ALM – Interest Rate Risk / Duration Gap

Changes in interest rates can significantly affect both, a bank's profitability as well as the value of its equity. The concept of the Duration Gap (D-GAP) focuses on the impact on a bank´s equity (also capital) position.

A change in interest rates will directly impact the value of a bank´s total assets and total liabilities, therefore also the value of a bank´s equity. - If, for example, interest rates increase, then the value of a bond paying fixed interest rates will decline, as an investor would now prefer a (perhaps just recently issued) bond offering higher interest rates as investment alternative. This may be relevant for both, a bank´s assets, if it were invested in bonds, but also its liabilities, if having bonds outstanding. However, this basic principle is actually relevant for any asset or liability on a bank´s balance sheet.

The concept of duration measures the weighted average point of time of all payment streams of an investment (i.e. the average lifetime of a security's stream of payments). For instance, a bond paying regular interest will have a shorter duration than a bond with the same maturity paying both, accrued interest and principal at the end of its lifetime (zero-coupon bond). And, a bond with a longer duration will have a higher price sensitivity than a bond with a shorter one. - In other words: The longer the duration of an asset, the larger the change in its price for a given change in interest rates.

Now, the D-GAP analysis compares the duration of a bank's assets with the duration of the bank's liabilities. Hence, both, the weighted average duration of assets and the weighted average duration of liabilities are estimated. The difference gives the D-GAP, which can now be used to examine to which degree the value of a bank´s equity will be impacted with changing interest rates.

If, as is almost always the case in the banking industry, the average duration of assets were longer than the average duration of liabilities (positive D-GAP) then - with changing interest rates - the value of a bank´s assets would change more than that of its liabilities. If, in this case, interest rates went up, then the value of a bank´s equity would decrease.

Now, if, for instance, a management´s goal were to protect the economic value of a bank´s equity against interest rate changes, then this can (theoretically) be done by setting the D-GAP to zero. This step would de-facto immunize the value of a bank´s equity from any interest rate changes.

If, for instance, a bank had a positive D-GAP, then such could be decreased, perhaps even neutralized by issuing bonds with a longer average maturity than currently outstanding. Alternatively, assets held with longer maturities could be replaced with such having shorter ones. Now, whilst this is obvious in theory, implementing such strategies in the capital markets may by times not be all that straightforward.

Therefore, a duration-based analysis provides a comprehensive measure of the impact of the interest rate risk on the value of a bank´s equity. And, as duration measures are additive, the analysis allows matching total assets with total liabilities rather than requiring a matching of individual accounts.

In concluding, though, the D-GAP is cumbersome to compute, not least as a correct analysis requires future cash flows of each single balance sheet position to be estimated and discounted by a distinct rate.

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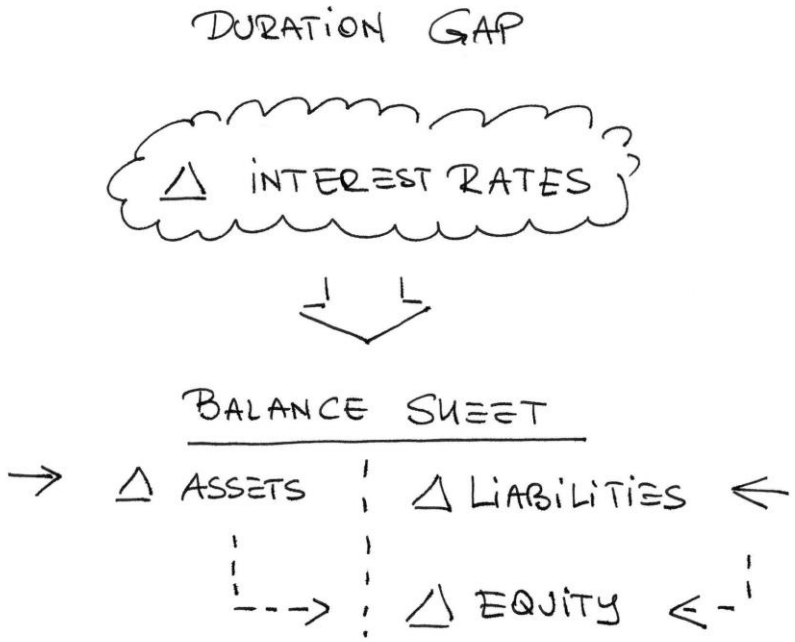

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