesis, she introduces the hypothesis that the application of the optimisation techniques improves the management of the banking book in terms of quantifiable economic impact on the P&L of the bank and that there is clear benefit from the integrated treatment of the interest rate risk and liquidity risk under one approach. She strongly promotes the proactive management of the balance sheet of a bank. The results of her research are published in *Financial Sciences*, *Springer Proceedings in Business and Economics* and *Research Papers of Wroclaw University of Economics*. Her recent publications include:

- ‘Review of the static methods used in the measurement of the exposure to the interest rate risk’ – *Financial Sciences* 2014.
- ‘Balance Sheet Shaping Through Decision Model and the Role of the Funds Transfer Pricing Process’ – Springer 2017.
- ‘Balance Sheet Shaping through a Decision model and Funds Transfer Pricing’ – *Research Papers of Wroclaw University of Economics*, 2017.
- ‘Contemporary challenges in the Asset Liability Management’ – Springer 2018.
- ‘Contemporary challenges in the Asset Liability Management’ – *Research Papers of Wroclaw University of Economics*, 2018.
- ‘Modern Asset Liability management (ALM) needs to operate in the multidimensional world’ – *ALCO* magazine, August 2018.
- ‘Interest Rate Risk in the Banking Book (IRRBB) – key challenges in the implementation of the revised European Banking Authority Guidelines and why it is so important’ – *ALCO* magazine, November 2018.

Introduction

The role of the Asset Liability Management function (ALM) in the management of the banking book of a bank is constantly growing. A clear evolution can be seen as ALM managers realise that a reactive approach, which consists of the management of the banking book as a passive structure resulting from the commercial and funding strategy of a bank, should be replaced by a proactive approach where the banking book structure is decided in a conscious and active way in order to come up with the desired target structure of the banking book.

The intention of this book is to promote a change in the role of ALM and, in general, in the approach towards financial risk management practice in modern finance. It will show that the proactive role of ALM through an integrated approach for the management of two main financial risk categories, i.e. interest rate risk (IRR) and liquidity risk under one approach, and interrelation with the commercial strategy that a bank wants to adopt, brings significant benefits. Those benefits are mainly economical and can be quantified. The need for change seems to be driven by a number of challenges, such as a heavily regulated landscape, low or negative rates (in the eurozone), and margin compression, which the banking industry has been facing since 2008.

This is why the word ‘optimisation’ is commonly used in banks these days as an attempt to address the aforementioned challenges. However, I quite often wonder what this word means in practice. What in reality should be optimised, and how it should be optimised. I believe that often the word ‘optimisation’ just means to make better allocation of resources such as liquidity or capital in order to align a bank with the regulatory requirements. In my view, optimisation is a process which involves the application of optimisation techniques (described in this book) and definition of the optimisation criterion (which metric do we want to prioritise?), objectives (what do we want to optimise?), and constraints (conditions which need to be taken into account in the optimisation process). It also needs a practical implementation tool (method). One of the objectives of this book is to walk the reader through the optimisation process in detail, from a practical perspective, in order to quantify the economic benefits coming from this exercise. At the end, the reader is provided with two business cases on which the optimisation process is tested.

Additionally, the book sheds light on another aspect: the *silobased* approach adopted for the management of financial risks still commonly used as a *day-by-day* practice in banks. The *silobased* approach consists of separated management of financial risks, in particular interest rate risk in the banking book and liquidity risk. The consequence of this is taking suboptimal decisions regarding the funding strategy (and consequently liquidity and funding risk) and suboptimal hedging strategies

(and consequently mitigation of the interest rate risk in the banking book). In my experience, I have always seen these two risk categories treated separately and not interrelated in the daily measurement and management process. For example, in the risk management department there was a person (or team) focused on the calculation of liquidity metrics and another person (team) responsible for analysis of the interest rate risk in the banking book (IRRBB) metrics. The treasury department, in each bank, had its own set-up and targets designed for this function. As such, in some banks you will see the ALM function operating within the treasury department, with the main objective being to focus on taking an active positioning on the interest rate curve and benefiting from the expected movements of the curve in line with the market forecast. Quite often the size and components of the liquidity buffer (also within the responsibilities of the treasury department) are decided separately and the impact on IRRBB metrics is assessed only after the whole process of building the liquidity buffer is already finalised. One of the most important tasks of a bank's treasurer is to come up with the funding strategy. This is the process where all available funding sources are assessed, and their composition is decided. Again, there is still quite often little interaction with IRRBB. Instead, my experience and academic research lead towards the conclusion that such an interaction should be imperative.

Let's analyse this aspect in detail.

The crucial task of the treasury department is to maintain a healthy balance between the profitability of the banking book and its exposure to financial risks altogether. There is a clear trade-off between the riskiness of the banking book and its profitability. In this book, I call it a *target position*. Finding such a target position (or target profile) is the real challenge of ALM analysis because it requires the analytical tools and framework to be put in place. Herein, the target profile means the definition of a composition of assets and liabilities so that the profitability of the banking book reaches its maximum, taking into account a number of regulatory and internal risk constraints. I will come back to this definition later. For now, my main objective is to show that there is a strong interrelation between those two risk categories, i.e. interest rate risk in the banking book and liquidity risk (the two main risk categories which the ALM department has to manage), which becomes very evident when looking at the projection of outstanding stocks according to interest commitment dates (interest rate risk view) and liquidity commitment dates (liquidity risk view).

In order to present this argument in detail, let's analyse a very simple case, in which the banking book of a bank is composed of the fixed rate loan funded by a floating rate note with a 3-month reset. Their financial characteristics are shown in Figure I.1.

In analysing the ALM profitability, we need to first define some terms. First of all, there is a positive margin resulting from the interest rate risk management which is attributed to ALM (the allocation of profits between business units and ALM is described in this book later on) if the spread of assets is higher than the spread of liabilities. If this margin is already crystallised and attributed, we call it *margin locked in*. If there is uncertainty about the future spread because the position, at some point of time, is exposed to the risk of changes in interest rates, we call it *margin at risk*. The same applies to the funding spread on the position as it fluctuates over time.

In the case of the analysed example, the banking book shows exposure to the IRR on 31 March 2019 due to the refixing of the floating rate liability. Starting from that date, the refixed asset will be funded by the refixing liability, causing the interest rate gap and

ASSET – Fixed rate loan at maturity 100

Repayment type: bullet
 Next (capital) payment date: 31/12/2019
 Next repricing date: 31/12/2019
 Customer Rate: 3.50%
 FTP Base Rate: 2.00%
 FTP Liquidity Spread: 0.50%

LIABILITY – Floating rate note 3m reset 100

Repayment type: bullet
 Next (capital) payment date: 30/09/2019
 Next repricing date: 31/03/2019
 Customer Rate: 1.50%
 FTP Base Rate: 1.25%
 FTP Liquidity Spread: 0.25%

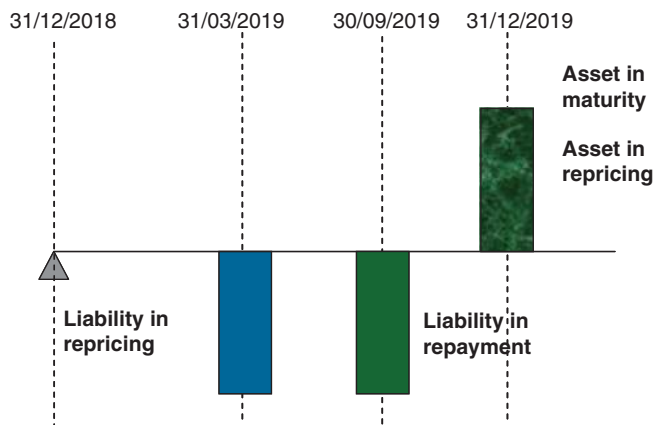


FIGURE I.1 IRR and liquidity profile in the banking book.

Source: own elaboration.

the impact on net interest income known as *NII sensitivity*. As regards the profitability of this position, due to the interest rate risk component, the locked-in ALM margin is equal to 0.75%, while the ALM margin at risk is equal to 1% under the assumption of a decrease in EURIBOR 3 M by 25 bps (from 1.25% to 1%).

This situation is presented in Figure I.2.

The same situation analysed from the liquidity standpoint looks slightly different. The bank begins to be exposed to the liquidity risk on 30 September 2019 when the liability expires and needs to be rolled over. Starting from that date, the funding gap creates the NII sensitivity. It can be clearly seen in Figure I.3.

The ALM locked-in margin deriving from this position is equal to 0.25% (the difference between the liquidity spread of the asset and the liability). However, the ALM margin at risk depends on the new liquidity spread related to the liability which needs to be rolled over.

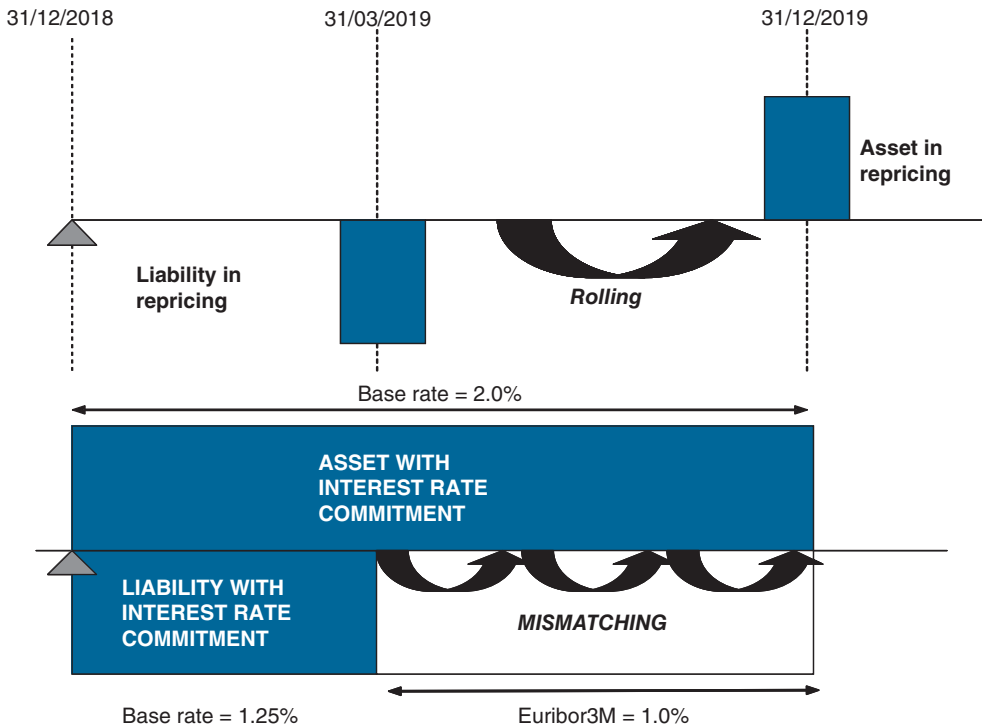


FIGURE I.2 Exposure to IRR in the banking book.
Source: own elaboration

Arriving at the total profitability of the bank, in this particular example, we need to sum the NII margin obtained by the positioning of the bank in terms of both interest rate risk and liquidity risk.

Consequently, the total net interest margin in the period until 31 March 2019 is equal to 1% (0.75% + 0.25%) and will be assigned to the ALM book within the treasury department. From 31 March 2019 to 30 September 2019 it gives 1.25%, but due to the fact that the component related to the IRR is uncertain, this result is unrealised. The same situation appears from 30 September 2019 onward. The unrealised ALM profit depends on the new liquidity spread of the liability in maturity and the movement of the EURIBOR 3 M pillar of the interest rate curve.

It is up to the treasurer to decide how to minimise the NII sensitivity derived from the interest rate risk and liquidity component of the banking book, and what profitability needs to be provided by the ALM unit to the bank. Therefore, the real challenge consists in understanding the trade-off between profitability and risk.

The realised profitability of the bank in terms of P&L impact is determined both by past hedging strategies concerning the interest rate management in the banking book and maturity transformation performed by the treasury with reference to its funding strategy. While the unrealised P&L results will be a function of the magnitude of the margin at risk due to both IRR and the funding strategy for the future accounting periods and the trade-off between expected P&L and its volatility (sensitivity), the riskiness

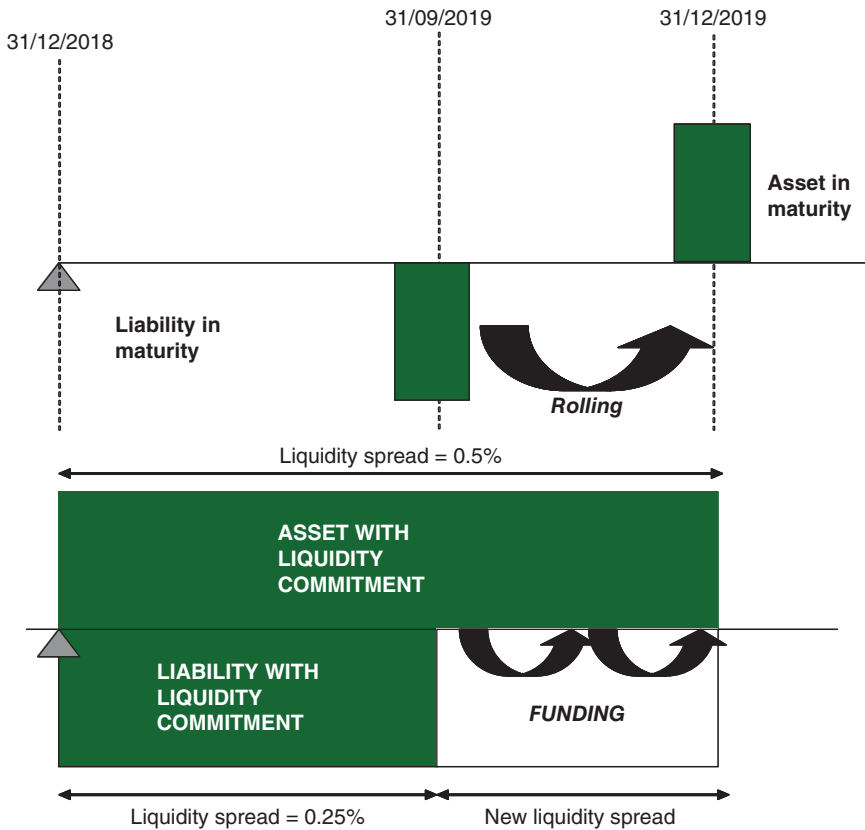


FIGURE I.3 Exposure to the funding risk in the banking book.

Source: own elaboration

embedded in the banking book structure is determined by the risk tolerance of a bank and regulatory requirements. It is obvious that the level of uncertainty and the capability of the bank to predict the direction of the market in terms of the interest rate curve and funding spread are the main impact factors in this exercise, but this is not sufficient.

There are other important factors, such as the unpredictable behaviour of customers of a bank both from the assets and liabilities side, which define the final composition of the banking book. The behavioural assumption related to the assets side is mostly defined by the prepayment rate of mortgages or personal loans which can be prepaid before their contractual maturity date. This factor introduces significant uncertainty into the banking book, since it can change the liquidity profile of the bank within the short-term period. Also, the hedging strategies undertaken in the past might turn out to be inefficient and might need to be adjusted.

As a consequence of the above, the main challenge of the ALM function is to find the banking book target position in terms of the exposure to financial risks, in order to boost its profitability and to minimise the cost of funding being subject to the limits dictated by internal policies and regulatory requirements. Another challenge of ALM is to cooperate in a proactive way with the business units (BUs)

over the definition of the target position of assets in the banking book. There will be the return maximisation aspect and regulatory requirements which may apply to the asset side.

The problem relating to the existence of the interrelation between interest rate risk and liquidity risk and its consequent impact on the structure of the banking book is not new and has been discussed in various papers and books, for example Baldan, Zen, and Rebonato in 2012, and Choudhry in 2017 and 2018. Consequently, this book attempts to approach the integration problem from a different angle, i.e. formulation of mathematical functions and thereafter application of optimisation techniques in order to find out the most appropriate composition of the banking book. The functions are built for the objective variables which need to be optimised (asset profitability and cost of funding) and constraints which need to be taken into account in the optimisation exercise (for example the NII volatility, concentration of funding, and desirable level of liquidity buffer). The output of such a constructed optimisation problem will lead to the achievement of the target profile of a bank in terms of the composition of assets and liabilities and the quantification of the economic impact on the bank's P&L. Finally, the recent sovereign crises, interbank market illiquidity, and strengthened regulatory requirements such as Basel III have forced the banking industry to find the most appropriate position in order to maximise profitability and, at the same time, respect limits dictated by the internal policies and the regulator.

The structure of this book has been subordinated to its main purpose, i.e. the definition of the target structure both for the asset side and liability side of the banking book.

Chapter 1 presents the main concepts of asset and liability management in commercial banks and highlights the special role of the treasury department in seeking a balance between maximising profitability (which is largely derived from the selection of strategies for financing banking operations in the context of expected yield curve and maintaining the previously defined level of metrics describing the risk). From the point of view of liquidity management, the optimisation task focuses on the issue of building a sufficient buffer of liquid assets (HQLA) and maintaining an appropriate long-term liquidity ratio. The interest rate risk is limited by setting a threshold for the sensitivity of interest income (Δ NII). This part of the book presents the most important concepts of managing the banking book in commercial banks, the main financial risks it is subject to, and the concept of the funds transfer pricing process. This chapter also contains an overview of the regulatory architecture built after the global financial crisis of 2007–2009, i.e. Basel III.

Chapter 2 of the book provides the reader with a description of methods for measuring and limiting the interest rate risk and liquidity risk within the banking book. This chapter presents in detail the methods of risk measurement using the gap method and quantifying mismatch of the maturity dates of the banking book items and its impact on the economic value of capital. The subject of the analysis is also the duration method and its application in the process of managing the bank's assets and liabilities (DGAP method). The second part of this chapter presents decomposition of liquidity risk and selected methods of measurement and management in the short and long run. Particular attention is given to analysis of the mismatching risk between risk sensitive assets, liabilities, and basis risk. A separate section is dedicated to the problem of funds transfer pricing (FTP) in the banking sector and the possibility of using it to determine the price parameters of assets in accordance to the level of liquidity risk driven by the liabilities

financing them. This part of the book describes the concept of FTP and the interest rate decomposition paid by the client. The FTP process plays a major role in banking book shaping techniques.

Chapter 3 focuses on the behavioural factors determining the decision of the bank's clients. This problem is presented both for the liabilities side (behaviour of depositors) and for borrowers with the option of early repayment of their liabilities to the bank. This chapter highlights the importance of behavioural factors for the stability and structure of the banking book. One of the key challenges, from the perspective of liquidity and interest rate risk management, is to model these phenomena. Among a number of existing methods, the book presents two methods for estimating the level of deposits without defined the maturity date. The first of these, classified as a quantitative approach, allows for the determination of the stability of deposits based on the growth model; the second is classified as a hybrid method. The sensitivity analysis carried out allows one to point out factors significantly affecting change in the stability of deposits; for example, the level of interest rates or macroeconomic factors. Instead, the process of modelling early repayment of loans (the asset side of the banking book) is presented in stages. The first stage describes the objective of modelling, then the types of behaviour regarding early repayments and factors affecting the decision-making process. This part of the work is descriptive and serves to present an approach to modelling the option of early repayment by the client. In particular, there is the phenomenon of financial prepayments, which is determined by macroeconomic factors and changes in interest rates, as well as statistical prepayments, which cannot be explained by the above mentioned factors.

Chapter 4 focuses on optimisation techniques and describes the optimisation process in the decision-making model. The first section introduces the concept of optimisation and the optimisation algorithm based on the Lagrange multipliers method. The second section concerns the definition of the banking book profile and the description of the initial state of assets and liabilities for which the decision model was constructed (roll-over of time deposits, volatility of current and savings accounts, amortisation profile of assets, prepaid rate of assets, and type of interest rates and pricing policy). This part presents the differences in the structure of the banking book in various countries and the supervisory constraints to which the model is subject. The next section contains a description of the model's structure and constraints imposed on the objective function in the optimisation process. The constraints are divided first into those that determine the banking book's asset side, and include liquidity risk (liquidity buffer, short-term liquidity ratio, structural liquidity ratio, including the behaviour of clients and without taking them into account), interest rate risk (income-based measures and measures of economic value), and capital absorption (capital adequacy ratio). On the liabilities side, the constraints additionally include (apart from the liquidity and interest rate risk) the risk of excessive reliance on a particular source of funding (concentration risk). The chapter also includes the derivation of the objective functions: maximisation of assets income and minimisation of funding costs (costs of obtaining liabilities). The last section of this chapter presents the model risk and its sensitivity analysis. In particular, it defines the model risk and provides some insight on supervisory requirements. Subsequently, it defines the number of scenarios on which the business cases are based.

Chapter 5 includes a practical case study and shows the impact of individual scenarios on the results obtained from the application of the optimisation model. The case

study is conducted on the example of two different banks. The case study can be seen as a test of the previously designed model.

In Appendices 1 and 2, the reader can find the quantification of benefits resulting from the application of the optimisation model, both for the asset and liability side of the banking book, under a number of scenarios (described in Chapter 4).

The term decision model is used in order to emphasise the practical application of the optimisation exercise in the decision-making process. Optimisation, in the form described throughout the book, provides a benchmark for the treasurer, CFO, and CRO related to the optimal composition of the banking book. Thus, senior management can gain awareness of the banking book composition, which allows them to reduce the cost of funding for the liability side and increase income for the asset side.

The book concludes with a number of take away messages and emphasises key points delivered to the reader.

ALM of the Banking Book

This chapter describes in detail the main concepts related to the Asset Liability Management (ALM) in a commercial bank. Several aspects are analysed and put in evidence. It highlights the evolving role of ALM and its growing importance in ensuring the healthy and profitable structure of the banking book. There is an overview of financial risks existing in the banking book and managed within the ALM function, and a reminder of the Basel Committee on Banking Supervision (BCBS) practices related to the liquidity and funding risk, known as Basel III. Quite an important portion of this chapter is devoted to the Funds Transfer Pricing process (FTP) and its role in the management of interest rate risk and liquidity risk in the banking book.

The final part of this chapter is focused on the selective review of the main literature positions which have contributed significantly to the developments in the ALM field and have ensured the progress in the ALM role, risk measurement techniques, and profitability enhancement strategies.

THE ROLE OF ASSET LIABILITY MANAGEMENT IN COMMERCIAL BANKS

Under the common definition, Asset Liability Management (ALM) means the management of the balance sheet structure with two main objectives:

- to keep risks within the limits of risk bearing capacity;
- to earn on the capital utilised for banking book risks.

Those objectives are set within a bank's treasury division by a bank's Asset Liability Committee (ALCO) in a sense that each bank has a different risk appetite towards interest rate risk in the banking book and liquidity risk, which are managed within the ALM desk. As such, banks set up their own trade-off between risk and profitability in their banking books. For example, some banks are willing to take on more exposure in terms of *riding the yield curve* strategy through funding fixed rate assets with floating rate liabilities. Other banks opt for an immunisation strategy.

Exchange rate risk and credit spread risk are also managed within ALM.

In my view, ALM also has another important objective which gained attention quite recently, i.e. after the financial crisis of 2008. It consists of the determination of the cheapest funding structure for the bank in order to optimise its resources, such as

liquidity, and support the business model of the bank. In this context, ALM acts as a strategic and active connection between business units, in particular to support them in decision-making processes (this point is explained in detail later on). Additionally, it has to find the target position for a bank through minimisation of funding costs. ALM is also a game changer – it adopts an integrated view for the management of financial risks, interest rate risk, and liquidity risk in the first instance.

Quite often the role of ALM is referred to as *'a bank within a bank'* and I support this statement. This important role can be clearly seen once you introduce the FTP process into Figure 1.1.

ALM charges the asset centre (the business unit responsible for delivering products to clients who intend to borrow from the bank, for example credit cards, mortgages, commercial loans) the FTP rate and recognises the FTP rate to the liability centre (the business unit responsible for delivering products to clients who intend to invest or hold their money within the bank). In doing so, the financial risks (interest rate risk and funding risk) are stripped off the business unit and transferred to ALM to manage. This is why it adopts this *'bank within the bank'* role. The whole process, which is presented in Figure 1.1, is the basis of the FTP process and we will come back to this point repeatedly.

However, it must be noted that some of risks specific to the bank cannot be transferred to the financial market through derivatives and managed within ALM. This can be driven either by inappropriate FTP set up in the bank (incorrect methodologies or

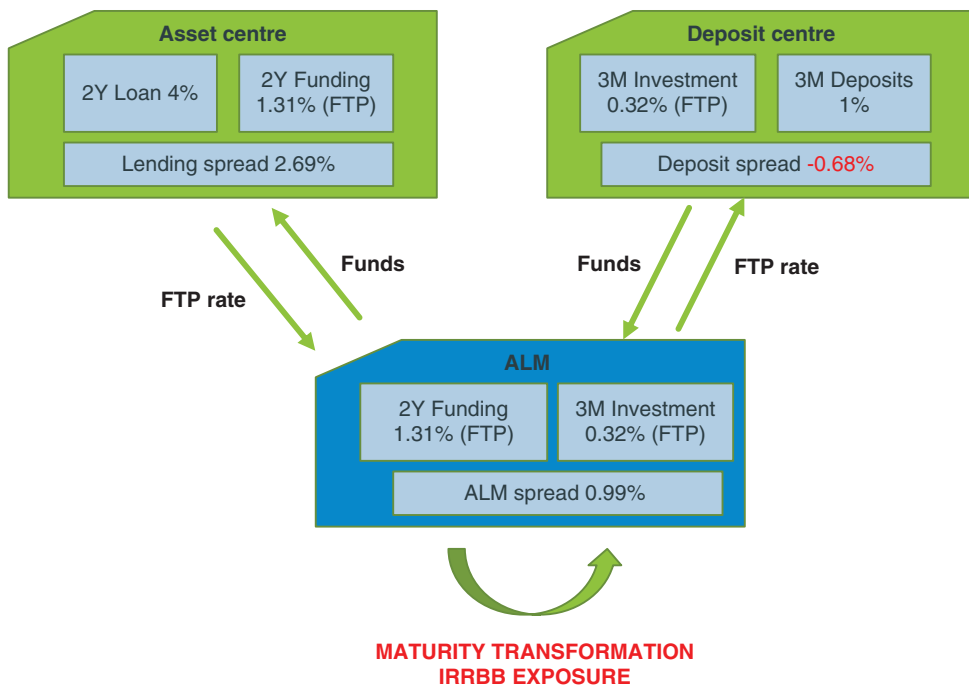


FIGURE 1.1 Maturity Matched Funds Transfer Pricing and ALM role.

Source: own elaboration.

curve construct) or an illiquid derivatives market in certain locations or currencies. By definition, credit risk cannot be transferred to ALM either.

Thus, ALM is defined as the management of balance sheet risks with financial instruments; however, not all balance sheet risks can be managed within ALM and ALCO.

Credit risk, which consumes the largest part of capital, is frequently managed by another body called the Total Bank Management Committee (in some banks managed by a Risk Committee) and is strictly linked to the commercial strategy of the bank and the products it is willing to offer.

In fact, it is still very common practice to separate credit risk management from financial risk management, although the name of the committee which governs the credit risk can differ across the banks. Again, in my view, ALM has a significant role in the balance sheet shaping and should be interlinked with the commercial units.

As already mentioned, the main task of ALM is to limit and manage risks on- and off-balance sheet. Management requires respecting internal and regulatory limits and controlling the revenue impact on the balance sheet. Thus, regulatory and internal limits are constraints. The goal of managing risk is to earn on it, to fulfil the revenue budget. In addition, it is practically impossible to mitigate all risks resulting from a bank's customer business and balance sheet. The following risks are managed by ALM:

- Interest Rate Risk in the Banking Book (IRRBB) – the risk of reduction of interest income through unfavourable interest rate movements. It is also the risk of reduction in market value of the interest rate risk position. ALM management concepts, reporting, and limits have to reflect this dual view.
- Liquidity Risk – risk of insufficient funds resulting in illiquidity. This risk is managed by keeping liquidity buffers that can be turned into liquidity in the case of stress.
- Liquidity Cost Risk – risk of the reduction of interest income (or mark to market value) through an increase in liquidity cost (funding spread).
- FX Risks – losses from unfavourable movements in the foreign currency exchange rates.
- Credit Spread Risk in the Banking Book (CSRBB) – mark to market losses from spread variations in the bond and derivatives portfolio.

IRRBB, CSRBB, and FX risks in ALM are limited within the Internal Capital Adequacy Assessment Process (ICAAP) by decisions of the Management and Supervisory Board (Risk Strategy); meanwhile, the Liquidity Risk and Funding Cost Risk are covered by the Internal Liquidity Adequacy Assessment (ILAAP). Those risks are managed mostly independently from the customer business.

In the introduction I stated that there are different ways of structuring the ALM unit within the financial institution. These are:

- ALM is a part of the Market Organisation (Financial Markets, Capital Markets, and Treasury). The ALM committee, headed by the respective board members, decides on risk positioning and the ALM department manages the positions within operative limits for daily management on its own. In this set-up, the Treasurer will make a prediction about the future movements of interest rates and will position the banking book in favour of the bank. For example, if the bank is *asset sensitive* on the short end of the interest rate curve (the short end is usually intended to be up to the 1-year time period) and the treasurer will increase the total GAP under