



ASSET LIABILITY MANAGEMENT

FIS BALANCE SHEET MANAGER
FORMERLY AMBIT FOCUS



The aftermath of the financial crisis has been characterized by historically low interest rates and growing complexity of regulatory requirements. As a consequence, banks now seek both comprehensive analytical support and flexibility for planning and reporting, in their asset liability management solutions.

The persistent low-rate environment in America, the United Kingdom, the Eurozone, Japan and Switzerland has confronted banks with dramatically shrinking margins. At the same time, regulators have been increasing their attention to interest rate risk. For example, Interest Rate Risk in Banking Book management framework (both under Basel and EBA SREP), as well as EBA Stress Test and Funding Plan require the banks to analyze the possible effects of interest rate increases, including changes to net interest margin, the shifting values of interest-sensitive assets and liabilities – and the resulting erosion of regulatory capital. In addition, the industry has seen an overall increase in regulations related to risk management, including the implementation of Basel III rules and new international accounting standards (IAS and IFRS). For banks, this meant dedicating a significant amount of resources to comply with new regulation. As a result, many organizations now recognize the need for a comprehensive asset liability management (ALM) system. On the one hand, ALM solutions support better business decisions based on scenario analysis, allowing a forward-looking view from a combined risk and finance perspective. And on the other, they help banks comply with increasing regulatory pressure.

FIS® Balance Sheet Manager (formerly Ambit Focus) is comprehensive balance sheet management solution that offers banks the toolset they need to address growing market and regulatory pressure. As a key member of the FIS family of risk management systems, it helps our customers to optimize their risk/return profile, therefore giving them a significant competitive advantage.

The modular structure of Balance Sheet Manager allows our clients to build a consistent internal framework for risk management across its different functional areas, helping them to better manage growing business requirements.

- Starting with the strategic interest rate risk management that lies at the core of ALM, the solution helps to analyze interest rate risk from two perspectives: economic value and earnings. Fair value volatility is visualized in terms of the interest rate gap profile, including static shifts on the market or spot rate curves to analyze the sensitivity of the economic value of equity (EVE). Further, to model the volatility of earnings, the advanced simulation engine is used to simulate the balance sheet into the future and obtain income reports under different scenarios.
- To expand strategic planning capabilities, stochastic simulation methods are applied to generate multiple market rate movements and calculate the distribution of future profits and market values.

- To empower holistic balance sheet management, the solution also allows for integrated liquidity risk management. The scenario engine, originally designed for ALM purposes, has been extended to report on, manage and stress the structural liquidity gap, liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) and the liquidity survival horizon.
- Incorporating trading book exposures into balance sheet management, the integrated market risk engine enables sensitivity and scenario analysis, as well as the computation of Value at Risk (VaR) for all the major asset classes traded.
- In response to IAS 39/IFRS 9 hedge accounting requirements, Balance Sheet Manager provides full support for hedge cycle management, including creating, documenting, monitoring and closing hedge relationships. The solution calculates hedge adjustments and provides general ledger systems with accounting-related information for both micro and portfolio fair value hedges.
- In-built fund transfer pricing (FTP) functionality helps to allocate the margins to products and profit centers, in order to distinguish profitable from less profitable activities, attribute costs of funding and liquidity, and create proper incentives for the businesses, aimed at optimizing overall performance. The FTP functionality is embedded throughout the application, allowing users to view results based on either customer or internal funding rates.

In summary, Balance Sheet Manager helps banks to implement industry best practice ALM processes. Information essential for the Asset Liability Management Committee (ALCO) can be delivered in the form of standard or customized reports, as well as web-based dashboards, providing a granular view of risk and facilitating decision-making.

Analyzing today's balance sheet:

The economic value perspective

- The management of interest rate risk by a bank typically starts with analyzing the current balance sheet from an economic value perspective – quantifying the impact of interest and exchange rate movements on the market value of assets, liabilities, and derivatives, resulting in EVE sensitivity.
- Balance Sheet Manager facilitates balance sheet analysis both for internal management and regulatory reporting purposes. It provides the following outputs: interest rate and liquidity gap profiles, market values for all on-balance and off-balance-sheet positions, duration-related metrics and EVE sensitivities.
- These reports are often required as part of the Internal Capital Adequacy Assessment Process (ICAAP), e.g. assessing the sensitivity to +/- 200 bps shocks in interest rates, and for regulatory reporting purposes.

The introduction of Balance Sheet Manager means that Frankfurter Sparkasse can display its existing reporting system in its entirety while gaining greater flexibility, especially in terms of analytics. At the same time, the new solution meets all IT requirements for authorization, stability and standby support.

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Balance Sheet Manager: Solution overview



EVE sensitivity report



Gap reports

To facilitate the analysis of current risk exposure, the liquidity and interest rate gap reports provide extensive drill-down capabilities that allow users to trace the results back to single position level. Time buckets as well as balance sheet structures are fully configurable (e.g. daily, weekly, monthly, etc.). The standard filters help to convert the report into different reporting currencies on the fly, distinguish between principal and coupon flows, as well as inspect the gaps in discrete or cumulative manner.

Behavioral modeling and what-if analysis

For positions without contractual maturity like savings deposits, replication models are applied to model changing volumes on customer accounts and the overall balance on the relevant deposit class in terms of estimated interest rate sensitivity. For positions with contractual maturity, pre-payment and early withdrawal assumptions are, among others, taken into account to model the impact of implicit and explicit options. Finally, users can analyze the effect of hypothetical transactions ('what-if' or trial deals, such as hedging transactions, large commercial loans, or bond issues) to assess the effect of planned actions on the bank's risk profile and key performance indicators (KPIs).

Economic value sensitivity (delta and duration report)

Among other results, a sensitivity report will provide the calculated market values of assets, liabilities, derivatives and EVE, as well as the change in market value for a specified risk factor shock. All sensitivities are computed under a full revaluation, taking into account non-linear effects resulting from options. Extensive capabilities for scenario generation allow banks to model user-defined shocks of the yield curve (e.g. regulatory required scenarios like ± 200 basis points parallel shifts, shifts derived from historical crises, inversion or steepening of the yield curve, etc.), as well as foreign exchange rates and credit spreads shifts.

In addition to applying shifts and twists to the whole yield curve, the sensitivity report lets users analyze sensitivities in more granular detail with the help of key rate durations. These quantify the change in market values of every single asset, liability and derivative due to a shift of each single grid point of the yield curve. This sensitivity against each grid point breaks down the overall interest rate risk exposure into its components. It therefore provides the necessary information for deriving effective hedging strategies, i.e. deciding on the maturity and the volume of the hedging instrument. The report also provides essential insights into the basis risks inherent in the balance sheet.

Balance Sheet Manager repricing balance sheet



ALM Scenarios:

Projecting future earnings

After having analyzed risk exposures and economic value sensitivities across the current balance sheet, the next step is to examine alternative forward-looking scenarios by adding time as a critical dimension. The objective is to determine how the relevant risk and performance measures on the balance sheet will evolve under a set of user-definable assumptions – about customer-specific behavior, the bank's business strategy and the market environment. This allows users to evaluate the impact of different deterministic scenarios on future earnings and risk exposures. By using accrual accounting rules, the projected earnings help to define, validate and check existing and upcoming budget plans.

Simulation framework

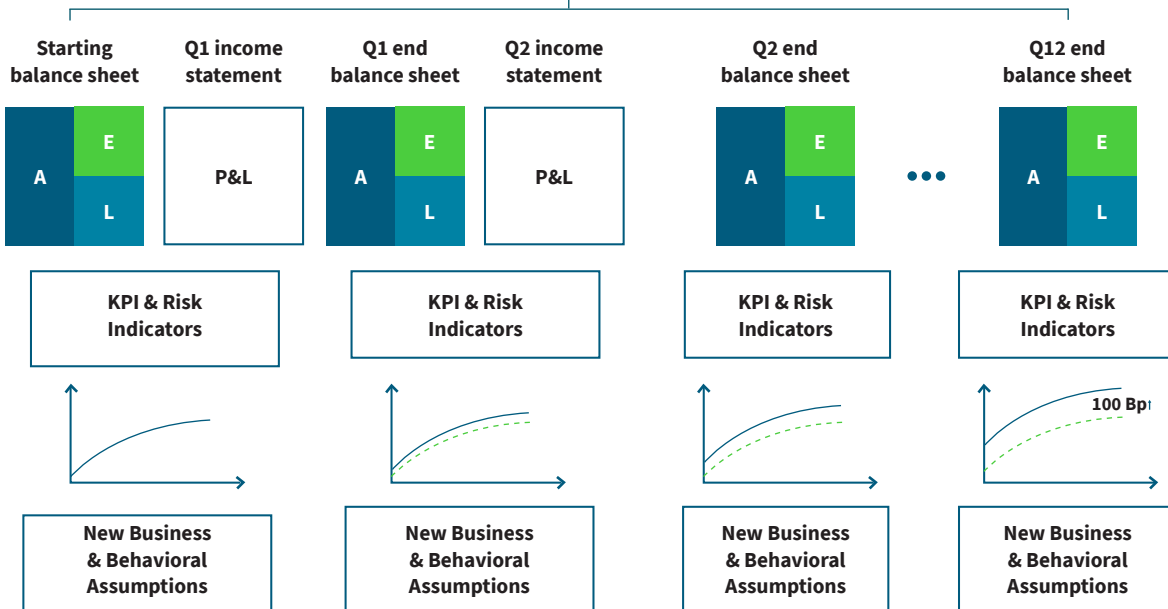
Forward-looking projections of the balance sheet enable banks to identify the impact of alternative scenarios on future earnings. Typically, such an analysis needs to be tailored to match the bank's business strategy, complexity of operations and risk profile, while also recognizing any risks arising from off-balance sheet commitments. Balance Sheet Manager facilitates scenario simulations by guiding the user through a well-structured and user-friendly scenario setup process. Here, the user defines a set of assumptions relating to risk factors and balance sheet dynamics, to show how the balance sheet will be affected by, for example, planned new business and expected customer behavior. The system uses the defined assumptions to extrapolate the entire balance sheet over a future time horizon and deliver a rich set of results on projected dates, ranging from income, sensitivities and gap profiles to cash flows and liquidity ratios.

Risk factor scenarios

Balance Sheet Manager helps banks to model a wide range of risk factor scenarios, from simple parallel shifts of the yield curve of ± 100 bp over the next 12 months, to sophisticated scenarios based on historical events like the 9/11 stock market crash or the 2008 credit crunch. The intuitive setup allows users to move the whole curve at once or shift individual points of the rate curve at any point in time within the planning horizon. This gives the user the ability to easily set up regulatory, internal or ad-hoc scenarios for risk analysis and stress testing.

Scenario simulation in Balance Sheet Manager

Three year forecasting



Balance sheet planning

The process of balance sheet projection begins with defining the granularity at which the balance sheet is being forecasted, i.e. whether new business or behavioral assumptions are made at the level of business line, product, currency, or according to a combination of parameters. The level of granularity involved in balance sheet planning is usually derived from current business requirements and planning processes, and as such, needs to be flexible enough to be able to alter rapidly – and react to changed business development strategies. Using multi-dimensional framework embedded within Balance Sheet Manager, business users can easily define a planning structure, specific to a scenario or business strategy. Examples include: planning at the level of the consolidated balance sheet or by entity; modeling shifts between fixed and floating rate products under a specific interest rate scenario; or projecting volumes of business as broken down into single large counterparties.

Once the scenario-specific balance sheet structure has been defined, different sets of new business assumptions, such as budget or growth scenarios, can be assigned to specified levels of the planning structure. To model the further evolution of the balance sheet, business users can define the volumes, maturities and pricing of new business based on scenario assumptions (e.g. growth or decline in loan portfolio, tenor and margins for newly issued loans), as well as behavioral assumptions for existing and new business (replication keys for non-maturing balances, prepayments, option exercise patterns etc.).

The system is highly flexible when it comes to planning new business, enabling users to set assumptions at the high level (e.g. total investments portfolio) or more granular levels (e.g. by product, entity or currency). To support the necessary granularity of obtained results and adequate allocation of planned new business volumes to earnings and KPI projections, the system can also automatically assign qualitative attributes to planned deals. For example, for earnings simulation the new volumes of business would be appropriately assigned to the respective products or customers, given today's distribution. Alternatively, users can explicitly plan volume changes in chosen dimensions, e.g. an increase in commercial mortgages while residential mortgages remain constant.

The flexible planning structure and scenario setup allows users to react quickly to changing business requirements and ad-hoc management reporting requests. Furthermore, multiple departments and entities can apply common scenarios to derive results across relevant metrics and breakdowns – for example, analyzing the effect of interest rate specific scenarios on the liquidity of the bank.

INTEREST RATE RISK: EARNINGS PERSPECTIVE

Consideration of interest rate risk from the perspectives of both short term earnings and economic value is important. Volatility of earnings is an important focal point for interest rate analysis because significantly reduced earnings can pose a threat to capital adequacy.

Source: EBA: Technical Aspects Of The Management Of Interest Rate Risk Arising From Non-Trading Activities Under The Supervisory Review Process, October 2006

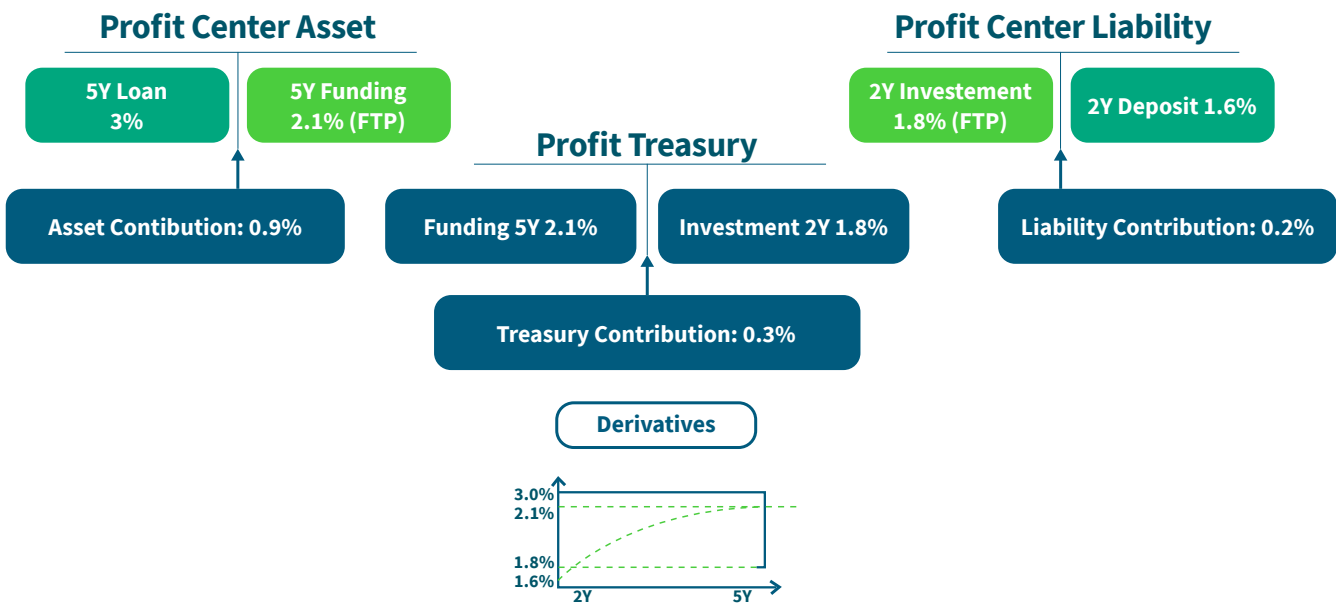
Simulation results

To ensure a holistic view of risk, the system generates a full set of key performance and risk indicators, including earnings, EVE sensitivities, gap reports and liquidity ratios for future points in time, based on simulated balance sheets. This allows for complete risk-return analysis, providing the necessary information for forward-looking business decisions.

Among other outcomes, Balance Sheet Manager enables banks to analyze and project expected net interest income and fee income under various market rate scenarios (deterministic Earnings at Risk), which allows users to model the impact of possible hedging strategies on a bank's earnings. For each scenario, Balance Sheet Manager will demonstrate the future evolution of net interest income, taking the IAS 39/IFRS 9 accounting rules into full consideration, and allow business users to analyze the corresponding income components accordingly.

Net interest income can be further broken down into its constituents using the FTP framework. Each department can choose to report what it controls: the part of the income due to interest rate risk, liquidity risk, or generated by a customer relationship (margin). By doing so, profit centers can assess and manage their risks and their income more effectively. The breakdown of interest income into its FTP components is possible both on a backward-looking basis, which allows the bank to identify profitable products or customer segments, as well as on a forward-looking basis, which helps analyze projected net interest income under different scenarios and different hedging strategies.

FTP framework



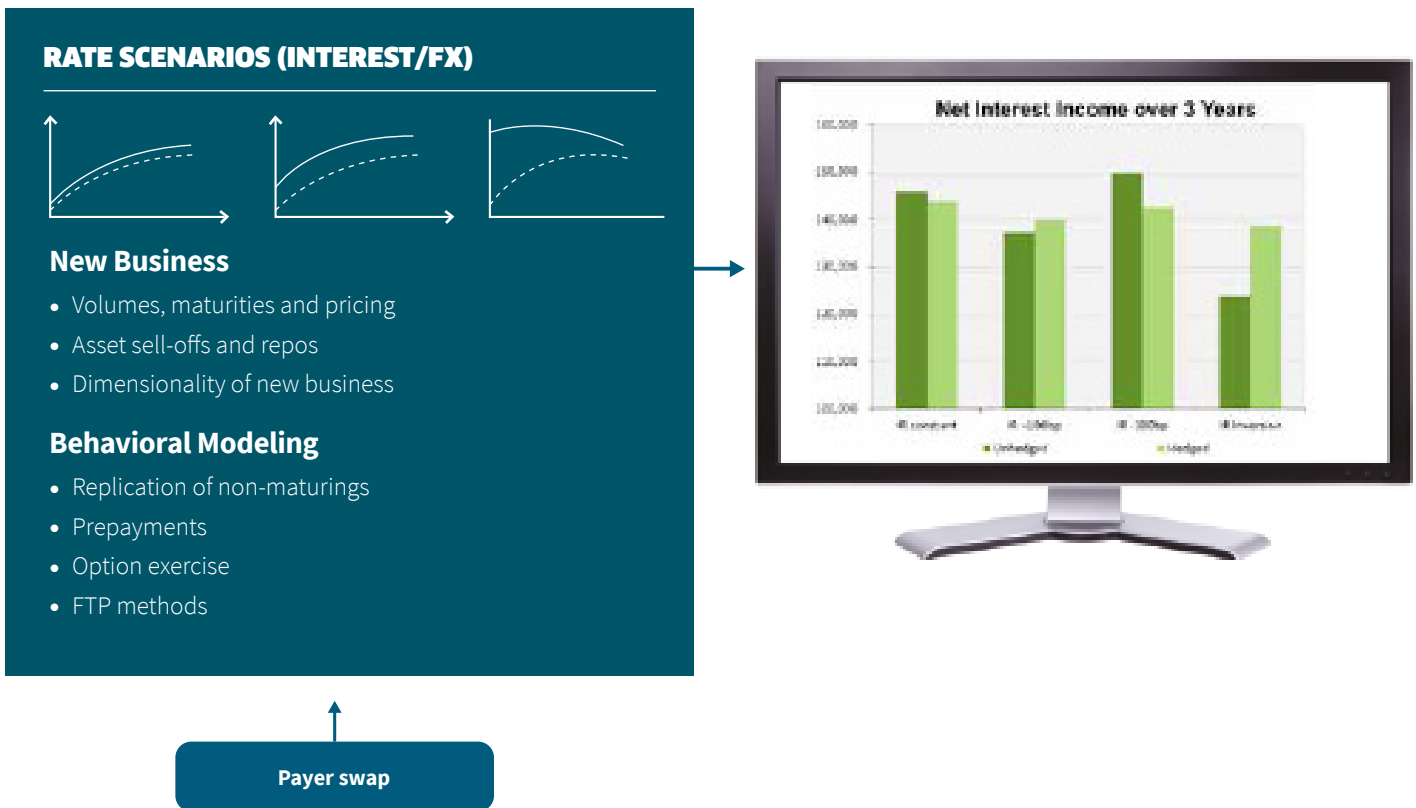
Along with projected earnings, Balance Sheet Manager allows users to analyze the impact of hedging decisions. The illustration below shows an example of a payer swap that has been used to reduce the market value volatility of current balance sheet, which would also create an income hedge under expected interest rate growth scenario. This is a plausible assumption for a bank operating in the current low-rate environment. However, it is also evident from the graph that the swap would bear a cost of carry, if rates were to decrease or stay constant.

Based on the applied hedging strategies, the bank may choose to create a hedge relationship, e.g. between the swap and the hedged item on the balance sheet. Without the application of fair value hedge accounting, classical hedging activities will cause swings in the income statement. This happens because the derivative instruments must be classified at fair value through profit and loss, while hedged items are accounted for at either amortized cost or fair value through other comprehensive income (FVOCI). As a result, the income statement would only contain the change

in fair value caused by variations in the hedged risk of the hedging instrument – while the hedged item is still accounted for at amortized cost or FVOCI. So, creating a hedge relationship in such a case can add value by reducing the volatility of the income statement.

Addressing the requirements of IFRS 9/IAS 39 for hedge accounting, Balance Sheet Manager can provide all the accounting information necessary for managing hedge relationships. Effectiveness tests, both prospective and retrospective, can also be performed before entering into the hedging transaction³.

FTP framework



Stochastic ALM

Traditional deterministic income simulations, as described above, are bound to subjective interest rate forecasts. As such, the accuracy of the income forecast depends on the accuracy of the interest rate scenario that has been defined deterministically.

The Stochastic ALM module of Balance Sheet Manager allows the bank to overcome the subjectivity embedded in every user-defined interest rate forecast. Using term structure models or historic simulation, the system generates a large number of future interest rate paths, which are further combined with defined balance sheet assumptions to calculate a distribution of possible earnings and market values. From these distributions, one can make conclusions with a specified level of confidence (e.g. 95 percent or 99 percent), that a certain outcome will (or will not) be exceeded. As a result, the economic results prediction will be enriched by an additional dimension: probability, which allows the bank to verify its risk strategy in not only a deterministic, but also a stochastic way. This will permit the bank to find out what level of income or market value will not be exceeded with a given probability.

The key result that the bank obtains as a result of stochastic simulation is Earnings at Risk (EaR). Despite its complexity, this measure has proved to be very helpful in the following use cases:

Stochastic distribution report



- Enriching managerial reporting – The ALM Committee reports usually contain income forecasts based on deterministic scenarios. However, to enable informed decision-making, the management also needs information on whether the projected earnings are closer to “average expected”, or relate more to an optimistic or pessimistic prediction of market evolution. As such, stochastic simulation helps to put deterministic results into perspective and demonstrate how likely a certain outcome is.
- Addressing ICAAP and interest rate in the banking book (IRRBB) economic capital requirements – Stochastic simulations provide banks with a possible approach to calculation of the economic capital required for interest rate risk in the banking book. With net interest income traditionally constituting a significant part of a bank’s total income, the associated risk relates mainly to future situations where the realized income would fall below the expected (budgeted) value. The resulting loss would directly affect the bank’s capital. To ensure that such situations are managed appropriately, banks need to plan economic capital for interest rate risk. A possible definition of the required economic capital for IRRBB, which would cover the above situation, is the difference between a selected percentile of the earnings distribution and the expected earnings (i.e. the mean of the distribution). The bank would therefore put aside enough capital to compensate for below-average income in a specific period, up to a certain quantile in line with the bank’s risk appetite.
- Reverse stress testing for interest rate risk. Within its reporting framework, Balance Sheet Manager allows business users to visualize the (stochastic) scenario that generates a specific level of net interest income at a given confidence level. For a confidence level of five percent, the definition of EaR states that with a 95 percent probability income will be higher than that level. This functionality proves to be exceptionally useful in a stress testing exercise, where the user has to look for a scenario that “breaks the bank” and produces below-average revenues.

In addition to the EaR measure, the system also calculates VaR at future points in time as well as the distribution of economic value, thus providing the banks with more insight into their future balance sheet from an economic value perspective.

Fact: Balance Sheet Manager facilitates balance sheet analysis both for internal management and regulatory reporting

Customized Reporting Made Easy

Balance Sheet Manager is an easy-to-use and intuitive solution. To allow the user to concentrate on the analysis of results, the process of loading data, running calculations and reporting can be fully automated using the built-in batch framework. The solution has been streamlined for performance, providing distributed computing capabilities and thus ensuring the fast availability of results.

In addition to the built-in standard reports, Balance Sheet Manager comes with multi-dimensional reporting capabilities based on an online analytical processing (OLAP) cube. Within the cube, users can easily create their own reporting layout and filter results by any data field, which allows them to build custom management reporting sets. The cube might also act as a data mart, storing various user-specific reporting setups and sets of results over time periods and entities. This allows for historical comparisons of results, hence enabling financial institutions to monitor the evolution of risk over time. Since the cube can be accessed from the application's front end, through business intelligence tools or from Microsoft Excel, banks have a wide range of possibilities to generate and distribute reports, feed results into pre-defined templates (for regulatory or internal reporting needs), or create management dashboards that can be further published on the institution's web portal. An example of a custom ALM dashboard is presented in the screenshot below.

All results from the application can be also automatically transferred to the bank's results data warehouse through an automated standard extraction interface, using pre-defined views of the results layer. These views present results at the lowest level of granularity, and across all the dimensions set up in the system (e.g. product type, business unit, entity) to enable further analysis, comparison and drill-down.

Customized reporting in Balance Sheet Manager



Balance Sheet Manager gives us the flexibility to address very specific local regulatory requirements and to help achieve wider risk management goals across our organization. New efficiencies through data integration and reporting will not only help us to better comply with current and future regulation, but will also help us to boost performance and enhance our competitiveness.

ÅLANDSBANKEN
FINLAND.

Why choose Balance Sheet Manager?


Our solution provides the following benefits:

- Fully integrated ALM and liquidity risk management, empowering risk measurement across different departments
- Best-of-breed ALM Solution, enabling banks to take risk management beyond compliance and focus on performance
- Modular platform, allowing combinations of out-of-the box solutions for:
 - ALM
 - Stochastic ALM
 - Liquidity risk
 - Market risk
 - Hedge accounting
 - IFRS 9 impairment and credit adjusted ALM
 - Funds transfer pricing
- Intuitive and user-friendly interface
- Multi-dimensional planning and reporting

About FIS

FIS is a leading provider of technology solutions for merchants, banks and capital markets firms globally. Our employees are dedicated to advancing the way the world pays, banks and invests by applying our scale, deep expertise and data-driven insights. We help our clients use technology in innovative ways to solve business-critical challenges and deliver superior experiences for their customers. Headquartered in Jacksonville, Florida, FIS is a Fortune 500® company and is a member of Standard & Poor's 500® Index.

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