

BANK ANALYSIS

ALM – Interest Rate Risk / Duration Gap and Earnings Sensitivity

Interest Rate Risk (IRR) points towards the potential loss from unexpected changes in interest rates. These can significantly impact a bank's profitability but also its market value of equity. As a matter of fact, if a bank's assets and liabilities do not reprice at the exactly same time, then this will result in a change in net interest income. But as a change in interest rates will likely also impact the value of assets as well as the value of liabilities, this will eventually also impact the value of a bank's stockholder's equity. In such constellations, financial institutions typically focus on either the impact on net interest income or the market value of stockholders' equity, but not both. In this section, we will only focus on the market value of stockholders' equity.

As a matter of principle, changes in interest rates will impact the value of an asset. If, for example, interests increase, then the value of a bond paying fixed interest rates will decline, as an investor would prefer now a bond with higher interest rates as an investment alternative. – In this context, the concept of duration measures the weighted average point of time of the overall payment streams of an investment. Or, in other words: The average lifetime of a security's stream of payments. For example, a bond paying regular interest will have a shorter duration than a bond with the same maturity paying both, interest and principle at the end of its lifetime. And, therefore, a bond with a longer duration will show a higher price sensitivity than a bond with a shorter one. Or,

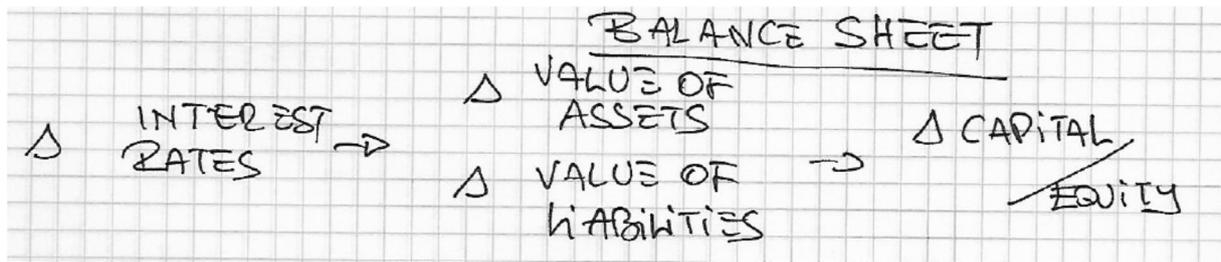
in other words: The longer the duration of an asset, the larger the change in price for a given change in interest rates.

Now, the duration GAP analysis compares the duration of a bank's assets with the duration of the bank's liabilities. That means that both, the weighted average duration of assets and the weighted average duration of liabilities are estimated. These estimates are used to calculate the so-called duration GAP. And, in a next step, the duration GAP analysis examines how the economic value of the bank's stockholder equity will change when interest rates change.

If, for example, the average duration of assets were greater than the average duration of liabilities (positive duration GAP) then the asset values would change more than the bank's liability values. If, in this case, interest rates went up, then the bank's equity would decrease. – Now, if, for example, it were the goal of a bank's management to protect the economic value of the bank's equity against any interest rate changes, then the bank could do this by simply setting the duration gap to zero. Therefore, by simply setting the duration GAP to zero management could de-facto immunize the bank's equity from interest rate changes.

The duration analysis provides a comprehensive measure of interest rate risk. And, as duration measures are additive, the analysis allows for the matching of total assets with total liabilities rather than the matching of individual accounts.

On the other hand, the duration GAP is difficult to compute, not least as a correct analysis requires that each future cash flow be discounted by a distinct rate. In addition, it is difficult to estimate the duration on assets and liabilities that do not earn or pay interest.



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