ON THE PREFERENCES OF CoCo BOND BUYERS AND SELLERS:

as a mandatory conversion method, using stock prices as a tool for conversion from bond to equity. Flannery (2009) proposed a contingent capital certificate that also uses the market trigger to convert debt into equity.

Raviv (2004) introduced a debt for equity swap (DES) contract that pays its holder a determined conversion threshold; otherwise, it converts into common equity. Squam Lake Working Group (2009) suggested a regu

added that the current Solvency II standard formula for market risk, which relies on rudimentary risk weights, needs to improve because it fails to estimate the full risk of CoCo

the existing CoCo bonds with finite maturity dates are only eligible to obtain Tier 2 capital status under Basel III. Most of them have an original maturity of approximately 10 years (Avdjiev et al., 2013). With a longer or perpetual maturity, CoCo bond investors are likely to enjoy (generally higher) coupon payments than for other debt instruments over a long period, while the opposite holds for CoCo bond issuers. Thus, we formulate our second hypothesis as:

H2: *A* *maturity is positively (negatively) related to its buyer*
(seller .

CoCo issuance patterns are largely driven by the way Basel III is applied, or supplemented by national regulators and

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On the other hand, investors may perceive the trigger level of CoCo bonds as too low to spark a conversion, which may be seen as simply more leverage. Therefore, as the CoCo and the likelihood of an early conversion rises, the issuing banks will experience an increase in bankruptcy protection (Ammann et al., 2017)

high trigger CoCo bonds have the potential to cause more losses for CoCo bond holders ahead of the issuing , which inverts the traditional hierarchy of investors and is an additional possibility the credit rating agencies need to consider. Third, the existence of the principal write down feature (the discretionary trigger) creates valuation uncertainty, further complicating the rating process (Avdjiev et al., 2013).

For CoCo bonds not to convert, they should have high credit ratings which investors prefer to avoid internalizing possible losses from the issuing companies. On the other hand, banks prefer issuing CoCo bonds when they feel a strong need to increase their bankruptcy protection, especially when their credit ratings are low. Therefore, our sixth hypothesis is the following:

H6: *A credit rating is positively (negatively) related to its buyer (seller rences.*

Therefore

subtracting the CoCo bond buyers preference score from one. We assume that preferences are mutually exclusive, namely:

$$\left(\frac{}{}\right) = 1 - \left(\frac{}{}\right) = \frac{1}{} \quad (2)$$

The CoCo bond characteristics considered are coupon (%), maturity (this is a binary variable equal to one if permanent and zero otherwise), the amount issued (milliopermanent and zero otherwise),

As for the CoCo bond issuing firm characteristics and economic control variables, we also collect the data from Bloomberg and use the 6 months lagged ones vis-à-vis the CoCo bond data to avoid hindsight bias. The CoCo bond characteristics considered are: return on common equity (ROE), firm size (SIZE: the natural

and total debt to total asset (TD/TA). The economic control variables used are real GDP growth (RGDP in yearly percentage change), the consumer price index (CPI in yearly percentage change) and the unemployment rate (UEM in %); the dependent variables (CoCo s) SCORE_25 , SCORE_50 and SCORE_75 are defined as ——————— which is compared to the corresponding 25th, 50th and 75th percentile values, respectively, and take value one if greater than the median and zero otherwise. Table 1 shows summary statistics for the variables used for the analysis.

[Insert Table 1]

Most CoCo bonds have coupon rates between 6% and 7%, permanent maturities (about 81%), a trigger level around 5% and 6%, credit ratings between Ba2/BB/BB and Ba1/BB+/BB+ according to Moody/S&P/Fitch credit ratings, and 32% have the equity conversion property, while the remaining 68% have principal write down features. Most of the variables in our sample do not exhibit a large difference between the mean and the median and have relatively non skewed distributions, except for CPI and the preference scores of CoCo bond buyers and sellers. The mean of CPI (5.05) is much larger than its median (0.30), there is a clustering of low CPI values, and the distribution is right skewed. On the other hand, the preference scores of buyers and sellers have mean values of 0.50 that are only half of their medians (1.00), exhibit clustering of high preference score values, and the distribution is left skewed.

5.2 Empirical Results

Table 2 displays the results from the preference score logistic regression analysis. [1] We use three different binary dependent variables, SCORE_25, SCORE_50 and SCORE_75 which are equal to one if the ——————— is larger than the 25th, 50th and 75th percentile of

——————— within the same year, respectively. The ——————— is the return-to-risk ratio of a CoCo bond that the buyer can achieve. We expect the CoCo bond sellers opposite to the buyers one, which is confirmed by the opposite signs of the beta coefficients in equations (1) and (2), therefore we only report the first set of coefficients.

We find that buyers of CoCo bonds with low return-to-risk ratios (i.e., in the 25th percentile) are mostly interested in the issuing bank TRC/RWA) and credit risk (CRD), i.e. the financial soundness of the CoCo bond issuing firms, especially if they are (TRC/RWA = 0.523) with a high credit rating (CRD = 0.896), which is preferred by buyers because CoCo bonds force shareholders to internalize the negative consequences of a are converted (Flannery, 2015; Ammann et al., 2017). By contrast, sellers do not prefer a high credit rating because it might not be necessary to issue CoCo bonds if their financial condition is already stable enough. Sellers instead prefer to issue CoCo bonds only when the financial outlook is less promising and they are needed to satisfy the Basel III requirements. Thus, our results are consistent with H6. Overall, buyers seem to be more sensitive than sellers to the credit rating. Therefore, it may be worthwhile for the CoCo bond-issuing firms (the sellers) to consider increasing their CoCo credit rating since buyers may react more than sellers (Table 3). Overall, the CoCo bond buyers and sellers in the 25th percentile tend to exhibit risk-averse and risk-loving behavior, respectively, towards their CoCo bond investments.

The CoCo bond buyers investing in Coco bonds with a medium return-to-risk ratio (i.e., in the 50th percentile), are more sensitive to CoCo bond (CPN, CON and CRD) and issuing bank characteristics than buyers in the lower (25th) or higher (75th) percentiles.

make them costly to issue, the equity conversion mechanism involves additional costs and the owners become shareholders when CoCo bonds are converted into equity. Accordingly, they could be quite sensitive to the over- or under-

percentile exhibit risk-loving and risk-averse behaviour, respectively, in contrast to those in the 25th percentile. While they behave similarly to those in the 50th percentile, they are also sensitive to the total CoCo bond amount issued. These buyers prefer banks to issue fewer CoCo bonds in order

References

Calomiris, C.W. and R.J. Herring, 2013, How to design a contingent convertible debt requirement that helps solve my too-big-to-fail problem, Journal of Applied Corporate Finance, 25 (2), 39-62.

Chandra, U. and N. Nayar, 2008, The information content of private debt placements, Journal of Business Finance and Accounting, 35 (9-10), 1164 1195.

Chen, N., P. Glasserman, B. Nouri, and M. Pelger, 2013, CoCos, bail-in, and tail risk [Working paper #0004], Office of Financial Research.

Christensen, D.G., H.J. Faria, C.C.Y. Kwok, and M. Bremer, 1996, Does the Japanese stock market react differently to public security offering announcements than the US stock market? Japan and the World Economy, 8 (1), 99 119.

Corcuera, J.M., J. De Spiegeleer, J. Fajardo, H. Jönsson, W. Schoutens, and A. Valdivia, 2014, Close form pricing formulas for coupon cancellable CoCos, Journal of Banking and Finance, 42, 339 351.

Dann, L.Y. and W.H. Mikkelson, 1984, Convertible debt issuance, capital structure change and financing-related information. Some new evidence, Journal of Financial Economics, 13 (2), 157 186.

Davis, D., O. Korenok, and E.S. Prescott, 2014, An experimental analysis of contingent capital with market-price triggers, Journal of Money, Credit and Banking, 46 (5), 999 1033.

Davis, D., E. Prescott, and O. Korenok, 2011, Market-based corrective actions: An experimental investigation [Working paper 11-01], Federal Reserve Bank of Richmond.

J. De Spiegeleer, W. Schoutens, and C. Van Hulle, 2014, The handbook of hybrid securities. Convertible bonds, CoCo bonds, and bail-in, John Wiley & Sons Ltd.

Dong, M., D. Hirshleifer, and S.H. Teoh, 2012, Overvalued equity and financing decisions, Review of Financial Studies, 25, 3645 3683.

Duca, E., M. Dutordoir, C. Veld, and P. Verwijmeren, 2012, Why are convertible bond announcements associated with increasingly negative issuer stock returns? An arbitrage-based explanation, Journal of Banking and Finance, 36, 2884

Yang, Z. and Z. Zhao, 2014, Contingent capital with repeated interconversion between debt and equity. Available at: https://ssrn.com/abstract=2200883, (Accessed: 8 September 2014).

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Table 2. CoCo bond buyer and seller's preference score logistic regression analysis

The following table presents the logistic regression analyses with preference scores as dependent variables and CoCo bond (between May 11, 2009 and March 19, 2018 excluding the matured and cancelled ones), its issuing bank and economic characteristics as independent variables. The CoCo bond characteristics we consider are coupon (CPN in %), maturity (MAT), amount issued (AMT in million US $), trigger level (TRI in %), conversion (CON) and credit rating (CRD). The CoCo bond-issuing firm characteristics included are return on common equity asset (TRC/RWA) and total debt to total asset (TD/TA). The economic control variables are real GDP growth (RGDP in yearly percentage change), consumer price index (CPI in yearly percentage change) and unemployment rate (UEM in %). For our dependent variables, we use ———————— for CoCo bond

Table 3. Relative impact

Table 4. Global CoCo bond buyers and sellers' preference scores with incremental factor change

The following tables present the incremental change in CoCo bond on the 25th, 50th and 75th percentile benchmarks in Panel A (SCORE_25), B (SCORE_50) and C (SCORE_75), respectively. We provide the global preference scores with the incremental changes in significant factors in Table 2. The preference scores are scaled by the market power score for each country to provide country specific preference scores as in our equation (5) and (6). We report the country and factor average preference responses which are the average values across each row and column, respectively.

Panel A. ΔSCORE_25
(Preference response of the 25th percentile investors)

Country	CRD

Sweden	41.15%	-74.78%	56.00%	6.92%	2.47%	6.35%
Switzerland	378.71%	-688.15%	515.31%	63.67%	22.73%	58.45%
United Kingdom	1760.72%	-3199.39%	2395.78%	296.01%	105.69%	271.76%
Factor average	134.78%	-244.92%	183.40%	22.66%	8.09%	

Appendix I. Variance inflation factor (VIF) test

This table presents the Variance inflation factor (VIF) test results for the independent variables used in the regressions in Table 2 to identify multicollinearity problem. As a rule of thumb, the VIF values below at least 10 or 5 are assumed to be safe from problems of multicollinearity.

Variables	SCORE_25	SCORE_50	SCORE_75

Appendix II

Country average response of the CoCo bond's preference score: ΔSCORE_50

The following figure shows the country average preference responses for CoCo bond buyers SCORE_50 in Table 3 Panel B. We show the SCORE_50 as a representative one it has the most factors responsive compared to SCORE_25 and SCORE_75 while the overall map results are highly similar. The CoCo bond seller s country average preference response shows the same figure as below since it is only the opposite response while we capture only their absolute values. The darker blue shade indicates larger absolute values of the