

# Balance Sheet Forecast for Banks

**‘Balance sheets are actually superfluous: The result is always known; the liabilities are as big as the assets.’**

This nice aphorism by an unknown author also reflected my opinion on the subject of balance sheets quite accurately before I joined the FERNBACH team. This quote may indeed have contained a spark of truth in past days, but in today’s world it certainly no longer applies to the complex accounting processes of banks in accordance with the German Commercial Code (HGB) and IFRS 9.

The multi-GAAP-capable software solution that we have developed for banks’ financial accounting has indeed proved me wrong. It includes all the functions required for the preparation of financial reports: All calculations that are relevant for initial and subsequent valuation within the framework of financial accounting as well as the entire lifecycle of financial instruments and non-financial instruments are covered. For all deal events to be posted, the embedded Accounting Rules Engine generates debit and credit entries; the balance sheet, P&L and the appendices are supported for the period-end closing. We offer a complete IFRS solution including the valuation of financial instruments and impairment calculations for all three stages according to IFRS 9 - consolidation and multi-currency capability included. Both the IFRS accounting logic and the standardised chart of accounts are always contained in the scope of delivery.

So far, so good. But now, we at FERNBACH have also come up with the idea of developing a tool for forecasting bank balance sheets. And this even though forecasts are not always well received by people and are often tainted with something mystical, even with general mistrust:

The German poet Wilhelm Busch once said “It is difficult to foretell. Especially the future”, Mark Twain stuck to “Prediction is difficult – particularly when it involves the future” and also physics Nobel Prize winner Niels Bohr joined in with the words “It is very difficult to predict – especially the future”.

Nevertheless, it seemed important to us to invest time, work and money to develop a software that not only makes it possible to generate a bank balance sheet on a certain date in the past, but that is also able to generate reliable balance sheet forecasts for future booking dates. Simply for the reason because the informative value of a bank balance sheet from the past with regard to the future liquidity situation of a credit institution is only limited, as it is only a reporting date-related calculation. Due to the current events in the context of the Corona pandemic, it is all the more important to be able to make reliable predictions for the future: Economic output in the Eurozone has collapsed and the unemployment rate has risen. Banks and financial service providers are affected by the associated consequences, as private customers, for example, can no longer pay their loan instalments and many corporate customers are threatened with bankruptcy despite the use of government aids. Therefore, credit institutions have to think about what effects their banking business is threatened with. Even though no one knows exactly how the

situation will develop, in my opinion, simulation techniques involving various macroeconomic scenarios are not only useful but even a must in order to be able to look optimistically and purposefully into the future.

But how can we claim with a clear conscience that our tool produces reliable forecasts of bank balance sheets for the future and does not merely fall into the category of ‘Forecast: Replacing a lie with wild guess’ by the German satirist Karsten Mekelburg? Firstly, because we believe that already the correct explanation of the present is the foundation for a reliable forecast into the future. In our specific case, this means that we and our satisfied clients have been fully convinced of the correctness of the Accounting Rules Engine outlined above for years. On the other hand, because the forecasting tool that we have developed on top of it both provides mathematically correct predictions – at those points where they are appropriate (e.g. when forecasting future expected credit losses by means of statistical calculation methods) – and also enables the consideration of various individually configurable scenarios that adjust the forecast precisely to the corresponding client situation.

Customer Data Mart: Base Data Mart   Posting Date: Aug 31, 2020   Report: Balance Sheet Update									
	Time Bucket	posting date	01.09.2020	31.10.2020	30.11.2020	31.08.2021	31.08.2022	31.08.2023	
⚡ (1) Asset	cash		15,000	15,000	15,000	15,000	15,000	15,000	
	claims on banks		17,500	16,000	11,000	9,000	8,000	0	
	claims on customers		42,000	40,000	35,000	31,000	26,500	22,300	
	ECL		-1,700	-1,500	-1,200	-1,500	-1,000	-800	
	securities		220	200	300	500	400	250	
	derivatives		60	50	40	80	120	60	
	other assets		8,000	8,000	8,000	8,000	8,000	8,000	
	Subtotal of (1) Asset		<b>81,080</b>	<b>77,750</b>	<b>68,140</b>	<b>62,080</b>	<b>57,020</b>	<b>44,810</b>	<b>39,650</b>
	⚡ (2) Liability	due to banks		7,500	7,000	6,000	2,500	1,500	0
		due to customers		50,000	50,000	50,000	50,000	50,000	50,000
		securities		150	150	400	350	550	150
derivatives			20	20	80	70	100	30	
other liabilities			12,000	12,000	12,000	12,000	12,000	12,000	
equity			3,000	3,000	3,000	3,000	3,000	3,000	
technical offset account			8,410	5,580	-3,340	-5,840	-10,130	-10,370	
Subtotal of (2) Liability			<b>81,080</b>	<b>77,750</b>	<b>68,140</b>	<b>62,080</b>	<b>57,020</b>	<b>44,810</b>	<b>39,650</b>

Figure: Report - Balance Sheet Update

Let’s have a closer look at the whole thing: basically, our tool is able to create a balance sheet forecast (i.e. a residual balance) for future booking days. The basis for this is the current portfolio on the booking day, i.e. no assumptions are made about the volume of new business. Using a configurable time period scale, it can be defined which future booking days should be considered. The structure of the forecasted balance sheet is given by the following balance sheet items: On the assets side, cash and cash equivalents, claims on banks, claims on customers, the expected credit losses in accordance with IFRS 9 (in negative amounts), securities, derivatives and other assets are considered; on the liabilities side, there are due to banks, due to customers, securities, derivatives, other liabilities, equity and a technical clearing account to settle the projected balance sheet. The future valuation at amortised cost and fair value is implemented by using the same methodology as in the generation of the ‘normal’ bank balance sheet. All required raw data of deals can be delivered as usual. The forecast of expected credit losses is performed in two ways: For business on the assets side without a fixed term (such as current accounts with a negative balance), the ECL is determined proportionally

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according to the ratio 'total assets on the booking day under consideration' to 'total assets on the previous booking day of the time period scale'. On the other hand, a statistically-based forecast of expected credit losses is made for business on the assets side having a fixed maturity: IFRS 9-compliant PDs and LGDs are also calculated for future booking dates by means of linear regression on the basis of historical business data, historical values of macroeconomic parameters and their forecasts (which are provided by central banks, for example). The quality of such an ECL forecast is significantly higher than the mere adjustment by using the rule of three, which is only applied for business on the assets side without a fixed maturity due to lack of alternatives. For business on the assets side with a fixed maturity, on the other hand, such a linear adjustment does not make much sense, since, for example, in a flourishing economy there is more demand for loans, but the default risks decrease – whereas a linear adjustment would increase the amount of risk provisioning. Finally, some assumptions have to be made in the context of a balance sheet forecast even without considering the volume of new business. For example, accounts and non-financial instruments are due daily, and thus do only have a residual debt on the booking date itself (while this amount is zero for all future booking dates of the time period scale). By means of shift scenarios, such daily due payments can be synthetically shifted backwards, so that the assumption of a constant account balance or constant values of non-financial instruments can be mapped. This can be conducted completely flexibly by the user, who can determine both the percentage of the volume to be shifted and the shift period, so that all scenarios are adapted to the individual situation of the bank, thus enabling a coherent overall forecast of the bank balance sheet.

**So, let's strike a balance: Although someone once said that the balance sheet of a company is like the three body shapes of a woman – one shape she has, another one she shows, and yet another one she wants to have – we have succeeded in developing a software that makes it possible to generate reliable forecasts of the bank balance sheet for future booking days. In accordance with the procedure described above, both balance sheet truth and balance sheet clarity are maintained in the forecasted balance sheets.**

## About the author

After studying mathematics at the University of Trier, Dr. Andreas Jung completed his doctorate in the research area of "complex dynamics/hypercyclic operators" and has been a Stakeholder Risk at FERNBACH for several years, working mainly in the area of IFRS 9 (with a focus on ECL calculation using statistical methods) and regulatory reporting (Basel III, credit risk).

## About FERNBACH

FERNBACH is a group of medium-sized companies operating worldwide in software solutions and consulting whose hallmark is many years of Fintech expertise combined with a strong customer focus.

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