Alessio Gioia

STREAM OF CONSCIOUSNESS ABOUT ASSET & LIABILITY MANAGEMENT

ALM LINKEDIN POSTS COLLECTION

TRADING LIBRARY

www.tradinglibrary.it

STREAM OF CONSCIOUSNESS ABOUT ASSET & LIABILITY MANAGEMENT

ALM LINKEDIN POSTS COLLECTION

Internet: www.tradinglibrary.it - e-mail: info@tradinglibrary.it

Impaginazione: Erika Parasecoli

ISBN 979-12-81696-04-4

SOMMARIO

Book Presentation 5

ALM & Balance Sheet Interdependencies: Main Indicator Relationships and Risk Attribution 9

ALM & Balancesheet Management: The Relationship Between Enterprise Value of Equity (EVE) and Net Interest Income (NII) 15

ALM & Derivative Hedging Instruments 21

ALM & Dynamic Balance Sheet Management: Enhancing Risk Integration and Strategic Decision-Making 25

ALM & Hedge Fund Liquidity Management: Aligning Fund Redemption Terms and Asset Liquidity 31

ALM & Hedging Instruments: Cancellable Swaps in Bank Risk Management 37

ALM & ICAAP: Capital Allocation to Cover IRRBB 43

ALM & IRRBB: Economic Value of Equity (EVE) and Repricing GAP 49

ALM & IRRBB: Estimating Deposit Beta 55

ALM & IRRBB: Managing the Trade-off Between Risk and Profitability 59

ALM & IRRBB: Supervisory Outlier Tests (SOTs) 65

ALM & IRRBB: The Policy 71

ALM & Liquidity Management: LCR and NSFR 77

ALM & Modelling of Non-Matured Deposits 83

ALM & Non-Maturity Deposits: A Review of Literature and Key Findings 89

ALM & Prepayment Risk Management 95

ALM & Replicating Portfolio of Non-Maturing Deposits: A Modern Approach to Risk Management 101

ALM and Behavioural Models: Calibrating, Managing, and Hedging Approaches 107
ALM and Liquidity Risk Management: The Functions of Liquidity and Repricing GAP 113
ALM, ESG, and Liquidity Risk Management 119
ALM, Hedge Accounting, and IFRS 9: Integration for Financial Stability 125
The Influence of Yield Curve Slope and Interest Rate Levels on ALM Positioning and Interest Rate Risk in Financial Institutions 131
Asset & Liability Management: The Case of Silicon Valley Bank 139
Asset and Liability Management & the Prepayment Phenomenon 145
Assets & Liabilities of the U.S. Banking System: A Comprehensive Overview 151
Convexity Issues in Asset and Liability Management (ALM) & Banking Books 157
GAP Techniques in Asset and Liability Management (ALM) 161
Interest Rate Risk and Credit Spread Risk in the Banking Book 165
IRRBB & Balance Sheet Management: Value and Income Risk Optimization Mix 169
IRRBB & Basis Risk: Understanding the Impact of Interest Rate Mismatches in ALM 175
IRRBB Governance and Framework 181
IRRBB: Natural Hedging and Hedging Through Derivatives 187
Managing Interest Rate Risk: How TFR Funds Impact Corporate Financial Strategy 193
New Frontiers in ALM and Balance Sheet Management: Integrating Machine Learning and AI Techniques 195
New Techniques in ALM: Management Processes, Risk Measurement and Hedging Strategies 201
Profitability Analysis of Banks' ALM Book: The Role of the Financial Transfer Price (FTP) System 207
The Relationship Between NII and EVE: Intrinsically Interconnected 211
The Duration Gap Analysis in Asset and Liability Management (ALM) 217
The Author 222

BOOK PRESENTATION

"ALM Linkedin Posts Collection" is a compelling work that gathers a series of LinkedIn posts by Alessio Gioia, focusing on key aspects of **Asset & Liability Management (ALM)** and balance sheet management in the banking industry. This book serves as a practical guide, filled with reflections and in-depth analysis on how banks can effectively manage and optimize the financial risks they face in today's complex environment.

At the heart of this collection is the theme of risk management in its various forms, with a particular emphasis on **credit risk** and **liquidity risk**. Alessio Gioia explores how financial institutions can identify, assess, and mitigate credit risk across their portfolios. The posts delve into the key techniques for evaluating borrower creditworthiness and for monitoring credit exposure over time, a critical process for maintaining the financial health of banks. Gioia breaks down the complexities of credit risk management, offering readers a comprehensive look at the strategies that banks can employ to reduce the likelihood of defaults and to safeguard their balance sheets.

Another vital area discussed in the book is the management of **liquidity risk**, a crucial topic for banks that must ensure they have enough liquid assets to meet their short-term obligations. Gioia explains the challenges involved in maintaining liquidity, particularly in times of financial stress, and outlines best practices for liquidity stress testing and contingency funding

planning. He emphasizes the importance of maintaining adequate liquidity buffers and having strong liquidity management frameworks in place to prevent crises, which is essential for any bank's long-term stability.

The book also tackles the intricacies of **interest rate risk management** and **hedging strategies**. These posts provide a thorough examination of how banks can use hedging instruments such as swaps, options, and other derivatives to protect themselves from interest rate fluctuations. By carefully managing interest rate risk, financial institutions can ensure that they not only protect their short-term profits but also safeguard their long-term equity value. Gioia discusses how aligning a bank's risk profile with market dynamics is crucial for minimizing exposure to interest rate volatility and ensuring sustainable performance.

A particularly insightful section of the book is dedicated to the monitoring of **Delta Economic Value of Equity (ΔEVE)** and **Delta Net Interest Income (ΔNII)**. Gioia explains how these two metrics are critical tools for measuring interest rate risk and for understanding a bank's risk exposure over different time horizons. ΔNII reflects the impact of interest rate changes on a bank's short-term profitability, while ΔEVE offers a long-term perspective, focusing on how changes in interest rates affect the economic value of the institution's equity. The interplay between ΔNII and ΔEVE is a central theme in ALM, as both need to be managed together to ensure a balanced approach to risk management.

Moreover, the book touches on **innovative approaches to ALM**, highlighting the importance of using modern tools such as dynamic models and scenario analysis to anticipate future risks and to react to regulatory changes. Gioia emphasizes that, in today's rapidly evolving financial markets, banks must adopt forward-looking risk management strategies. By integrating new technologies and advanced methodologies, financial institutions can improve their ability to manage risks proactively and to adapt to shifting regulatory landscapes.

"ALM Linkedin Posts Collection" is not just a collection of insights but also a guide to how ALM principles can be applied in the real world to enhance a bank's risk management practices. Each post reflects the growing importance of ALM in navigating the financial industry's challenges and demonstrates the practical steps banks can take to improve their risk profiles. The

book's unique value lies in its ability to combine theoretical understanding with practical, actionable advice, making it a valuable resource for anyone involved in the banking sector.

In summary, **"ALM Linkedin Posts Collection"** is more than just a book; it is a treasure trove of knowledge for those looking to deepen their understanding of **Asset & Liability Management** and balance sheet management in the banking sector. Alessio Gioia's posts provide a rare glimpse into the daily workings of ALM and offer readers the opportunity to learn from real-world examples and expert commentary. Whether you are an ALM specialist, a risk manager, or a financial executive, this book offers critical insights into how to manage risks effectively and sustainably in an increasingly complex financial world.

ALM & BALANCE SHEET INTERDEPENDENCIES: MAIN INDICATOR RELATIONSHIPS AND RISK ATTRIBUTION

AUTHOR: ALESSIO GIOIA

Abstract

The relationship between key balance sheet indicators—particularly Delta Economic Value of Equity (ΔEVE) and Net Interest Income (NII)—is essential for understanding how banks manage risk and profitability in Asset and Liability Management (ALM). This paper explores the interdependencies between these indicators, breaking down the components driving ΔEVE and NII. We correct the definition of NII_RF, which represents not only the income generated from risk-free assets but also the risk-free component associated with liabilities. By examining the relationship between ΔEVE and NII, we gain insights into how market conditions and product strategies influence financial performance. Specifically, we analyze the attribution of performance to market returns, product margins, and the amortization of unrealized profit and loss (P&L).

Introduction

Asset and Liability Management (ALM) is crucial for balancing financial risks—such as liquidity, interest rate, and market risks—faced by banks. A central focus in ALM is understanding the dynamic relationship between two critical indicators: Delta Economic Value of Equity (ΔEVE) and Net Interest Income (NII). ΔEVE provides a long-term view of changes in a bank's

equity value due to interest rate fluctuations, while NII measures short-term profitability by reflecting the spread between interest income from assets and interest expenses on liabilities.

This paper explores the relationship between ΔEVE and NII, with an emphasis on how the two indicators interact under different market conditions. We also clarify that NII_RF, which represents the risk-free component of NII, includes both risk-free assets and the risk-free component tied to liabilities. Understanding the components of these key indicators and their interdependencies allows banks to attribute performance to specific factors, aiding in risk management and strategic decision-making.

Definition and Components of Delta EVE

Delta Economic Value of Equity (ΔEVE) measures changes in the present value of a bank's future cash flows on both its assets and liabilities. It reflects how sensitive the bank's equity is to changes in interest rates and provides a long-term view of financial stability. The formula for ΔEVE is as follows:

ΔEVE = NIIRF + PM + MarketReturn

Where:

- **NII_RF**: This is the portion of **Net Interest Income** linked to the **risk-free rate**. It includes not only the income from risk-free assets, such as government bonds, but also the risk-free component tied to liabilities, reflecting the cost of funding at risk-free rates.
- **PM (Product Margin)**: This component represents the margin earned from the bank's products, calculated as the spread between the interest income on loans and the interest expenses on deposits, along with fees and charges tied to various products.
- **Market Return**: This refers to the broader performance of financial markets over a specific time period, impacting the value of the bank's assets and liabilities due to changes in market conditions.

ΔEVE provides insight into how the bank›s balance sheet is impacted by interest rate changes, market fluctuations, and internal strategies. A decrease in ΔEVE indicates potential long-term value erosion, while an increase suggests improved financial resilience.

Definition and Components of NII

Net Interest Income (NII) measures the difference between the interest earned on a bank's assets (e.g., loans) and the interest paid on its liabilities (e.g., deposits). NII is an indicator of the bank's short-term profitability. The formula for NII can be expressed as:

NII = NII_{RF} + PM + Unrealized P&L Amortization

Where:

- **NII_RF**: Similar to ΔEVE, this represents the portion of NII that is tied to the **risk-free rate** but encompasses both the earnings from risk-free assets and the costs associated with risk-free liabilities. This includes income from government securities and the cost of funds secured at risk-free rates.
- **PM (Product Margin)**: The margin related to the bank's product offerings, calculated based on the spread between interest earned on loans and interest paid on deposits, as well as product fees.

Unrealized P&L Amortization: This refers to the amortization of unrealized gains or losses that arise from fluctuations in market values but have not yet been realized through actual transactions. Over time, these unrealized gains or losses are gradually recognized in the income statement.

NII offers a view of a bank's short-term income generation capabilities and reflects how interest rate changes and product pricing strategies affect profitability. By incorporating **unrealized P&L amortization**, NII provides a more comprehensive measure of ongoing profitability that factors in both realized and unrealized market movements.

The Relationship Between ΔEVE and NII

By comparing the formulas for ΔEVE and NII, we derive the following relationship:

ΔEVE - NII = Market Return - Unrealized P&L Amortization

This equation reveals a critical aspect of ALM: the difference between long-term value (ΔEVE) and short-term profitability (NII) is driven by the interaction between **market performance** and **unrealized P&L amortization**. When market returns are strong, ΔEVE may increase significantly, while NII may reflect more stable performance due to the amortization of past gains or losses. Conversely, in times of weak market performance, ΔEVE may de-

cline, while the slower amortization of unrealized P&L may cushion NII. This relationship is particularly useful in ALM, as it helps banks balance the need to optimize short-term profitability without sacrificing long-term value. By understanding how different factors contribute to ΔEVE and NII, banks can make more informed decisions regarding interest rate risk management, product pricing, and overall financial strategy.

Attribution of Performance to Key Factors

The relationship between ΔEVE and NII enables banks to attribute performance to specific factors and gain a deeper understanding of balance sheet interdependencies.

- **Risk-Free Rate (NII_RF)**: Changes in the risk-free rate affect both ΔEVE and NII by influencing the income generated from risk-free assets and the cost of risk-free liabilities. An increase in the risk-free rate typically reduces ΔEVE by increasing the discount rate on future cash flows but may enhance NII if the bank holds a significant portion of risk-free assets.
- **Product Margin (PM)**: The product margin reflects how effectively the bank is managing its asset and liability portfolio. Improvements in product margin, through better pricing strategies or cost management, directly increase both ΔEVE and NII, contributing to both short-term and long-term financial health.
- **Market Return**: Market returns significantly influence ΔEVE by altering the value of the bank's assets and liabilities. NII is less sensitive to market returns in the short term but is affected over time through the amortization of unrealized gains or losses. Strong market returns boost ΔEVE, while weaker performance may diminish it.
- **Unrealized P&L Amortization**: The amortization of unrealized gains and losses smooths the impact of market volatility on NII, ensuring that short-term profitability remains stable even during periods of market stress. This amortization process explains the difference between immediate market returns and their gradual impact on the bank's profitability.

Balance Sheet Interdependencies

The relationship between ΔEVE and NII illustrates the strong **interdependencies** within a bank's balance sheet. Changes in one variable, such as the

risk-free rate or market performance, can create ripple effects across other indicators. For instance, an increase in the risk-free rate might lower ΔEVE due to higher discount rates on future cash flows, but could simultaneously raise NII if risk-free assets generate higher income.
Understanding these interdependencies allows banks to make more strategic decisions about **hedging** and risk management. By analyzing the relationship between ΔEVE and NII, banks can optimize their interest rate risk strategies, ensuring that both short-term profitability and long-term value are preserved.

Conclusion
The interaction between ΔEVE and NII is fundamental to ALM, providing banks with insights into both long-term value and short-term profitability. By breaking down these indicators into their key components—NII_RF, product margin, market return, and unrealized P&L amortization—banks can better understand how different market conditions and internal strategies influence financial performance. This understanding is critical for effective risk attribution and decision-making in an increasingly complex financial environment. As ALM evolves, recognizing these interdependencies will be essential for maintaining financial stability and achieving strategic objectives.

References

- *Bessis, J. (2015). Risk Management in Banking (4th ed.). John Wiley & Sons.*
- *Hull, J. C. (2018). Risk Management and Financial Institutions (5th ed.). John Wiley & Sons.*
- *Fabozzi, F. J., & Mann, S. V. (2012). The Handbook of Fixed Income Securities (8th ed.). McGraw-Hill.*
- *Van Deventer, D. R., Imai, K., & Mesler, M. (2013). Advanced Financial Risk Management: Tools and Techniques for Integrated Credit Risk and Interest Rate Risk Management (2nd ed.). John Wiley & Sons.*

ALM & BALANCESHEET MANAGEMENT: THE RELATIONSHIP BETWEEN ENTERPRISE VALUE OF EQUITY (EVE) AND NET INTEREST INCOME (NII)

AUTHOR: ALESSIO GIOIA

Abstract

Asset and Liability Management (ALM) plays a crucial role in managing financial institutions by balancing profitability and risk exposures. This paper explores the interrelationship between Enterprise Value of Equity (EVE) and Net Interest Income (NII), focusing on their joint management through the EVE Attribution Framework. We also investigate how the timing of realized income impacts balance sheet liquidity and the overall stability of the institution. Finally, the role of the Asset and Liability Committee (ALCO) in optimizing EVE and NII performances to ensure short-term profitability and long-term viability is examined.

Introduction

In the context of ALM and balancesheet management, EVE and NII serve as key indicators of financial health and risk performance. While EVE reflects the long-term value of equity based on the present value of future cash flows, NII is the realized income generated from interest-bearing assets and

liabilities. Understanding how these metrics interact is essential for effective financial risk management. This paper aims to demonstrate that EVE and NII are not independent measures but interconnected components that must be managed together to achieve a balance between profitability and risk exposure.

Joint Management of EVE and NII through EVE Analysis

The EVE Attribution model offers a way to jointly manage EVE and NII by expressing the relationship between the two through the following formula:

$$\Delta\text{EVE} = \text{NII} + \text{Market Risk Performance}$$

This equation highlights that changes in EVE are driven by both NII and market risk performance, linking them through the risk exposures on the balance sheet. ALM teams, particularly through the guidance of the Asset and Liability Committee (ALCO), must balance the management of EVE and Earnings at Risk (EaR) to meet institutional targets. Properly managing this balance allows firms to optimize both short-term profitability, as represented by NII, and long-term sustainability, as indicated by EVE.

EVE and NII: Inseparable Performance Measures

EVE and NII are inherently linked by the risk exposures of the institution's balance sheet. Interest rate risks, for instance, simultaneously affect NII and the future value of equity embedded in EVE. While NII provides a short-term view of income performance, EVE reflects the institution's long-term economic value. Therefore, managing them jointly allows institutions to address both immediate income needs and long-term risk factors, creating a more resilient financial strategy.

EVE Analysis in Decision-Making

The EVE Attribution framework allows management to decompose EVE into its contributing factors, enabling a more detailed understanding of how different risk factors—such as interest rate movements and liquidity changes—impact both NII and EVE. By recognizing these contributing elements, ALM can develop strategies that optimize market risk performance without compromising short-term income generation.

Timing of Realized Income: The Link Between EVE and NII

Although EVE and NII are interconnected, their primary distinction lies in the timing of realized income. NII represents income that has already been realized within the accounting period, while EVE captures the unrealized gains and losses that will materialize over time. This temporal difference affects balance sheet liquidity, influencing both short-term and long-term financial strategies.

Retaining NII to Enhance EVE

Retaining NII over time increases the institution's EVE by building future cash flows into the present value of equity. Conversely, when institutions experience unrealized gains in EVE, these gains are expected to be released as NII in future periods. Thus, NII can be viewed as the front-line indicator of the realized profits that will ultimately contribute to the institution's equity value.

Timing and Balance Sheet Liquidity

The timing of profit release plays a critical role in determining an institution's liquidity position. A delayed release of unrealized gains from EVE into NII may improve liquidity in the long term but could create short-term liquidity constraints. For this reason, Earnings at Risk (EaR) and EVE are often viewed as indicators of short-term and long-term risks, respectively. While EaR emphasizes immediate risks to income, EVE represents a store of value that maintains the institution's financial viability and resilience.

The Role of ALCO in ALM Strategy

The Asset and Liability Committee (ALCO) is integral to managing both EVE and NII by overseeing the institution's overall balance sheet risk exposure. ALCO coordinates strategic decisions on risk tolerance, interest rate management, and liquidity planning, ensuring that both short-term and long-term financial objectives are aligned.

Balancing EVE and EaR

ALCO plays a crucial role in balancing EVE and EaR performances by ensuring that market risk exposures are managed to meet the institution's targets.

By regularly reviewing risk metrics, ALCO enables informed decision-making regarding asset-liability matching, hedging strategies, and capital management.

ALCO's Forward-Looking Strategy
To effectively manage EVE and NII, ALCO must take a forward-looking approach, considering not just current market conditions but also future risks and opportunities. This includes analyzing interest rate forecasts, regulatory changes, and macroeconomic factors to make proactive adjustments that safeguard both the institution's short-term profitability and long-term viability.

Conclusion
Effective ALM and balancesheet management require a deep understanding of the interrelationship between EVE and NII. These two metrics, though often analyzed separately, are inextricably linked through the institution's balance sheet risks. The EVE Analytic model could provide a valuable framework for managing these metrics jointly, enabling financial institutions to strike a balance between immediate income generation and long-term value preservation. ALCO, as the governing body responsible for these decisions, plays an essential role in maintaining this balance and ensuring that both short-term and long-term financial objectives are met. By carefully managing the timing of realized income and balancing EaR with EVE, institutions can navigate financial risks while safeguarding their viability for the future.

References
- *Bessis, J. (2015). Risk Management in Banking (4th ed.). John Wiley & Sons.*
- *Fabozzi, F. J., & Drake, P. P. (2009). The Handbook of Financial Risk Management (1st ed.). John Wiley & Sons.*
- *Saunders, A., & Cornett, M. M. (2018). Financial Institutions Management: A Risk Management Approach (9th ed.). McGraw-Hill Education.*
- *Van Deventer, D. R., Imai, K., & Mesler, M. (2013). Advanced Financial Risk Management: Tools and Techniques for Integrated Cred-*

it Risk and Interest Rate Risk Management (2nd ed.). John Wiley & Sons.

- *Jarrow, R. A., & Turnbull, S. M. (2000). Derivative Securities (2nd ed.). South-Western College Publishing.*
- *Borio, C. E. V., Drehmann, M., & Tsatsaronis, K. (2014). Stress-testing Macro-financial Linkages: A New Analytical Framework. Journal of Financial Stability, 13, 205-224.*
- *Hull, J. C. (2018). Risk Management and Financial Institutions (5th ed.). John Wiley & Sons.*
- *Gioia A., Asset & Liability Management – Introduzione alla gestione attivo/passivo nelle banche". Tradinglibrary.*