



ALMA
ASSET & LIABILITY MANAGEMENT ASSOCIATION

CERTIFICATE

Certificate of Banking Asset
and Liability Management

SYLLABUS

Updated: March 2025



The UK Asset and Management Association (ALMA) is the only independent professional association to offer a recognised qualification in Banking Asset and Liability Management.

The Certificate in Banking Asset and Liability Management (CertBALM[®]) has been benchmarked as a UK Level 6 qualification, equivalent to the level of a final year of an honours degree programme and has been accredited by the Association of Corporate Treasurers (ACT).

The CertBALM[®] defines the knowledge and competency standards expected from those working in the sector and leads the way in assessing candidates against these standards.

The syllabus represents a true body of knowledge designed and scoped by ALMA subject matter experts for ALM practitioners.



Aim of the Qualification

At the end of the qualification, students will have the ability to demonstrate:

- a deep understanding of how to manage a bank's balance sheet, i.e. the management of capital, liquidity and funding as well as interest rate risk in the banking book.
- ability to recognise the practical problems arising from these risks and to solve such problems.
- application of the regulatory context of bank balance sheet management and the governance process that results.

Qualification Structure

The qualification is broken into 5 units:

- Unit 1: An Introduction to Banking, Treasury and Asset & Liability Management (ALM)
- Unit 2: Capital Risk Management
- Unit 3: Liquidity and Funding Risk
- Unit 4: Market Risk in the Banking Book
- Unit 5: Integrated Asset and Liability Management

Studying for the Certificate is expected to take 40 learning hours per unit or a total of 200 hours for the whole qualification. This study time can include self-study using the ALMA study materials, face to face tuition and revision activities.

It is suggested that students allow 6 to 8 months to complete their learning and assessment activities.

Assessment Structure

The Unit 1 assessment is a 75 question multiple-choice, non-invigilated examination delivered online. This is designed to be a progress test which examines underpinning knowledge essential to the successful understanding of Units 2 to 5. Unit 1 must be completed first in the course of your studies.

The Unit 2 and 3 combined assessment tests the learning objectives covered in their respective areas. This is done through one 3 hour closed book online examination covering both units.



The Unit 4 and 5 combined assessment tests the learning objectives covered in their respective areas. This is done through one 3 hour closed book online examination covering both units.

Finally, there is a 7,500 word integrative Case Study assessment, submitted online, which tests application of knowledge from anywhere in the syllabus. This assessment is designed to allow students to show a pulling together of all their studies and application of their learning in a practical based scenario.

Online Exams via ACT's e-Assessment Site

All assessments are delivered online and students must have access to a suitable computer, webcam and internet connection. More information can be found at the ACT which provides the assessment infrastructure:

<https://academy.treasurers.org/assessment/need-to-know>

Entry Requirements

There are no entry qualification requirements. However, the CertBALM[®] is aimed at people working in bank and building society treasury, balance sheet management, asset and liability management, risk and finance departments and an understanding of basic bank financial accounts, and statistical concepts such as time value of money, probability, correlation, standard deviation, weighted average cost of capital is required. Candidates should be reasonably numerate. For example, you will need to be able to set up, rearrange and solve straightforward equations.



Unit 1 – An Introduction to Banking, Treasury and Asset & Liability Management (ALM)

Introduction to Unit 1

Unit 1 constitutes an introduction to banking from an ALM perspective. It outlines what banks do, the products they provide, the markets in which they operate and their broader role in the economy. It also introduces the reader to the risks that banks inevitably run and examines how, in particular, the treasury and ALM functions seek to mitigate these risks. Finally, it provides a short introduction to banking regulation covering its purposes and structure.

The principal objective of Unit 1 is to equip students with all the necessary background information prior to their proceeding to the more specialised units.

Unit 1 – Learning Objectives

Learning Objectives form the building blocks of learning required by students to be able to successfully complete the CertBALM® qualification. Each Learning Objective is preceded by “LO” to make it easily identifiable.

1.1 Banks and the Nature of Banking

LO1: Explain the prime functions that are performed by the banking system and the principal products and services banks provide.

LO2: Examine the different types of banks that exist.

LO3: Analyse a bank’s ability to take deposits and perform maturity transformation.

LO4: Understand how banks actually “create” money.

1.2 The Wider Financial Environment in which Banks Operate

LO5: Discuss different types of non-bank financial institution.

LO6: Explain what a yield curve is and the principal determinants of its shape.

LO7: Analyse the features of the principal wholesale market instruments used by banks.

LO8: Discuss other underlying market infrastructure of relevance to bank asset and liability management.



1.3 Bank Financial Statements

LO9: Analyse the principal items that typically feature on a bank's balance sheet.

LO10: Analyse the principal items that typically feature on a bank's income statement.

LO11: Discuss the relationship between a balance sheet and an income statement.

LO12: Evaluate the essential accounting concepts that are relevant for ALM.

1.4 The Risk that Banks Run

LO13: Examine the principal risks to which banks are typically exposed.

LO14: Evaluate the principal risk mitigants that banks employ.

LO15: Discuss the importance and characteristics of good internal governance.

LO16: Analyse the concept of risk culture and its impact on risk management.

1.5 The Role of a Bank's Treasury or ALM Function

LO17: Evaluate the role of the bank treasury or ALM function.

LO18: Discuss how the function can be considered as "the bank within the bank".

LO19: Analyse the importance of effective asset and liability management in optimizing the balance between risk management and return.

LO20: Compare and contrast different organisation models that can be applied to the Treasury function.

1.6 The Economic & Social Environment

LO21: Discuss economic concepts that are of relevance to banks.

LO22: Analyse the role of central banks.

LO23: Explain the objectives of monetary policy and understand the tools typically used by central banks to achieve these.

LO24: Discuss the wider social and environmental responsibilities banks have and how ALM activities can support these.



1.7 Bank Performance Metrics

LO25: Evaluate a range of financial measures and metrics used by investors to assess banks.

LO26: Compare and contrast Net Interest Margin (NIM) with other performance measures.

LO27: Discuss those performance measures which capture credit risk.

LO28: Describe how the ratio of debt to equity will impact the return to shareholders.

1.8 The Regulation of Banking

LO29: Discuss the rationale for regulating banks.

LO30: Outline the UK financial services regulatory framework.

LO31: Outline the international regulatory framework.

LO32: Analyse the impact of financial services regulation on bank asset and liability management.



Unit 2 – Capital Risk Management

Introduction to Unit 2

Unit 2 covers the key principles of capital management for a treasury function.

The unit introduces what capital is and why it is crucial for appropriate risk management of the bank itself and the wider financial system and economy. It outlines the various types of capital and the key difference between accounting capital and regulatory capital.

Having examined what constitutes capital, the unit then considers how to quantify the amount of capital that banks should have, using the two lenses of regulatory risk-based capital and leverage ratio requirements.

The unit then considers the Bank Recovery and Resolution framework, designed since the Global Financial Crisis to better manage failing banks. It discusses the amount and nature of bail-in debt that larger banks are now required to issue.

Finally, the unit discusses the benefits and challenges of enterprise-wide stress testing, with a focus on “concurrent” stress testing exercises run by the Bank of England, as well as CCAR in the US and the EBA-coordinated stress tests in the EU. This is essential to understanding risks within the balance sheet and the capital required to mitigate these risks during a business cycle.

Unit 2 – Learning Objectives

2.1 The Purpose and Definition of Capital

LO1: Understand the purpose of capital in a bank.

LO2: Describe different forms of capital and the creditor hierarchy.

LO3: Explain gearing, or leverage, in the capital structure and demonstrate the impact on return of different capital structures.

LO4: Recognise the difference between accounting, economic and regulatory capital.

LO5: Understand capital management objectives, including within a group structure.

2.2 Meeting Capital Requirements

LO6: Understand the three major types of solvency risk to which banks are exposed, namely credit, market and operational risks.



LO7: Explain the characteristics of each tier of the regulatory capital hierarchy.

LO8: Understand the purpose of Point of Non-Viability (PONV) clauses in capital instruments.

LO9: Explain different ways to manage capital supply.

2.3 Regulatory Capital – Basel I to Basel III

LO10: Describe Basel Requirements and the history of regulatory capital rules.

LO11: Appreciate the drivers of Basel II and the advent of the Three Pillars of Capital.

LO12: Explain for which risks Regulatory Capital is typically held.

LO13: Understand why there has been a need for Basel III and other post-Crisis reforms.

LO14: Understand Basel III capital buffers and the Leverage Ratio.

2.4 Pillar 1 Capital Requirements and RWA management

LO15: Understand that risk-based capital requirements are determined by quantifying potential unexpected losses.

LO16: Understand a generic approach to quantifying potential losses.

LO17: Explain the qualitative and quantitative standards for using internal risk models to calculate regulatory capital requirements.

LO18: Describe the Standardised and Internal Models approaches to calculating credit, market and operational risks.

LO19: Assess the benefits and costs of Standardised vs Internal Models approaches.

LO20: Determine Pillar 1 capital requirements, or RWAs.

LO21: Understand how Basel III changed the calculation of RWAs.

LO22: Understand techniques to mitigate credit risk and to manage RWAs.

2.5 Pillars 2 & 3 – Capital Planning and Disclosure

LO23: Understand the capital planning process.



LO24: Appreciate what Risk Appetite and Material Integrated Risk Assessment (MIRA) contribute to a systematic process for risk assessment.

LO25: Understand the key components of a good ICAAP document and capital plan.

LO26: Describe stress testing and explain how it differs from base case capital plans and scenario analysis.

LO27: Describe the Supervisory Review and Evaluation Process (SREP).

LO28: Describe Pillar 3 disclosure requirements.

LO29: Understand how overall regulatory capital requirements are set following the SREP and the consequences of failing to meet them.

2.6 Recovery & Resolution

LO30: Explain the concepts of recovery and resolution.

LO31: Design early warning indicators and a basic capital recovery plan.

LO32: Understand the objectives of resolution and resolution tools.

LO33: Link resolution strategy to the Minimum Requirement for own funds and Eligible Liabilities (“MREL”).

LO34: Differentiate between structural and contractual subordination.

LO35: Evaluate the single and multiple point of entry resolution models.

2.7 Enterprise-wide Stress Testing

LO36: Explain different types of stress tests.

LO37: Understand how enterprise-wide stress tests fit in the regulatory framework.

LO38: Appreciate the importance of qualitative standards for stress testing.

LO39: Link stress testing to capital management and risk appetite setting.



Unit 3 – Liquidity and Funding Risk

Introduction to Unit 3

This Unit addresses the increasingly important subject of liquidity and funding risk, which has been at the centre of market and regulatory focus since the financial crisis of 2007-08.

It describes the fundamental nature of liquidity and funding risk and the risk this causes to banks.

Students are introduced to methodologies and metrics for both identifying and managing liquidity and funding risk.

Standard regulator methodologies, by which banks are required to comply with as a minimum standard, are outlined in depth, but students are encouraged to understand and be able to challenge the sensitivities to assumptions that are implicit within these models.

The Unit continues with an introduction to the overall management and governance framework around liquidity and funding.

The Unit concludes with a chapter on planning and stress testing. This area in particular shows the connections between Unit 3 and Units 2 and 4. It is the interactions between these areas that are at the heart of the overall balance sheet management process and an important reason for taking this course.

Unit 3 – Learning Objectives

3.1 The Definition of Liquidity and Funding in the Context of Banking

LO1: Define the concepts of funding and liquidity within the context of banks' balance sheets and be able to explain why banks need to manage both liquidity and funding risk.

LO2: Define the primary characteristics that lead to assets being liquid. Be able to interpret, justify and critique why these characteristics can be relied upon.

LO3: Appraise methodologies for identifying what a liquid asset is.

LO4: Differentiate between the stability characteristics of the main types of liabilities of a bank



3.2 Identification and assessment of the causes of liquidity and funding risk and their impact

LO5: Understand the cause of contractual funding and liquidity risk.

LO6: Describe cash management, types of payments and the link to both intraday and end of day liquidity and funding risk management.

LO7: Evaluate risks of intraday liquidity and the processes around managing and calculating intraday requirements.

3.3 Managing and Hedging Liquidity and Funding Risk

LO8: Explain the main metrics for measuring liquidity risk.

LO9: Explain the main techniques for managing short term liquidity risk.

LO10: Understand the main metrics for measuring structural funding risk.

LO11: Explain the main techniques for managing structural funding risk.

3.4 Developing an appreciation of the sensitivity of liquidity and funding to changes in market and individuals' behaviour

LO12: Appreciate the importance and judge the appropriateness of behavioural methodologies.

LO13: Analyse the dependencies, assumptions and flaws in these methodologies.

LO14: Evaluate the appropriateness of assumptions for liabilities.

LO15: Evaluate the appropriateness of assumptions for assets.

3.5 Regulatory Liquidity and Funding Requirements

LO16: Analyse the journey to a global liquidity and funding standard.

LO17: Explain the process of setting bank liquidity and funding regulatory requirements under Basel III and in the European context under Capital Requirements Directive IV/Capital Requirement Regulations.

LO18: Analyse the two key Basel III metrics (Liquidity Coverage Ratio and Net Stable Funding Ratio).

LO19: Explain the quantitative regulatory drivers of liquidity risk.



3.6 Reporting the liquidity position and constructing the management process

LO20: Evaluate the Internal Liquidity Adequacy Assessment Process.

LO21: Design a basic liquidity and funding risk management framework.

LO22: Use key calculations to critique liquidity and funding risk metrics.

LO23: Describe the Asset and Liability Management Committee process.

3.7 To understand the tactical and strategic elements of a funding plan. Analyse a funding plan, identify the linkages to stress testing, contingency funding plans and the recovery planning process

LO24: Critique both the theory and practice in developing a funding plan and its interaction with both the wider finance operating plan and the strategic plan.

LO25: Compare different forms of stress testing over different timescales.

LO26: Critique the objectives of funding contingency planning.

LO27: Evaluate recovery plans and their linkages with contingency plans, reverse stress testing and resolution.



Unit 4 – Market Risk in the Banking Book

Introduction to Unit 4

While market risk is often thought of as primarily a trading book risk, it, and particularly interest rate risk, can actually have a far greater financial impact on the banking book. This is because net interest income is the principal source of income for most banks and, therefore, any threat to this resulting from changes to the level of external interest rates needs to be measured and managed.

Unit 4 describes from first principles the nature of interest rate and other market risks and then proceeds to explain, with the aid of simple examples, the various ways in which these are quantified and controlled in the banking book.

The Unit concludes with a review of the current regulatory requirements and, in particular, how various jurisdictions are now implementing the Basel Committee Standards on IRRBB originally published in 2016.

Unit 4 – Learning Objectives

4.1 Introduction to Market Risk in the Banking Book

LO1: Distinguish between the principal types of market risk most relevant to banks.

LO2: Understand how the final interest rate charged or paid to a customer is a function of both the general level of interest rates and certain other elements necessary to protect bank profitability.

LO3: Describe the fundamental nature of yield curve risk and distinguish between parallel and non-parallel yield curve risk.

LO4: Explain how banks can also be subject to interest rate basis risk and describe what this is and how it may arise.

LO5: Identify banking products that may contain option risk and distinguish between explicit and implicit optionality.

LO6: Understand the regulatory distinction between the banking book and the trading book.

LO7: Appreciate the accounting and capital implications of designating an item as either banking or trading book.



4.2 Standard Metrics for Identification and Assessment of Interest Rate Risk in the Banking Book

LO8: Understand how a simple interest rate gap is constructed.

LO9: Appreciate the uses and limitations of gap analysis.

LO10: Describe the difference between a contractual gap report and a behaviourally adjusted gap report.

LO11: Contrast a static gap report with a dynamic gap report.

LO12: Explain how value sensitivities may be computed by discounting net gap positions at different rates of interest and appreciate the strengths and limitations of these metrics.

LO13: Distinguish between deterministic and simulation scenarios and understand the basics of Value at Risk.

LO14: Understand how an income sensitivity model works.

LO15: Contrast the value with the income approach and be able to summarise the principal advantages and disadvantages of each.

4.3 Managing and Hedging Interest Rate Risk in the Banking Book

LO16: Outline the fundamental features of an interest rate swap and demonstrate how such an instrument may be used to hedge interest rate risk.

LO17: Outline the role of a treasury function in managing IRRBB and how organisational models may vary according to size and nature of the bank.

LO18: Describe the purpose and outline the features of the interest rate risk component of Funds Transfer Pricing.

LO19: Explain what is meant by macro hedging and give examples.

LO20: Understand the accounting issues raised by the use of derivatives in a banking book and show how these can usually be mitigated by applying hedge accounting.



4.4 Interest Rate Basis Risk

LO21: Understand that different external market interest rates, even in the same currency and market, may move differently in relation to one another and that this creates a potential risk for a bank termed basis risk.

LO22: Appreciate that interest rates for different currencies may move differently to one another and this constitutes another type of basis risk.

LO23: Understand how the tenor of the next projected reset has to be considered in circumstances where the shape of the yield curve is not driven solely by anticipated future rate change.

LO24: Describe how all these various forms of basis risk can usually be hedged by means of basis swaps.

4.5 The Importance of Behavioural Assumptions in the Management of Interest Rate Risk in the Banking Book

LO25: Appreciate the importance of behavioural assumptions in the management of IRRBB and outline the general considerations that apply to any such assumption.

LO26: Describe the process by which banks make assumptions when fixed rate products are originated and how these give rise to pipeline and pre-hedge risk.

LO27: Understand the nature of prepayment risk on fixed rate mortgages and other loans.

LO28: Appreciate that match funded variable rate loans are not necessarily immune to interest rate risk and that attention needs to be paid to basis risk, the scope to re-margin and likely balance retention.

LO29: Describe the particular considerations which apply to credit card lending.

LO30: Appreciate the impact that loan impairment may have on the interest rate risk profile of a bank.

LO31: Describe the analogous risks on the liability side of the balance sheet with reference to fixed and variable rate savings and to current accounts.

LO32: Appreciate the particular issues that arise with respect to hedging of equity and other liabilities that have no contractual re-pricing date.

LO33: Describe the considerations that apply to a bank's own debt issuance.



4.6 Other Types of Market Risk

LO34: Describe the fundamental nature of foreign exchange risk.

LO35: Demonstrate how foreign exchange risk arising from currency funding mismatch may be hedged.

LO36: Understand the arguments for and against forward hedging of future foreign currency income and expense.

LO37: Appreciate how owning foreign subsidiaries gives rise to structural foreign exchange risk and how this may be hedged.

LO38: Describe the nature of equity risk and distinguish between general and specific equity risk.

LO39: Understand how financing customers by means of development capital creates some exposure to general equity risk.

LO40: Explain how equity linked structured deposits give rise to equity risk.

LO41: Outline the concept of asset spread risk, particularly credit spread risk and articulate the arguments for and against this being considered a separate risk class.

4.7 Reporting and the Management Process

LO42: Explain the crucial role that an Asset and Liability Management Committee (ALCO) plays in the management of market risk in the banking book and outline its principal responsibilities.

LO43: Identify the essential components of good ALCO reporting.

LO44: Appreciate some of the practical difficulties that arise in trying to produce information that is accurate, sufficiently detailed and timely and how a balance needs to be struck.

LO45: Understand the concept of risk appetite and its importance, and be able to apply this to the various market risks in the banking book.

LO46: Distinguish between appetite for discretionary risk and appetite for more structural risk.

LO47: Describe how overall appetites need to be cascaded down to business unit level in the form of operational controls and how these may be either hard limits or softer management triggers.



4.8 Market Risk in the Banking Book and its Links to the Operating Plan and to Stress Testing

LO48: Understand the purpose of a bank producing and publishing the results of an operating plan.

LO49: Appreciate the importance of Risk/ALM input to, and challenge of, the operating plan when it is formulated.

LO50: Explain the continuing role of Risk/ALM in the monitoring of actual performance against plan and demonstrate how this can improve risk identification and control, particularly in respect of the behavioural assumptions that should be common to both the plan and risk measurement.

LO51: Understand the various forms of stress testing which banks typically perform, describe their purpose and appreciate that the outcomes can help improve the management and control of risk.

4.9 Regulatory Requirements

LO52: Examine and evaluate the Basel IRRBB Standards issued in April 2016.

LO53: Examine and evaluate the PRA requirements for IRRBB issued in December 2020 and how they deviate from Basel.

LO54: Understand the key differences between the Basel IRRBB Standards and Europe's implementation and other notable deviations from Basel in other jurisdictions.

LO55: Understand the nature of the regulatory regime for other market risks in the banking book.



Unit 5 – Integrated Asset and Liability Management

Introduction to Unit 5

This Unit addresses how ALM fits together and how new regulations are changing the way banking is governed, organized, structured and valued.

Firstly, it describes the way banks have organized their ALM operations in the context of the fundamental changes in regulation and markets following the financial crisis of 2008.

The Unit covers the intersection between the new regulations and market environment and how it has changed the way banking is governed, organized, valued, structured and conducted.

These changes are described with the aid of real life examples of what happened to create the need for such fundamental change and guidance on the future structure and nature of banking.

The Unit draws together the learnings from Units 1 - 4 to give the student perspective on how the nature of banking, its norms and culture and relationship to markets and society has fundamentally changed and continues to adapt to the new financial order.

Unit 5 – Learning Objectives

5.1 Integrated Asset and Liability Management

LO1: Evaluate the organisation of Asset and Liability Management (ALM) disciplines of liquidity, funding, capital and Market Risk in the Banking Book (MRBB).

LO2: Explain the processes that enable risk transfer from the bank to external markets.

LO3: Evaluate good practice in the ALM planning cycle.

LO4: Critically review the relevance and structure of information for an Asset and Liability Management Committee (ALCO).

5.2 Funds Transfer Pricing

LO5: Evaluate the key objectives of Funds Transfer Pricing.

LO6: Calculate components of FTP and evaluate how they are derived.

LO7: Analyse the impact on product and business line profitability of FTP calculations.

LO8: Evaluate the governance and policy framework for an effective FTP.



5.3 Financial Planning & Analysis in Banking Treasury

LO9: Evaluate the role of forecasting, planning and strategy, and how they integrate with bank treasury management

LO10: Examine the main decisioning financial metrics to drive the balance sheet and revenue management of a bank.

LO11: Describe the role of multiple scenario financial assessments of capital, liquidity and funding plans and appreciate how this materialises in a bank's BAU operations.

LO12: Assess the main drivers of volatility of a bank, how to identify them through financial planning, mitigate the risks and incorporate them into day-to-day operations.

LO13: Define the key financial and performance metrics to efficiently manage the balance sheet, appreciating the role of allocation in driving businesses and their outcomes.

5.4 Defining the Modern ALM System – What Are the Considerations?

LO14: Multi-dimensional optimisation or integrated financial resource management – understanding the concept as well as the different “dimensions” of constraints.

LO15: Internal governance and institution-wide controls – understanding the requirements and how an ALM system should support the ICAAP and ILAAP processes on a continuous basis.

LO16: Defining performance and capacity – what is required and what is desired.

LO17: Data management – what it is and why it is so important.

5.5 Structural Reform

LO18: Analyse structural reform and evaluate Recovery and Resolution Planning and Ring Fencing.

LO19: Evaluate how banks need to change to meet the new requirements.

LO20: Analyse the drive toward utility banking and the implications for future organisational structure.

LO21: Critically review the nature of resolution powers and how they are applied in practice.



5.6 Governance and Regulation

LO22: Evaluate the governance and conduct framework of the UK financial system.

LO23: Review the ethical and regulatory framework applying to individuals.

LO24: Evaluate Governance in individual firms and effective checks and balances.

LO25: Evaluate the Key Regulatory drivers to achieve financial soundness in the UK

5.7 Bank Business Models

LO26: Evaluate different business models and their implications for banks to support their critical roles in enabling maturity transformation and lending to households and businesses.

LO27: Evaluate the impact of Basel liquidity and capital reform on the economics of different banking models.

LO28: Analyse the consequences for bank balance sheet structures of structural reform including ring fencing and resolution.

LO29: Assess the impact of shadow banking on traditional banking models.

5.8 Bank Valuation

LO30: Analyse the meaning of equity and how it is impacted by accounting convention and regulation.

LO31: Examine the concept of the 'time value of money' and the Cost of Equity.

LO32: Apply the four key bank valuation methodologies and evaluate the attractions and limitations of each.

LO33: Examine the role of valuation within the broader investment appraisal process.

Glossary of Terms

Asset and Liability Management specifically and UK and International Banking generally are subjects that requires a broad understanding of a multitude of acronyms.

When writing the Units of the CertBALM® authors have naturally used many of these terms and the Glossary of Terms is provided to give students an easy point of reference when studying texts.

The Glossary contains many of the key words and acronyms that appear in the syllabus and examinations.



The Glossary has been prepared based around the published glossaries from bank financial accounts which have then been checked for relevance across the text of the CertBALM® papers.



External Reading List

Some of the authors have referenced additional reading material in their individual Units. However, here are some further thoughts on additional reading matter:

- Reinhart and Rogoff “The Time is Different” (Princeton, 2009)
- Chris Skinner “Digital Bank: Strategies to Launch or Become a Digital Bank” (Marshall Cavendish, 2014)
- Jonathan McMillan “The End of Banking” (Zero/One Economics GmbH, 2014)
- David Graeber “The First 5,000 Years” (Melville House, 2011)
- Ryan-Collins, Greenham, Werner, Jackson “Where Does Money Come From” (NEF New Economics Foundation, 2011)
- Phillip Coggan “Paper Promises” (Penguin Books, 2012)
- Martin Wolf “The Shifts and The Shocks: What We’ve Learned and Have Yet to Learn from the Financial Crisis” (Penguin, 2014)
- Haycock, Richmond “Bye Bye Banks” (Wunderkammer, 2015)
- Fernand Braudel “The Wheels of Commerce” (Fontana, 1985)
- Mervyn King “The End of Alchemy” (Little, Brown, 2016)
- Timothy F Geithner “Stress Test – Reflections on Financial Crises” (Penguin Random House UK, 2014)
- Barbara Casu, Claudia Girardone and Piliip Molyneux “Introduction to Banking” (Pearson, 2016)
- Robert J Shiller “Finance and the Good Society” (Princeton University Press, 2012)
- Mervyn King/John Kay “Radical Uncertainty” (The Bridge Street Press, 2020)



About ALMA

ALMA was formed in 1992 as a trade association of asset & liability risk management practitioners in leading banks, building societies and other related companies. The company has over 110 members from UK, Irish and international institutions.

The company's primary aims are to provide education, networking opportunities and promote awareness of asset and liability risk management issues within Treasury and a wider bank balance sheet. We do this through a series of courses, conferences and in-person and online events. ALMA seeks to promote and share best practice in related risk management techniques and approaches. We provide an informal forum in which risk management professionals can network and discuss the issues facing the industry and their responses to these challenges. We work for, and on behalf of our members, to give them the opportunity to share their views on areas as diverse as risk systems strategy, structuring of balance sheets to manage liquidity and funding, interest rate risk, credit, capital and leverage, experience in e-commerce and strategic business direction. We are actively looking at the applications of Digital Currency and assets alongside the impacts of Climate Change on balance sheets and risk metrics.

About ACT

The Association of Corporate Treasurers (ACT) sets the global benchmark for treasury excellence. As the chartered professional body for treasury, we lead the profession through our internationally-recognised suite of treasury qualifications, by defining standards and championing continuous professional development.

ACT works with selected organisations, including ALMA, to accredit their programmes against its Treasury and educational standards. More information can be found at: www.treasurers.org

