Modeling of the Credit Spread Risk in the Banking Book

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Introduction

Changes observed in fixed income securities can be primarily described by the fluctuations of the risk-free rate and the market credit spread component. The value reactions to spread movements are usually more pronounced than those observed concerning term structure fluctuations. However, the Basel III framework deals only with the effect of the interest rate risk in terms of valuation of the banking book. Thus, the effect of the widening credit spread has not yet been explored, and, moreover, it was ignored by the majority of Value-at-Risk models and asset-liability management frameworks. The research analyzes the market credit spread risk in the banking book advised by the Basel Committee on Banking Supervision and the European Banking Authority as outlined in the Capital Requirements Directive (CRD 5) and Capital Requirements Regulation (CRR 2).

The first part of our study deals with the phenomena and gives a general introduction to the credit spread risk in the banking book. It then assesses the two environments that have the most significant influence on spread movements, the Hungarian Government bond market and the interest rate swap market.

The second part undertakes to establish a theoretical model for measuring the credit spread risk for various asset classes. It then goes on to demonstrate the methodology with one type of asset, Hungarian Government bonds, by defining the credit spread risk component and its fluctuations with a GARCH model, as well as demonstrate the extreme values captured by the Value-at-Risk methodology.

Methodology

The common understanding of the European banking industry concerning the Credit Spread Risk in the Banking Book (CSRBB) was defined in the European Banking Authority's guidelines; it relates to the banking book assets, which are actively traded on a deep and broad market, and held in a business-model projecting a possible sale before maturity and in which market value is affected by the credit-spread risk component. The guideline also states that the sale in a business-as-usual environment refers to the course of normal business activities that are not affected by extraordinary events such as stress-test scenarios and recovery or resolution mode – activities that would lead to selling the assets in extraordinary circumstances relating to other sources of risk.

The definition provided in the EBA guidelines suggests that the metric to monitor and assess the Credit Spread Risk in the Banking Book (CSRBB) is the sensitivity of these assets' market value to changes in the credit-spread risk component. As the Basel Committee on Banking Supervision defines Credit Spread Risk in the Banking Book as "any kind of asset/liability spread risk of credit-risky instruments that is not explained by the Interest Rate Risk in the Banking Book (IRRBB) and by the expected credit/jump to default risk", institutions must avoid double counting with credit/jump to default risk.

In general, banks own market-tradable assets in the Banking Book in order to maintain a liquidity buffer and to comply with the regulatory requirements. These assets in the banking book can be held to their maturity or potentially be sold before maturity, depending on certain market conditions. According to the International Financial Reporting Standards (IFRS9), we can classify market tradable assets in the Banking Book as follows:

- HtC&S (Held to Collect and Sell Assets): these assets are held to collect the contractual cash flows and to be sold before maturity. HtC&S assets are accounted at fair value, and the changes in market value can be recognized through Other Comprehensive Income (OCI).
- HfT (Held for Trading Assets): in a few instances, market tradable assets, albeit the intention to sell them in the short-term, are classified in the prudential banking book. Held for Trading assets in the banking book are accounted at fair value, and the changes in market value can be recognized through Profit and Loss (P&L).
- HtC (Held to Collect Assets): HtC assets are expected to be held to maturity while the contractual cash flows are collected. Held to Collect assets are accounted at amortized cost and not at fair value, hence the perceived changes in the market value cannot be reflected through OCI and P&L.

As the risk of losses only materializes when the asset is sold, it is the common understanding of the European Banking Authority that assets whose sale is not forthcoming can be excluded from the credit spread risk assessment. Thus, IFRS9 tradable assets that are Held to Collect are unaffected by the temporary changes in their market value.

Main challenges:

- Guidelines require banks to assess CSRBB, but the Basel Committee on Banking Supervision (BCBS) does not provide any methodology for the measurement and monitoring activities.
- The definition of CSRBB is unclear, and its perception varies across the industry.
- The BCBS does not advise on the application of risk measures for balance sheet items or recommend the avoidance of double-counting with Pillar 1 capital for credit risk.
- CSRBB is not easily quantifiable and can be determined only for assets that are traded on a deep and active market.
- CSRBB is comprised of market credit spread and market liquidity spread, and it is only applicable to fair-value items in the banking book

In the main research, the project will present a model to adequately assess and measure the credit spread risk for Hungarian Government bonds.

Conclusion

As the outcome of Capstone Project paper, we have examined the new standards of the Capital Requirement Directive (CRD 5) and Capital Requirements Regulation (CRR 2) suggested by the Basel Committee on Banking Supervision to assess the credit spread risk in the banking book.

The interaction of market credit spread and market liquidity risk can amplify value fluctuations of various financial securities and might amend the level of banks' capital adequacy. Market credit spread factors cannot be identified directly as numerous effects aggregate to determine the dynamics. Shifts of the demand curve for credit risky instruments due to different liquidity conditions or change in the risk aversion strongly contribute to the spread movements and behavior.

When the spreads are widening, banks can obtain new funding from the market at an increased cost, which might result in a liability-related loss. Hence, the effect of the credit spread risk is that both sections will be affected by the balance sheet simultaneously, resulting in an uncertain impact on the net economic capital. The market credit spread movements are not directly related to changes in creditworthiness; they arise primarily due to perceptions of investors, risk aversion, and demand for credit-risky securities. As the credit spread risk is a second pillar matter, it should be managed adequately with the tools of gap analysis and Value-at-Risk methodologies.

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