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The Effects of Contingent Convertible (CoCo) Bonds on Insurers' Capital Requirements under Solvency II¹

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Abstract: The Liikanen Group proposes contingent convertible (CoCo) bonds as instruments to enhance financial stability in the banking industry. Especially life insurance companies could serve as CoCo bond holders as they are already the largest purchasers of bank bonds in Europe. The growing number of banks issuing CoCo bonds leads to a rising awareness of these hybrid securities among life insurers as they are increasingly looking for higher-yielding investments into bond-like asset classes during the current low interest rate period. Our contribution provides an insight for life insurance companies to understand the effects of holding CoCo bonds as implied by the Solvency II standards that will become effective by 2016.

The Liikanen Group strongly recommends the issuance of contingent convertible debt by banks as a potential mechanism to reduce the risk shifting towards tax payers created by governments' safety nets as well as to enhance financial stability in the banking sector. This form of long term debt, (also called contingent convertibles or CoCo bonds), with a fixed coupon rate, automatically converts to equity when a bank approaches insolvency, i.e. when a predetermined trigger is met. Upon conversion, a bank immediately replenishes its equity capital base, while at the same time reducing its interest payment obligations.

To maximize the stabilizing effect on the financial system, CoCo bond holders may not hedge themselves in the banking sector and should not experience refinancing difficulties when suffering losses on their investments. Diversified financial institutions with long term maturities on their funding side and restrictive termination rights, such as life insurance

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companies, seem to fit this profile in particular. In fact, life insurers are already the largest purchasers of bank bonds in Europe, owning around 11% of European bank debt. Especially in the current low interest rate environment which leads to a decline in the returns of fixed-income securities, life insurers might favor higher yielding fixed-income securities, such as CoCo bonds.

CoCo Bonds under Solvency II

In a recent study (Niedrig and Gründl, 2015), we calculate the effects of holding CoCo bonds on life insurers' risk-based solvency capital requirements under the upcoming European Solvency II standards. Therefore, we develop a stylized model with a direct financial connection between banking and insurance (see Figure 1). The bank provides loans that are financed by equity capital, deposits and additional bank debt (either non-convertible or contingent convertible). The life insurer features an existing stock of endowment or annuity policies, i.e. savings contracts, that include minimum guaranteed returns. The financial connection between banking and insurance stems from the insurer's investment into the bank's bonds.

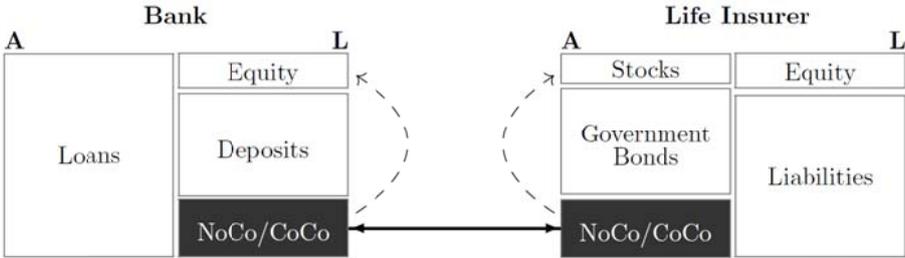


Figure 1: Financial connection between bank and insurance company.

We study a variety of CoCo bond designs and allow for partial conversion which has important implications for investors: as CoCos convert to equity, bond holders become shareholders and thus share any costs or benefits that accrue to shareholders from subsequent conversions. To assess the effect of the conversion on insurers' capital requirements, besides using the Solvency II standard model, we develop an internal model that ex-ante anticipates possible future bank share holdings. From the resulting capital requirements for insurers, we study the sensitivity with respect to the CoCo bond design (trigger value, conversion ratio, holding time of bank shares) and the bank's risk appetite.

To study different CoCo contract designs and to check the robustness of our findings, we analyze six different contract calibrations (high/low trigger, conversion ratio and bond size).

Capital Requirements for different CoCo Bond Types

Based on empirically calibrated parameters, we calculate an insurer’s capital requirements under the proposed Solvency II standard model as well as under an internal model for three contingent convertible bond types: write-down bonds (bond value is written down upon conversion rather than being converted to equity), contingent convertible bonds SAC (sold at conversion) and contingent convertible bonds HTM (held to maturity). As a benchmark, we use the treatment of non-convertible bank bonds.

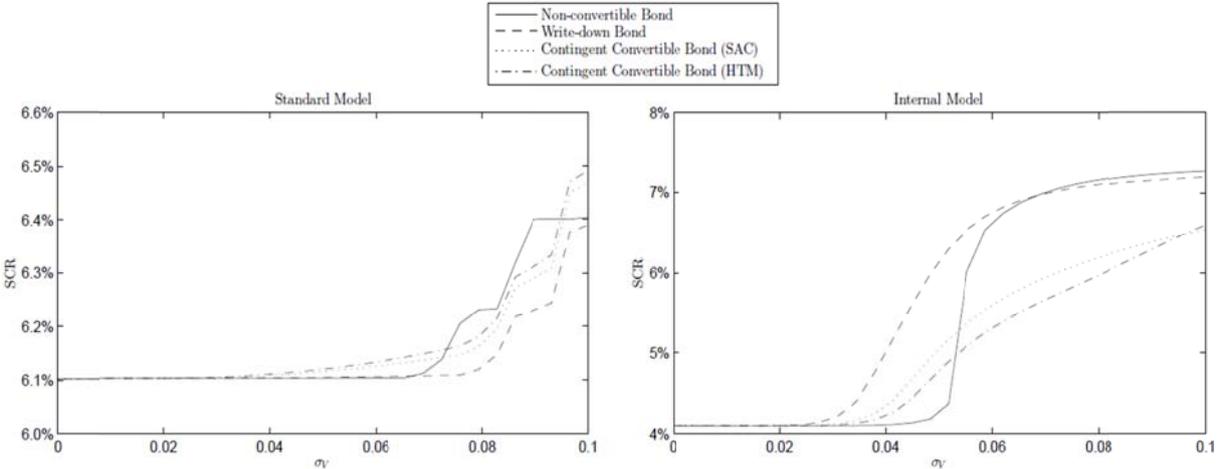


Figure: Solvency Capital Requirements (SCR) from the Standard Model (left) and the Internal Model (right) in percentage of the insurer’s total assets.

The numerical results reveal large differences in the capital charges for insurers under the standard model and the internal model. Since the current standardized assessment of market risk depends on relatively crude risk weights, the Solvency II standard model is not able to reflect the entire risk profile of a CoCo bond. In contrast, an internal model can recognize the full risk return profile through dynamic modeling techniques and therefore evaluates the actual risk situation of the company. By varying the CoCo bond's trigger value and the conversion ratio as well as the bank's risk appetite, we find that the standard model can mislead CoCo investors and does produce economically unsound incentives. For example, by increasing the trigger value, other things being equal, capital requirements

under the Solvency II standard model wrongfully decrease while they increase under the internal model.

From the internal model, we learn that capital requirements for CoCo bonds increase with increasing trigger value, decreasing conversion ratio as well as increasing bank risk. In addition, CoCos lead to higher capital charges than non-convertible bonds if bank risk is low, and to lower capital requirements if bank risk is high. For low bank risk, an increase in capital requirements for CoCos is accompanied by an increase in the credit spread. For high bank risk, insurers clearly benefit from buying CoCos due to lower capital charges and a higher coupon rate (see Figure 2). In this case, holding a CoCo clearly dominates holding a non-convertible bond. Therefore, insurers might even accept a reduction in the fair bond spread due to the reduction of risk capital. As a potential growth area for CoCos from an insurer's point of view, we identify small-sized CoCo bonds from lower than AAA rated counterparties.

Policy Implications

Our results have several economic implications. Policymakers responsible for determining whether particular contingent capital designs will qualify to meet Basel III capital requirements and ultimately add to financial stability get a hint in how far CoCo bonds are an attractive investment category for life insurers as an important investor group. The analyses reveal that the current set-up and calibration of the Solvency II standard formula for market risk are inadequate with respect to the treatment of contingent convertible bonds. By highlighting these weaknesses of the market risk module, our results provide an indication for improving it.

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