

Executive Summary

Question

Structured products allow investors to diversify into all asset classes with predefined payoffs. These products are offered by banks that satisfy the demand of investors and thereby also often hedge their risks. The benefit for retail investors is that they can invest beside stocks also into normally inaccessible markets, like commodities or emerging markets, with small amounts and implement their market expectations into a corresponding strategy. The issuing banks can charge high margins due to the information asymmetry between the parties. The investor is in an inferior position because of the complex pricing and also scenario misinterpretations. The lack of specific knowledge and the lack of transparency are reasons for an advantageous position of the issuers. Even in a risk-free world these reasons would play an important role. It gets even more complicated in reality, a risky world, where the issuers are affected by the issuer risk, a kind of credit risk.

This thesis investigates the relationship between structured products and the credit risk of issuers with the measurement of credit default swap (CDS) spreads. In particular, this thesis examines if issuers of structured products generally compensate the investors of structured products for bearing higher credit risks. The thesis further focuses on the question whether the raising awareness of investors concerning the issuer's credit risk, mainly caused by the collapse of Lehman Brothers, forced the issuing banks to adjust their pricing policies regarding to credit risk and transparency. To a full understanding of the applied credit risk measurement we provide a theoretical part on credit default swaps. This part includes specifications of credit event triggers, the settlement, the auction process in case of a credit event as well as a theoretical and practical reflection on the method of CDS quoting.

Procedure

The applied data is a merger of the final database used by Woschitz (2010) and newer available data for structured products provided by Derivative Partners Group. We edit a data base of 2,742 structured products divided into six product classes. We then calculate the relative fair value gaps at issuance with the same procedure as Woschitz (2010). The fair value at issuance is computed by replicating the structured products in portfolios. The portfolios reproduce the structured products by using a bond component and an option strategy. The implied volatility as well as the market-based values for the embedded option of the structured product are determined with a method presented by Black and Scholes (1973) and Merton (1973). Finally, we end up with 1,188 fair value gaps. Due to the fact that CDS spreads exist only for large investment banks our sample is reduced to 376 fair value gaps assigned with either a 5-year CDS spread denominated in EUR or USD. Further, we provide three approaches to measure the credit risk. Firstly, we use the liquid 5-year CDS spread, secondly a linear unweighted interpolation and thirdly a linear weighted interpolation between the available upper and lower CDS spreads. While CDS spreads are available for durations of 1, 3, 5 and 10-years, structured products are much more flexible regarding to the duration. Therefore, we present the mentioned approaches. We make use of OLS regressions to analyze potential influences of the different CDS spread

approaches, which are our measurement for the issuer's credit risk, on our calculated fair value gaps. We run regressions for three different samples and in each we distinguish between a full model, a pre and a post Lehman Brothers model. The first of the mentioned three samples is an overall sample of the available CDS spreads. In the second and third sample the CDS spreads are split into their corresponding currencies EUR and USD. Moreover, a set of control variables is included to catch several influencing factors on the fair value gaps.

Results

At first, the findings of the overall sample (irrespective of the CDS currency) are presented, followed by the EUR CDS findings and finally the CDS denominated in USD.

Our pursued presumption for the first sample is that CDS spreads, irrespective of their currency, mirror the pure credit risk. In general, the coefficients of our first sample indicate for the approaches of the linear weighted and unweighted interpolated CDS spreads negative and highly significant relations with the fair value gap. Furthermore, we find a small negative and significant influence of the linear unweighted and weighted interpolated CDS spreads in the post Lehman Brothers sample. We interpret it in the following way: Issuers provide a compensation for their investors of structured products, if they are bearing a higher credit risk. Therefore, our prognostications are in line with the results of this sample.

OLS regressions with all EUR denominated CDS spread approaches on the fair value gaps support our first hypothesis that investors are generally compensated. We receive negative coefficients for all our approaches. In terms of the linear weighted and unweighted interpolated CDS spread we observe even more negative coefficients as with the 5-year CDS. This means that investors are compensated by issuers in general for bearing credit risk. The 5-year CDS spread denominated in EUR is, however, the only credit risk measurement approach which can support the finding of Woschitz (2010) regarding a positive and significant coefficient for products issued before the bankruptcy of Lehman Brothers. In this case investors even had to pay a premium for higher credit risk. The third hypothesis, that issuers provide a compensation after the collapse of Lehman Brothers, cannot be supported by any of the approaches denominated in EUR. However, we can observe negative coefficients for all approaches but not a single one is significant.

Finally, our findings for the third sample, which consists of CDS spreads denominated in USD, indicate that a strong significant and negative relationship exists for the linear weighted as well as for the linear unweighted approach in the full model and also for the products which were issued after the collapse of Lehman Brothers. We can even present a significant and negative influence of the 5-year CDS spread in the post Lehman Brothers sample. This indicates that US domiciled issuers of structured products or European issuers with a CDS denominated in USD compensate their investors in general as well as after the collapse of Lehman Brothers for bearing a higher credit risk.

General Evaluation

The findings of the OLS regressions in this thesis are in line with our first hypothesis that investors are generally compensated by the issuer in level of their credit risk. However, it plays an important role which measurement in which sample is used to confirm the hypotheses. For example we could only capture a positive and significant relation in the EUR denominated sample with the 5-year CDS spread for the time before the collapse of Lehman Brothers. A guess for this result is that the 5-year CDS spread was the only CDS spread that could mirror the issuer's credit risk until the collapse of Lehman Brothers thanks to its liquidity. Since then the demand for credit risk information increased generally and therefore also for short-termed CDS spreads which is why the interpolated CDS spread approaches performed in the post sample respectably well. This means that they are more significant and have higher coefficients than the 5-year CDS spread and are therefore presumably the more accurate measurement for credit risk in case of structured products. We can confirm overall as well as for the sample after the collapse of Lehman Brothers and irrespective of the CDS denominated currency, that in all these cases, the coefficients are negative and mostly significant. This means that investors require a compensation for bearing a higher credit risk, after the collapse of Lehman Brothers, which is provided by the issuers who changed their pricing policies due to changing circumstances and market environments.