On the preferences of CoCo bond buyers and sellers

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Abstract

This paper estimates the preference scores of CoCo bond buyers and sellers by running multinomial logistic regressions taking into account both bond and issuing banks' characteristics; it also provides evidence on the role of country−specific CoCo bond market concentration. Buyers are defined as having a preference for CoCo bonds if their return−to−risk is higher than the corresponding 25th, 50th and 75th annual percentile values; the preferences of buyers and sellers are assumed to be mutually exclusive. We find that the sellers' needs to have bankruptcy protection and to comply with the Basel III financial regulations play a more important role than the buyers' desire to increase their income from this fixed−income instrument. Sellers prefer to issue CoCo bonds when they are not financially sound whilst buyers prefer CoCo bonds with low risk; therefore, these two categories can be characterised as being risk−loving and risk−averse respectively, especially in the higher percentiles. Coupon payment, conversion mechanism, credit rating, P/B ratio and bank size appear to be the strongest global determinants of CoCo bond trading between buyers and sellers, these being very responsive to CoCo bond and issuing banks' characteristics in the main European countries, Brazil, Mexico and a few of the main Far East economies (especially in the UK and China).

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1. Introduction

A contingent convertible (CoCo) bond is a fixed−income security that provides coupon payments to investors until it is converted into equity or suffers a write−down of its face value when the bank's capital level falls below a predetermined lower trigger threshold (De Spiegeleer et al., 2014). CoCo bonds have recently become one of the most commonly used financial instruments for satisfying the more stringent financial regulations imposed by the Bank of International Settlements (BIS) and for protecting banks from insolvency. Consequently, CoCo bond issuance has been steadily increasing, with banks issuing $450 billion in CoCo bonds globally from January 2009 to September 2015. In addition, the European Central Bank's October 2014 asset quality review (AQR) reported that CoCo bonds accounted for 32 billion Euros of the total of 92 billion Euros in new security issues from July 2013 to August 2014 (Avdjiev et al., 2015).

CoCo bonds add flexibility to the capital structure of banks. Since they are typically treated as debt, they allow banks to take advantage of the benefits of debt financing. Then, when capital falls below the lower trigger threshold during a crisis period, banks can quickly, easily and effectively convert these bonds into equity or write down their principles (Raviv, 2004; Flannery, 2005, 2009; Squam Lake Working Group, 2009; McDonald, 2013, Pennacchi et al., 2014; Avdjiev et al., 2015); thus, CoCo bonds act as automatic bankruptcy protection devices. Regulators have advocated the use of CoCo bonds because they absorb losses without using taxpayers' money (De Spiegeleer et al., 2014). In addition, they represent Additional Tier 1 (AT1) or Tier 2 (T2) capital for banks to meet the Basel III requirements. For all these reasons, banks are increasingly issuing CoCo bonds.

However, their high coupon rate is a disadvantage for the issuing firm; also, the loss−absorbing capacity of Coco bonds is insufficient (Admati et al., 2013; Avdjiev et al., 2015), they suffer from pricing complexities, a high correlation with systematic economic events (Avdjiev et al., 2015) and potential shareholder dilution. Therefore, it is important to understand how equity markets react to the issuance of CoCo bonds and the role played by their characteristics and those of the issuing banks.

To date there have only been a few market analyses based on CoCo bond issuance, most of them being event studies focusing on general equity investors. This paper examines instead the preferences of CoCo bond investors (buyers) and issuers (sellers) between 1 April 2010 and 18 December 2019. These are measured by the ratio of the CoCo bond yield−to−call (YTC) or yield−to−maturity (YTM) to the credit default swap (CDS) spread, which represent the return and risk of CoCo bonds, respectively. In particular, we obtain

preference scores by estimating multinomial logistic regressions and define buyers as having a preference for CoCo bonds if their return−to−risk is higher than the corresponding 25th, 50th and 75th annual percentile values (note that the preferences of buyers and sellers are assumed to be mutually exclusive). We extend our analysis further to examine buyers and sellers' preferences across the world by considering the country−specific CoCo bond market concentration (the inverse of the Herfindahl index) assuming that a stronger degree of CoCo bond market competition implies a stronger response of preferences to their determinants.

We find that CoCo bond issuance is mostly driven by the needs of the banks (the sellers) to have a bankruptcy protection device which complies with the Basel III financial regulation as opposed to the buyers' desire to increase their income from this fixed−income security. Sellers prefer to issue CoCo bonds when they are not financially sound whilst buyers prefer CoCo bonds with low risk; therefore, these two categories can be characterised as being risk−loving and risk−averse respectively. Buyers and sellers in the lowest percentile (25th) are the least sensitive to the CoCo bond and issuing banks' characteristics and economic conditions: buyers are only interested in the higher coupon payments and the better bankruptcy protection for the issuing banks that can be offered by CoCo bonds with a higher trigger level for the mechanical equity conversion mechanism, whilst sellers prefer to issue CoCo bonds with lower coupon payments and a lower trigger level which allows more risk−taking behaviour.

By contrast, buyers and sellers in the middle (50th) percentile are most sensitive to many of the characteristics of CoCo bonds and their issuing banks: buyers prefer to have CoCo bonds with a principal write−down feature which entails less restrictive covenants to own, which they consider more important than the possibly increase in risk−taking behaviour of the issuing banks since the discretionary trigger is mainly a decision of their supervisors; on the other hand sellers prefer the mechanical equity conversion for CoCo bonds which are cheaper to issue and still comply with the Basel III financial regulations (Avdjiev et al., 2013, 2015), which for them is more important than the reduced risk−taking incentives from the automatic trigger process. As in the case of the 25th percentile, buyers and sellers prefer to have higher and lower trigger levels for mechanical equity conversion respectively: buyers prefer CoCo bonds with higher credit ratings and issuing banks of a larger size (possibly because they receive more bailout protection from the government) and with sufficient regulatory capital to ensure their financial soundness, whilst sellers, i.e. the issuing banks, need to issue CoCo bonds especially when they are not financially sound.

Finally, buyers and sellers in the upper percentile (75th) exhibit the strongest preference responses to CoCo bonds' characteristics and are the least responsive to the issuing banks' characteristics. Their preferences are similar in some respects to those of buyers and sellers in the middle percentile (50th) but also have additional features; in particular, buyers are more sensitive to CoCo bond's coupon rates than sellers, which is evidence of more profit−seeking behaviour, whilst buyers prefer no additional CoCo bonds to be issued to avoid dilution of their ownerships when they convert to equity. By contrast, sellers prefer to issue more CoCo bonds to have more investors who can potentially internalise their financial losses when they convert to equity, which is more likely to occur for overvalued banks. Buyers in this percentile are more sensitive to regulatory capital than buyers. Therefore, the buyers and sellers' risk−averse and risk−loving behaviour becomes stronger for CoCo bonds in the higher percentiles.

We also analyse the impact of country−specific CoCo bond market concentration on the preferences of buyers and sellers. We find that coupon payment, conversion mechanism, credit rating, P/B ratio and bank size are their most important determinants especially in the main European countries, Brazil, Mexico and a few of the main Far East countries, with the UK and China exhibiting the strongest preference response.

The layout of the paper is the following: Section 2 reviews the relevant literature; Section 3 develops the hypotheses of interest; Section 4 outlines the methodology; Section 5 describes the data and presents the empirical findings; Section 6 offers some concluding remarks.

2. Literature Review

The extant literature on CoCo bonds is limited, but rapidly expanding. It includes four main strands analysing CoCo bond developments, properties, design and effects on firms and investors. The first discusses previous versions that highly resemble CoCo bonds. Flannery (2005) proposed a reverse convertible debenture (RCD) that automatically converts into common equity when the market capital ratio falls below a certain threshold, which is determined by the current share price. His work provides critical insights into market triggers 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 fixed payment upon maturity unless the bank's asset falls below a certain pre−determined

conversion threshold; otherwise, it converts into common equity. Squam Lake Working Group (2009) suggested a regulatory hybrid security type that remains long−term debt during normal periods and converts into equity when both financial markets and the issuing bank suffer financial distress. Glasserman and Nouri (2012) proposed a contingent capital type with a capital−ratio trigger with partial and ongoing conversion. The capital ratio is based on accounting or book values designed to approximate regulatory capital requirements. The partial and ongoing conversion process enables firms to convert just enough debt into equity to meet the regulatory capital requirements each time the capital ratio falls below the minimum threshold. Finally, Pennacchi et al. (2014) suggested the call option−enhanced reverse convertible (COERC) approach, which resembles a CoCo bond except that shareholders have the option to buy back converted shares from COERC investors at the bonds' par values.

Subsequently, Albul et al. (2013) presented the formal model for CoCo bonds, which started the discussion about their properties. They maintained that CoCo bonds provide most tax benefits as a straight debt, while offering the same protection as equity. This protection increases as the bond's conversion trigger level increases. The Squam Lake Group (Baily et al. 2013) stressed that financial authorities should encourage banks to issue CoCo bonds. In the Bank for International Settlements' (BIS) Quarterly Review, Avdjiev et al. (2013) provided an official explanation of CoCo bonds. They emphasized the importance of the trigger level (mechanical or discretionary) and the loss−absorbing mechanism (conversion to equity or principal write down).

As for research on the design of CoCo bonds, Pennacchi (2010) argued that early conversion during financial distress minimizes the default risk at a lower cost. Himmelberg and Tsyplakov (2012) found that the principal write−down conversion method generates incentives for banks to have high leverage, increasing the cost of financial distress and the cost of capital compared to the equity conversion method. Koziol and Lawrenz (2012) suggested using other devices together with CoCo bonds to control risk−shifting incentives to prevent manipulations of the bonds' risk control technologies and/or contracts. Calomiris and Herring (2013) argued instead that banks should hold significant quantities of CoCo bonds and use market value triggers with 90−day moving average equity market values. Davis et al. (2014) tested hypothetical CoCo bond data under three different trigger regime scenarios: a fixed−trigger regime, a regulator regime and a prediction−market regime. They concluded that CoCo bonds have fewer conversion errors and are less subject to manipulation under fixed−trigger and prediction−market regimes than under regulator regimes. McDonald (2013)

suggested that CoCo bonds should use a dual trigger incorporating the firm's stock price and the financial institution's index as the determinants for its threshold. This approach considers simultaneously both micro and macro financial conditions. As another enhancement, Corcuera et al. (2014) proposed a coupon cancellable contingent capital (Coca CoCo) bond, which cancels its coupon when a pre−defined barrier higher than the conversion barrier is broken through. This discourages speculative short−selling activities and significantly reduces the death spiral effect. Hilscher and Raviv (2014) argued that there is a conversion point at which shareholders become indifferent towards risk−taking.

Yang and Zhao (2014) introduced contingent capital, a contingent convertible security (CCS) that repeatedly converts between debt and equity depending on the firm's financial situation: that is, if the firm falls into (recovers from) recession, it converts from debt (equity) to equity (debt). Yang and Zhao (2015) enhanced this CCS by incorporating an asset jump risk. This new type of CCS dynamically adjusts the firm's capital structure without incurring adjustment costs and does not suffer from debt overhang or risk−shifting incentive problems. Sundaresan and Wang (2015) proved that using market triggers is inappropriate because such triggers involve price uncertainty, market manipulation, inefficient capital allocation and frequent conversion errors with no unique equilibrium. Thus, regulators reacting to market prices may not gain the financial information they need, since their interventions themselves may affect firms' security prices (Birchler and Facchinetti, 2007; Bond et al., 2010; Davis et al., 2011).

Chen et al. (2013) investigated the effects of CoCo bonds. They argued that they benefit the issuing firm if the conversion trigger is not set too low. However, when the CoCo bond−issuing firm takes excessive risk, causing a debt−induced collapse, CoCo bonds can become junior straight debt and the equity value may suddenly drop. Avdjiev et al. (2015) claimed that the contract design of a CoCo bond and the characteristics of the issuing firm are important determinants of its effects. However, in their opinion the beneficial effects of such bonds on loss absorbency and risk−taking incentives are rather weak. On the other hand, Gründl and Niedrig (2015) highlighted the benefits of CoCo bonds, arguing that they are effective in reducing risk−shifting towards taxpayers and enhancing banks' stability. They 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 bonds. Song and Yang (2016) found that the risk−taking incentives and agency cost of debt increase if shareholders are allowed to choose their optimal CoCo bond conversion barriers

by themselves. They also stressed that the risk−taking incentives and agency cost of debt decrease if CoCo bonds have an exogenously imposed conversion barrier.

Numerous studies have analysed the effects of convertible bonds, straight bonds etc. on financial markets. However, to the best of our knowledge, there are only four previous studies on market reactions to CoCo bond issuances. Avdjiev et al. (2015) and Vallee (2016) found that the reaction of credit default swap (CDS) spreads is significantly negative, whilst that of equity markets is not significant; however, they did not investigate the CoCo bond issue announcement periods. In a subsequent study, Ammann et al. (2017) found significant reductions in CDS spreads in response to CoCo bonds' post−issue announcements and a positive reaction of the equity market. By contrast, Liao et al. (2017) reported a negative reaction, but also detected differences across countries.

3. Hypothesis Development

The studies above suggest that the design of CoCo bonds and the financial situation of the issuing bank determine their effects on investors. We focus on the coupon, maturity, issue size, trigger level, credit rating and conversion method as CoCo bonds' characteristics.

According to the BIS Quarterly Review by Avdjiev et al. (2013), approximately 64% of CoCo bonds have tax−deductible coupons, while around 20% do not. The tax treatment of the remaining 16% of CoCos is currently under review. Therefore, although high coupon rates are not beneficial to issuers, this negative effect is somewhat mitigated by the favourable tax treatment. On the other hand, insurers clearly benefit from buying CoCo bonds owing to the high coupon rates compensating for the high issuing bank's risk (Gründl and Niedrig, 2015), which has proven to be very attractive in the current low−yield environment (Jaworski et al., 2017).

In addition, the CoCo bond's trigger, often defined in terms of the ratio of common equity Tier 1 capital to risk−weighted assets, may affect its coupon rates (Avdjiev et al., 2015). Higher trigger levels indicate better bankruptcy protection for the issuing bank because of its early equity conversion. However, CoCo bond investors become more likely to internalise the negative financial consequences of the issuing banks as new shareholders from their early equity conversions. Therefore, CoCo bonds with a higher trigger level are more likely to have higher coupon rates to compensate for the increased likelihood of early equity conversion with its negative consequences that investors will have to bear.

The CoCo bond's equity conversion mechanism can also affect its coupon rates. There are two main conversion methods, namely mechanical equity conversion and principal

write−down. CoCo bonds with mechanical equity conversion are cheaper to issue but require stricter mandates for investors (Avdjiev et al., 2015). Thus, CoCo bonds with this feature are likely to have higher coupon rates. Further, CoCo bonds with higher credit ratings are likely to have lower coupon rates as a compensation for the issuing banks being more financially sound. Accordingly, our first hypothesis is the following:

> H1: *Ceteris paribus, buyers prefer CoCo bonds with higher coupon rates and sellers prefer those with lower coupon rates.*

From the CoCo bond issuer's perspective, the trigger level selection is largely determined by the trade−off between regulatory capital eligibility and cost of issuance. CoCo bonds with low triggers have lower loss−absorbing capacity. They tend to be less expensive to issue and are usually used to boost Tier 2 capital in a cost−efficient manner while not being eligible to qualify as Additional Tier 1 capital which is relatively more expensive to raise. Over time, however, there has been increasing financial regulatory pressure for banks to boost their Tier 1 capital which requires trigger levels ($= \frac{\text{Common Equity Tier 1 Capital}}{\text{Risk Weighted Assets}} \geq 5.125\%$) higher than those for Tier 2 capital (Avdjiev et al., 2013). Therefore, as the CoCo bond's trigger level rises, its cost of issuance rises making its coupon rate more likely to increase to compensate for this situation.

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 bond's trigger level increases and the likelihood of an early conversion rises, the issuing banks will experience an increase in bankruptcy protection (Ammann et al., 2017), despite the increase in the cost of issuance (Avdjiev et al., 2013), owing to the ongoing regulatory pressure. However, CoCo bond investors are assumed to be primarily fixed−income security investors who are less equipped to manage large losses than equity holders and may want to avoid equity conversions (Avdjiev et al., 2015). Otherwise, they can be forced to internalise the negative consequences of the poor performance of companies which induces CoCo bonds to convert (Ammann et al., 2017). To compensate for the higher trigger level which can cause early equity conversions, CoCo bonds may offer higher coupon rates to investors. Hence, our second hypothesis is the following:

> H2: *Ceteris paribus, buyers prefer CoCo bonds with lower trigger levels and sellers*

prefer those with higher trigger levels.

The current equity−capital eligibility regulations do not distinguish between CoCo bonds with different loss absorption mechanisms, i.e. mechanical equity conversion and principal write−down. CoCo bonds with the former have dominated over the latter but the demand for the second category has been increasing over time. A possible reason is that fixed−income investors have mandates which often restrict them from holding CoCo bonds with mechanical equity conversions, but not CoCo bonds with principal write−down mechanisms; these involve less uncertainty about the payoff after the trigger level is broken through, which may facilitate their pricing and risk management (Avdjiev et al., 2015).

CoCo bonds with a mechanical equity conversion may reduce risk−taking incentives more effectively but exert negative pressure on the stock price when issued and dilute the existing shareholders ownerships with the conversion. On the other hand, those with a principal write−down feature are affected by the supervisors' judgement about bank solvency which leads to higher risk−taking incentives. Furthermore, CoCo bond issuance with a mechanical conversion mechanism produces negative pressure on the stock price while those with principal write−down feature have an insignificant impact on it (Avdjiev et al., 2015). However, they are cheaper for the issuers than those with a principal write−down feature and still satisfy the condition for regulatory capital eligibility under Basel III (Avdjiev et al., 2013). Consequently, Coco bonds with a mechanical equity conversion may have higher coupon rates than those with a principal write−down mechanism. This leads to the following third hypothesis:

> H3: *Ceteris paribus, buyers prefer CoCo bonds with a principal write−down mechanism and sellers prefer those with a mechanical equity conversion.*

Providing CoCo bonds' credit ratings has been a challenge for the credit rating agencies for three main reasons. First, the different regulatory treatment of CoCo bonds across jurisdictions makes it difficult to have consistent rating methodologies. Second, high−trigger CoCo bonds have the potential to cause more losses for CoCo bond holders ahead of the issuing bank's equity holders, 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 internalising 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. Consequently, CoCo bonds with a lower credit rating are more likely to offer higher coupon rates as a compensation to their investors. Therefore, our fourth hypothesis is the following:

H4: *Ceteris paribus, buyers prefer CoCo bonds with a higher credit rating and sellers prefer those a with lower credit rating.*

In the Basel III framework, all Additional Tier 1 instruments must be perpetual. Therefore, approximately one third of CoCo bonds issued have no maturity date. The rest of 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 fifth hypothesis as:

H5: *Ceteris paribus, buyers prefer CoCo bonds with a longer maturity and sellers prefer those with a shorter maturity.*

CoCo issuance patterns are largely driven by the way Basel III is applied, or supplemented, by national regulators and the tax treatment in different jurisdictions. Banks are motivated to issue CoCo bonds by their need to satisfy the loss−absorbing capital requirements, especially in the UK. Approximately 64% of CoCo bonds have tax−deductible coupons and the rest are either not so or are still under review depending on different countries' jurisdictions (Avdjiev et al., 2013). Asset managers, hedge funds and other banks usually purchase a significant amount of CoCo bonds. Investors from the UK, Europe, and the US are among the largest holders (Avdjiev et al., 2015). A large CoCo bond issue leads to sizeable equity conversions, possibly exceeding what would be required to eliminate all risk shifting incentives; instead, it can cause an excessive dilution effect among the existing shareholders (Martynova and Perotti, 2014). This leads to our sixth hypothesis, namely:

H5: *Ceteris paribus, buyers prefer a smaller amount issued of CoCo bonds and*

sellers prefer a larger amount.

Therefore we control for the issuing bank's characteristics (size, price−to−book ratio, regulatory capital ratio ($\frac{\text{total regulatory capital}}{\text{total risk weighted assets}}$) and leverage ($\frac{\text{total debt}}{\text{total asset}}$)) and underlying economic conditions (real GDP growth, inflation and unemployment rate).

4.   Methodology

We assume that CoCo bond buyers prefer a higher bid YTC (yield−to−call) but dislike risk, the CDS spread being the most appropriate risk measure for CoCo bonds according to the existing literature. Since many of the CoCo bonds are callable (Hesse, 2018; Vallée, 2019), we incorporate their bid YTC which CoCo bond buyers would prefer to have a higher value. Therefore, a higher $\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$ ratio indicates higher sensitivity of buyers' preferences to CoCo bonds. We run a multinomial logistic regression, where the dependent variables (CoCo bond buyers' preference scores) YTC_SCORE_25, YTC_SCORE_50 and YTC_SCORE_75 are defined as $\frac{\text{CoCo Bond Bid YTM}}{\text{CDS Spread}}$ which is compared to the corresponding 25th, 50th and 75th percentile values within each year, respectively, and take value one, two and three if greater than these percentiles and zero otherwise. The estimated regression is the following:

$$P_{buyer,i}\left(y_{\frac{CoCo\ Bond\ Bid\ YTC}{CDS\ Spread}}\right)$$

$$= \frac{e^{(\beta_{i,0} + \beta_{i,1} \times CoCo\_Char + \beta_{i,2} \times Issuing\_Bank\_Control + \beta_{i,3} \times Economic\_Control)}}{1 + \sum_{j=1}^{m-1} e^{(\beta_{j,0} + \beta_{j,1} \times CoCo\_Char + \beta_{j,2} \times Issuing\_Bank\_Control + \beta_{j,3} \times Economic\_Control)}} \quad (1)$$

Equation (1) shows that there are m possible outcomes (i.e., zero, one, two and three), specifically four (which we denoted as m) in our case. $P_{buyer,\ i}$ is the buyer's preference probability associated with a category *i* (e.g., YTC_SCORE_25, YTC_SCORE_50 and YTC_SCORE_75) of m (which is four in our case). β_i is the vector of coefficients associated with the covariates, which are the CoCo bonds' characteristics (*CoCo_Char)*, issuing bank control (*Issuing_Bank_Control)* and economic control (*Economic_Control*) variables.

Then we calculate the CoCo bond seller's preference score by subtracting the CoCo bond buyers' preference score from one. We assume that the CoCo bond buyers and sellers' preferences are mutually exclusive, namely:

$$P_{seller,i}\left(y_{\underline{CoCo\ Bond\ Bid\ YTC}\atop CDS\ Spread}\right)$$

$$= 1 - P_{buyer,i}\left(y_{\underline{CoCo\ Bond\ Bid\ YTC}\atop CDS\ Spread}\right)$$

$$= 1 - \frac{e^{(\beta_{i,0} + \beta_{i,1} \times CoCo\_Char + \beta_{i,2} \times Issuing\_Bank\_Control + \beta_{i,3} \times Economic\_Control)}}{1 + \sum_{j=1}^{m-1} e^{(\beta_{j,0} + \beta_{j,1} \times CoCo\_Char + \beta_{j,2} \times Issuing\_Bank\_Control + \beta_{j,3} \times Economic\_Control)}} \qquad (2)$$

The CoCo bonds' characteristics considered are coupon (CPN in %), maturity (MAT: this is a binary variable equal to one if permanent and zero otherwise), the amount issued (AMT: we use the natural logarithm in US$), the trigger level (%), conversion (CON: this is a binary variable that equals one in the event of mechanical equity conversion and zero in the event of a permanent write−down, a partial permanent write−down and a temporary write−down) and credit rating (CRD: the average credit rating among Moody, S&P and Fitch ratings where each credit rating increment is 1, and the highest (Aaa, AAA) and lowest (Ca, CCC and below) credit ratings are 19 and 0 respectively). As for the CoCo bond issuing firm characteristics, these include return on common equity (ROE), firm size (SIZE) which is the natural logarithm of the firm's total assets, price−to−book value ratio (P/B ratio) and total regulatory capital to risk−weighted asset (TRC/RWA). Finally, the economic control variables added to the regressions are real GPD (%) and consumer price index (CPI).

We estimate preference scores for CoCo bonds considering country−specific market competitiveness using the Herfindahl index and the issuing or holding Coco bond amount for each financial firm. We first compute the Herfindahl indices for Coco bond buyers and sellers in each country assuming that the total number of firms within a country is N as shown in equations (3) and (4) below. High (low) values of (3) and (4) indicate high (low) concentration (degree of competition) of the CoCo bond market in country j.

$$s_{country\ j}^{buyer} = \sum_{i=1}^{N}\left(\frac{holding\ Coco\ bond\ amount_{firm\ i,\ country\ j}}{holding\ Coco\ bond\ amount_{country\ j}}\right)^2 \qquad (3)$$

$$s_{country\ j}^{seller} = \sum_{i=1}^{N}\left(\frac{issued\ Coco\ bond\ amount_{firm\ i,\ country\ j}}{issued\ Coco\ bond\ amount_{country\ j}}\right)^2 \qquad (4)$$

We assume that in a highly competitive CoCo bond market both buyers and sellers have stronger trading power. We use the total CoCo bond issue size for all N firms in country j as a measure for the CoCo bond market concentration (or degree of competition) in that country as in equation (3) and (4) above; the inverse of the Herfindahl index increases with

the degree of competition of the CoCo bond market in country *j*. The preference scores are then rescaled using the CoCo bond market size of each country relative to the world's by dividing the CoCo bond stock issued by country *j* by that of the world, $\frac{Coco\ bond\ issued\ amount_{country\ j}}{Coco\ bond\ issued\ amount_{world}}$. The newly calculated Coco bond preference scores are therefore those specified in equation (5) and (6):

$$P_{i,buyer,\ country\ j}^{preference\ score} = P_{buyer}\left(y_{\frac{CoCo\ Bond\ Bid\ YTC}{CDS\ Spread}}\right) \times \underbrace{\frac{1}{s_{country\ j}^{buyer}} \times \frac{Coco\ bond\ issued\ amount_{country\ j}}{Coco\ bond\ issued\ amount_{world}}}_{buyers'\ market\ power\ score\ for\ country\ j} \tag{5}$$

$$P_{i,seller,\ country\ j}^{preference\ score} = P_{seller}\left(y_{\frac{CoCo\ Bond\ Bid\ YTC}{CDS\ Spread}}\right) \times \underbrace{\frac{1}{s_{country\ j}^{seller}} \times \frac{Coco\ bond\ issued\ amount_{country\ j}}{Coco\ bond\ issued\ amount_{world}}}_{sellers'\ market\ power\ score\ for\ country\ j} \tag{6}$$

It should be immediately apparent that a country's Coco bond preference scores are higher when its markets are highly competitive and its average trading volumes are higher than the world's.

As a robustness check, we repeat the above exercise by replacing bid YTC (yield−to−call) with bid YTM (yield−to−maturity) that assumes CoCo bond buyers prefer a higher bid YTM, but dislike risk measured by the CDS spread. Therefore, the dependent variables become YTM_SCORE_25, YTM_SCORE_50 and YTM_SCORE_75 defined as $\frac{CoCo\ Bond\ Bid\ YTM}{CDS\ Spread}$ which is compared to the corresponding 25th, 50th and 75th percentile values within each year, respectively, and takes value one, two and three if greater than these percentiles and zero otherwise.

5. Data and Empirical Results

5.1 Data Sources and Description

We collect CoCo bond data from Bloomberg between 11 May 2009 and 10 January 2020 using the SRCH@COCO command which yields an initial sample of 846 CoCo bonds from all over the world. Then we select those with the loss−absorbing property, which leaves 754 CoCo bonds from 37 countries between 1 April 2010 and 18 December 2019 and their corresponding issuing firm tickers. The CoCo bond's characteristics considered are: coupon (CPN in %), maturity (MAT: a binary variable showing one if permanent and zero

otherwise), amount issued (AMT in US $), trigger level (TRI in %)[1], conversion (CON: a binary variable that equals one in the event of mechanical equity conversion and zero in the event of principal write−down including permanent write−down, partial permanent write−down and temporary write−down) and credit rating (CRD: the average credit rating among Moody, S&P and Fitch ratings where each credit rating increment is 1, with 19 being the highest (Aaa, AAA) and 0 the lowest (Ca, CCC or below)). 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 bonds' characteristics considered are: return on common equity (ROE), firm size (SIZE: the natural logarithm of the firm's total asset), price−to−book value ratio (P/B) and total regulatory capital to risk−weighted asset (TRC/RWA). The economic control variables used are real GDP growth (RGDP in yearly percentage change) and the consumer price index (CPI in yearly percentage change); the dependent variables (CoCo bond buyers' preference scores) YTC_SCORE $(= \frac{\text{CoCo Bond Bid Yield-to-Call}}{\text{CDS Spread}})$ and YTM_SCORE $(= \frac{\text{CoCo Bond Bid Yield-to-Maturity}}{\text{CDS Spread}})$ which are equal to one, two and three if greater or equal to the 25th, 50th and 75th percentiles of the yearly overall CoCo bonds, respectively, and zero otherwise.[2] Table 1 shows summary statistics for the variables used for the analysis.

[Insert Table 1]

According to Panel A in Table 1, most CoCo bonds have coupon rates around 6%, permanent maturities (about 89%), a trigger level between 5% and 6%, credit ratings between Ba2/BB/BB and Ba1/BB+/BB+ according to Moody/S&P/Fitch credit ratings, and 22% have the mechanical equity conversion property, while the remaining 78% 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 AMT, TA and CDS. There is a clustering of low AMT, TA and CDS values with a right−skewed distribution. This indicates that the larger CoCo bond amount (AMT) tends to be issued by fewer large−size banks (TA) with higher risk (CDS) than on average in our

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[1] It is an accounting trigger, the common equity tier 1 (CET1) ratio $(= \frac{\text{common equity tier 1 capital}}{\text{risk-weighted assets}} \times 100)$ or a solvency trigger based on a predetermined solvency ratio.

[2] As for our CDS spread, we use the five-year CDS spread for the company implied by the Bloomberg Issuer Default Risk Model Likelihood of Default. The unit is in basis points

sample. The CoCo bond issue frequency is highest for Norway while China and United Kingdom have the largest CoCo bond issued amount in our sample (Table 1, Panel B). Europe has the largest CoCo bond issued amount compared to all other regions (Table 1, Panel C).

5.2   Empirical Results

5.2.1. CoCo bond preference score analysis

Table 2 displays the results from the preference score multinomial logistic regression analysis. [3] We use three different binary dependent variables, YTC_SCORE_25, YTC_SCORE_50 and YTC_SCORE_75 in Panel A, which are equal to one, two and three if the $\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$ ratio is larger than the 25th, 50th and 75th percentile of all CoCo bond's $\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$ within the same year, respectively. We regard the Coco bond's bid yield−to−call as the main source of income for buyers investing in this fixed−income instrument which is often callable. We choose the CDS spread as an appropriate risk measure and therefore construct the return−to−risk ratio $\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$.

We expect the CoCo bond sellers' response to the regressors to be opposite to the buyers' one, as shown in equations (1) and (2), therefore we only report the first set of coefficients in Table 2. We then estimate the marginal buyer's response of preference probability ΔP_{buyers}^{YTC} for each regressor. As a robustness check, we replicate the Panel A results in Panel B by replacing the three dependent variables   YTC_SCORE_25, YTC_SCORE_50 and YTC_SCORE_75 with YTM_SCORE_25, YTM_SCORE_50 and YTM_SCORE_75, respectively, which are equal to one, two and three if the $\frac{\text{CoCo Bond Bid YTM}}{\text{CDS Spread}}$ is larger than the 25th, 50th and 75th percentile of all CoCo bond's $\frac{\text{CoCo Bond Bid YTM}}{\text{CDS Spread}}$ within the same year, respectively.

We find that buyers prefer to have CoCo bonds with high coupon rates (CPN) and better bankruptcy protection compared to those with the high trigger level associated with the mechanical equity conversion (TRI × CON) and the good credit rating (CRD) issued by overvalued (P/B) large sized banks (SIZE) with sufficient regulatory capital (TRC/RWA). The buyers of CoCo bonds with higher return−to−risk ratios (YTC_SCORE and

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[3] The Pearson correlation matrix reported in Appendix I indicates that the multinomial logistic regressions are not affected by multi-collinearity.

YTM_SCORE) tend to prefer even higher coupon payments. In other words, as buyers hold CoCo bonds with a higher yield and a lower risk (i.e., higher $\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$ or $\frac{\text{CoCo Bond Bid YTM}}{\text{CDS Spread}}$), they are likely to seek even higher coupon payments as shown in the constantly growing coefficient and marginal preference response ΔP_{buyers}^{YTC} and ΔP_{buyers}^{YTM} values of CPN from YTC_SCORE_25 and YTM_SCORE_25 to YTC_SCORE_75 and YTM_SCORE_75.

Buyers of CoCo bonds with a low return−to−risk ratio as indicated by the YTC_SCORE_25 and YTC_SCORE_25 (i.e., in the 25th percentile) do not show significant preference responses to many of the CoCo bond, issuing bank and economic condition factors except the coupon payment (CPN) and the combined effect between trigger level and conversion method (TRI × CON). However, the impact of these variables is smaller than in the case of buyers in the 50th and 75th percentiles. Buyers in the 25th percentile prefer higher coupon payments and better bankruptcy protection resulting from the higher trigger level associated with the mechanical equity conversion mechanism. On the contrary, sellers prefer CoCo bonds with lower coupon payments and a lower trigger level for the mechanical equity conversion, which is consistent with more risk−taking behaviour, but their response is smaller than in the case of buyers.

CoCo bond buyers with a medium return−to−risk ratio of YTC_SCORE_50 and YTM_SCORE_50 (i.e., in the 50th percentile) are more sensitive to CoCo bond (CPN, CON, CRD and AMT) and issuing bank's (P/B, SIZE and TRC/RWA) characteristics than buyers in the lower (25th) or higher (75th) percentiles. They prefer high coupon payments (CPN), which is consistent with our hypothesis H1. They also prefer to have CoCo bonds with a principal write−down feature (CON) since they consider the less stringent restrictions to buy more important than the reduced risk−taking behaviour of the issuing bank resulting from its mechanical equity conversion property as in our hypothesis H3. On the other hand, sellers prefer to issue CoCo bonds with mechanical equity conversions since they are cheaper to issue than those with principal write−down conversions but still satisfy the Basel III financial regulation requirements (Avdjiev et al., 2013, 2015). Sellers could consider the mechanical equity conversion feature more important than the possibility of risk−taking behaviour resulting from the principal write−down feature which is triggered at the discretion of the supervisors assessing the bank solvency. However, when the trigger level is considered together with the conversion mechanism (TRI × CON), buyers prefer to have higher bankruptcy protection by having CoCo bonds with a higher trigger level (TRI) and

mechanical equity conversion (CON); they also prefer a high credit rating of CoCo bonds (CRD) to avoid internalising the negative financial consequences of the issuing bank with equity conversions in contrast to sellers who prefer to issue CoCo bonds with investors bearing the associated risk consistently with hypothesis H4. They are interested in the financial soundness of the issuing banks and prefer them to have sufficient regulatory capital (TRC/RWA) and to be large enough (SIZE) to become too−big−to−fail, possibly attracting more attention from the government for a bailout in case of a financial emergency. Buyers of CoCo bonds tend to behave more like growth stock investors as they prefer the issuing banks to be overvalued (P/B), with a relatively high yield compared to other fixed−income securities.

Buyers holding CoCo bonds with a high return−to−risk level (in the 75th percentile) are even more interested in the CoCo bonds' characteristics (CPN, CON, CRD and AMT) but less in the issuing banks' financial characteristics (P/B, SIZE and TRC/RWA). Similarly, to the 50th percentile buyers, they prefer a high coupon rate (CPN) and credit rating (CRD), which supports our hypotheses H1 and H4, respectively. Besides, these buyers prefer no additional CoCo bonds to be issued since their ownership gets diluted with an increased number of CoCo bond investors, the potential shareholders, when CoCo bonds are converted into common equity which is highly likely for overvalued issuing banks (AMT $\times$ P/B). Therefore, we find that the effect of the issued amount on buyers' preferences is consistent with H3, particularly when it is jointly considered with an overvalued issuing bank. Buyers pay more attention to the regulatory capital amount (TRC/RWA) in the case of the higher return−to−risk ratio (YTC_SCORE_75) exhibiting stronger risk−averse behaviour.

[Insert Table 2]

5.2.2. Marginal preference responses of CoCo bond buyers and sellers

In Table 3, we compare the marginal preference response of CoCo bond buyers (ΔP_{buyers}^{YTC} and ΔP_{buyers}^{YTM}) and sellers ($\Delta P_{sellers}^{YTC}$ and $\Delta P_{sellers}^{YTM}$). We show the marginal preference responses of both buyers and sellers in Panel A and C and report on the factors affecting them in Panel B and D. We find that the marginal response is stronger for sellers for most of the factors except CPN, P/B and SIZE. This indicates that CoCo bonds are more strongly driven by the sellers' desire to protect themselves against bankruptcy and satisfy the financial regulation than the buyers' motivation to increase their financial returns from this

fixed−income security. The buyers' marginal preference responses outweigh those of the sellers when they are attracted by the issuing banks' high valuations (P/B) and their large size (SIZE). Buyers tend to behave as growth stock investors when deciding to purchase CoCo bonds seeking for a high price−to−book value of the issuing firm. However, this is less the case for the CoCo bonds in the higher percentile (75th) as buyers become more risk− averse. Large sized banks may be too−big−to−fail and are more likely to be bailed out by the government in case of a financial emergency. Therefore, buyers may regard CoCo bonds issued by these large banks to be more protected against bankruptcy. The opposite is true of the response of sellers, who become more risk−loving, especially in the CRD and TRC/RWA categories, in the case of CoCo bonds belonging to the higher percentiles.

The buyers' marginal preference responses also outweigh those of the sellers in the case of the coupon rates (CPN) for CoCo bonds in the highest return−to−risk level group, the 75th percentile (YTC_SCORE_75 and YTM_SCORE_75).

[Insert Table 3]

5.2.3. Global marginal preference responses of CoCo bond buyers and sellers

We analyse for each country the CoCo bond average preference responses to the increments of the factors significant at the 5% level according to Table 2 and 3 by considering country−specific CoCo bond market competitiveness using equations (5) and (6). We show this for buyers (Table 4 and 5) and sellers (Table 6 and 7) in the 25th (Panel A), 50th (Panel B) and 75th (Panel C) percentiles. The global marginal preference responses only show the magnitude of the effect, not its direction, which is the opposite for buyers vis−à−vis sellers (see Table 2). We find that the most significant factors for global buyers and sellers are CPN, CON and CRD for CoCo bonds, and P/B and SIZE for the issuing banks. On average, buyers and sellers of CoCo bonds with the medium level return−to−risk ratios (YTC_SCORE_50 and YTM_SCORE_50) exhibit the highest marginal preference responses across countries for most factors. Consistently with Table 3, we also find that the global marginal preference of sellers is stronger than that of the buyers, which indicates that bankruptcy protection and financial regulation compliance are the primary roles of CoCo bonds at a global level.

At the country level, buyers consistently prefer high coupon payments (CPN) and a principal write−down mechanism (CON) which entails less restrictions as owners. On the other hand, since CoCo bond could be a costly security to issue, sellers prefer to pay lower

coupon payments and use the mechanical equity conversion for CoCo bonds since it is cheaper than the principal write−down feature. However, the global marginal preference response of sellers in the case of CPN is stronger than that of the buyers in most cases, except with the CoCo bonds with the highest return−to−risk ratio, in the 75th percentile (Table 3). The credit rating (CRD) can be subject to less valuation uncertainty depending on the regulatory treatment and rating methodologies (Avdjiev et al., 2013). Therefore, global buyers and sellers on average react more to CRD than to the regulatory capital amount (TRC/RWA). Furthermore, both buyers and sellers could perceive CoCo bonds as being close to equity since their high coupon rates 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−valuation (P/B) of the issuing bank, similarly to the case of stock investment decisions. Therefore, buyers and sellers appear to be highly responsive to the issuing bank's P/B ratio. The CoCo bond issuing bank's size (SIZE) is also a crucial factor influencing their preferences: buyers perceive large−size banks to have a bigger chance to be considered too−big−to−fail and to be bailed out by the government.

Geographically, we find that in the main European countries (e.g., France, Germany, Italy, Netherlands, Russia, Spain, Switzerland and UK), Brazil, Mexico and a few of the main Far East countries (China and Japan) there are significant responses to the CoCo bond and issuing bank's characteristics. In particular, the UK and China are the two countries with the strongest responses from both buyers and sellers (see Table 4, 5, 6, 7 and Appendix II).

[Insert Table 4]

[Insert Table 5]

[Insert Table 6]

[Insert Table 7]

We find a stronger response of sellers, which suggests that CoCo bond are mainly considered as a bankruptcy protection device which also satisfies financial regulations. Buyers prefer to have CoCo bonds with high coupon returns and a principal write−down feature (which is less restrictive than mechanical equity conversion), whilst the opposite holds for sellers who prefer to issue CoCo bonds paying lower coupons with mechanical equity conversion (which is cheaper than the principal write−down mechanism). In addition, buyers and sellers have a conflict of interests between ownership dilution and bankruptcy

protection, respectively, which depends on the CoCo bond issued amount and existing total equity. Buyers prefer a high credit rating of CoCo bonds to avoid internalising the negative financial consequences of the issuing bank with equity conversions, whilst sellers prefer to issue CoCo bonds with investors bearing the associated risk. Both buyers and sellers are most sensitive to CoCo bond and issuing bank's characteristics when they belong to the 50th percentile preference group. By contrast, the underlying economic conditions (ΔRGDP and CPI) generally do not have a significant effect on their preference scores.

6. Conclusions

To date only a limited number of studies have analysed the CoCo bond issuance effect on general equity investors. There has been a consensus that the reaction of CDS spreads to CoCo bond issuance is negative (Avdjiev et al., 2015; Vallee, 2016; Ammann et al., 2017) while the equity market shows insignificant (Avdjiev et al., 2015; Vallee, 2016), positive (Ammann et al., 2017) or negative (Liao et al., 2017) reactions. This paper focuses on the buyers and sellers of CoCo bonds. We estimate their preference scores by running multinomial logistic regressions considering both bond and issuing bank's characteristics, unlike the few existing CoCo bond event studies that only analyse the behaviour of general equity holders. It also provides evidence on the role of country−specific CoCo bond market concentration.

More specifically, we use data on CoCo bonds with the loss−absorbing property from 1 April 2010 to 18 December 2019. We estimate multinomial logistic regressions to obtain the preference scores expressed in probabilities, and define buyers as having a preference for CoCo bonds if their return−to−risk ($\frac{\text{CoCo Bond Bid YTC}}{\text{CDS Spread}}$ and $\frac{\text{CoCo Bond Bid YTM}}{\text{CDS Spread}}$) is higher than the corresponding 25th, 50th and 75th annual percentile values; this variable takes value one, two and three if it is greater than these percentiles and zero otherwise; we assume that the preferences of buyers and sellers are mutually exclusive.

We find that sellers are more responsive than buyers to the features of CoCo bonds. This implies that the sellers' needs to have a bankruptcy protection device and comply with the Basel III financial regulations play a more important role than the buyers' motivation to increase their financial income from this fixed−income security. Sellers prefer to issue CoCo bonds in a situation of financial distress whilst buyers prefer CoCo bonds when the financial outlook is sound; therefore, their respective behaviour can be characterised as risk−loving and risk−averse, especially in the case of CoCo bonds in the higher percentiles.

Buyers and sellers of CoCo bonds in the 50th percentile generally show the highest sensitivity to most CoCo bond (CPN, CON, CRD and AMT) and issuing bank's (P/B, SIZE and TRC/RWA) characteristics. Buyers prefer a higher coupon (CPN) but this effect outweighs the response of sellers only in the case of CoCo bonds with a high return−to−risk ratios, i.e., in the 75th percentile. The CoCo bond's principal write−down feature (CON) is preferred by buyers, possibly because it is less restrictive, although it might lead the issuing bank to adopt a more risk−taking behaviour given the fact that the trigger is at the discretion of the supervisor. On the other hand, sellers prefer CoCo bonds with a mechanical equity conversion mechanism (CON), which is an automatic process that can reduce their risk−taking behaviour but is cheaper to issue while at the same time complying with the Basel III financial regulations. Buyers prefer CoCo bonds with a higher credit rating (CRD) issued by large banks (SIZE) which are financially sound, with enough regulatory capital (TRC/RWA) and appearing to be growth companies (P/B). By contrast, sellers prefer to issue CoCo bonds when their financial outlook is less bright. Furthermore, buyers prefer not to have their ownership diluted with an increased number of potential shareholders from CoCo bond issuance (AMT). On the other hand, sellers prefer to issue more CoCo bonds as this results in more effective bankruptcy protection with more investors internalising their losses and also compliance with the Basel III regulations.

We also consider the country−specific CoCo bond market concentration (by calculating Herfindahl indices for each country using the CoCo bond issue size for each bank) assuming that higher market competition gives more trading power to both buyers and sellers. We find that coupon payment, conversion mechanism, credit rating, P/B ratio and bank size are the strongest global determinants of CoCo bond trading between buyers and sellers. These are very responsive to CoCo bond and issuing bank's characteristics in the main European countries, Brazil, Mexico and a few of the main Far East countries, with the UK and China exhibiting the strongest responses. These findings are relevant to both regulators and investors interested in understanding the conflicting preferences of CoCo bond buyers and sellers, their determinants, and their geographical features.

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Table 1. Summary statistics

The following tables show the summary statistics of our overall data (Panel A), and CoCo bonds issue per country (Panel B) and region (Panel C) of our sample between 1 April 2010 and 18 December 2019. In Panel A, we show the CoCo bonds, their issuing firms and the underlying economic characteristics. The CoCo bonds' characteristics considered are: coupon (CPN in %), maturity (MAT), amount issued (AMT in US $), trigger level (TRI in %), conversion (CON) and credit rating (CRD). The CoCo bond issuing firm characteristics included are: return on common equity (ROE), total assets (TA in million US $), price−to−book value ratio (P/B) and total regulatory capital to risk−weighted asset (TRC/RWA). The economic control variables are real GDP growth (RGDP in yearly percentage change) and consumer price index (CPI in yearly percentage change). We use CoCo bond's bid yield−to−call (Bid YTC in percentage), yield−to−maturity (Bid YTM in percentage) and CDS spread (CDS in bps) to produce our dependent variables, YTC_SCORE (= $\frac{\text{CoCo Bond Bid Yield-to-Call}}{\text{CDS Spread}}$) and YTM_SCORE (= $\frac{\text{CoCo Bond Bid Yield-to-Maturity}}{\text{CDS Spread}}$) which are our CoCo bond investors' preference score measures; these are equal to one, two and three if greater or equal to the 25th, 50th and 75th percentiles of the overall CoCo bonds within each year, respectively, and zero otherwise. We report the mean, median, standard deviation (Std.), 75th percentile, 25th percentile and total number of observations (N). In Panel B and C, we show the CoCo bond issuing countries and regions in our sample, respectively, with their issue frequencies and amounts (in US $).

Panel A. Overall data						
	Mean	Median	Std.	75th	25th	N
CPN (%)	6.13	5.95	2.14	7.38	5.06	754
MAT	0.89	1.00	0.32	1.00	1.00	754
AMT ($)	913,125,351	500,000,000	1,379,340,863	1,250,000,000	56,291,770	753
TRI (%)	5.41	5.13	1.04	5.25	5.13	754
CON	0.22	0.00	0.42	0.00	0.00	754
CRD	8.47	8.50	1.89	9.75	8.00	299
ROE (%)	7.92	7.77	7.01	11.69	3.92	474
TA ($M)	8,938,579	575,687	44,008,394	1,254,400	44,168	490
P/B	1.03	0.89	0.68	1.22	0.64	392
TRC/RWA (%)	17.39	17.00	4.17	19.50	14.78	455
RGDP	2.31	2.03	2.26	2.85	1.08	629
CPI (%)	2.06	1.80	1.85	2.84	0.74	629
Bid_YTC (%)	5.79	5.88	2.46	7.03	4.81	474
Bid_YTM (%)	5.69	5.65	2.05	6.73	4.74	453
CDS (bps)	128.58	94.00	103.53	162.50	63.00	547
YTC_SCORE	1.52	2.00	1.13	3.00	1.00	366
YTM_SCORE	1.52	2.00	1.14	3.00	0.00	347

Panel B. CoCo bonds issue per country		
Country	Counts of issue	Total issued amount ($)
Australia	7	5,344,615,000
Austria	18	3,879,176,800
Belgium	5	5,361,122,000
Brazil	21	24,647,710,000
China	61	232,432,714,180
Colombia	2	1,300,000,000
Croatia	1	45,328,800
Cyprus	3	597,388,419
Czech	3	145,652,612
Denmark	34	6,327,318,256

Estonia	1	2,730,360
Finland	13	7,773,033,234
France	45	51,485,409,500
Georgia	3	350,000,000
Germany	27	11,304,697,344
Hungary	1	113,028,000
India	23	4,525,668,720
Indonesia	1	7,380,070
Ireland	5	3,421,790,000
Israel	9	1,235,243,695
Italy	22	17,100,108,390
Japan	26	37,320,407,370
Luxembourg	3	230,100,245
Malaysia	21	4,164,713,650
Mexico	21	14,600,000,000
Netherlands	16	18,854,187,000
New Zealand	1	108,303,750
Norway	134	5,026,239,169
Portugal	3	4,788,529,000
Russia	36	17,562,596,500
Slovakia	1	115,595,000
South Africa	1	328,340,000
Spain	28	30,883,886,740
Sweden	24	7,210,411,550
Switzerland	67	75,646,575,201
Turkey	2	1,300,000,000
United Kingdom	65	92,043,389,121

Panel C. CoCo bonds issue per region		
Region	Counts of issue	Total issued amount ($)
Europe	569	362,803,536,937
Asia & Pacific	140	283,903,802,740
South/Latin America	44	40,547,710,000
Africa	1	328,340,000

Table 2. CoCo bond preference score analysis
The following tables present the multinomial logistic regression analysis with CoCo bond buyer's preference scores YTM_SCORE (Panel A) and YTC_SCORE (Panel B) as dependent variables and CoCo bond (between 1 April 2010 and 18 December 2019), its issuing bank and economic characteristics as independent variables. The CoCo bonds' characteristics considered are: coupon (CPN in %), maturity (MAT), amount issued (AMT in US $), trigger level (TRI in %), conversion (CON) and credit rating (CRD). The CoCo bond issuing firm characteristics included are: return on common equity (ROE), firm size (SIZE), price−to−book value ratio (P/B) and total regulatory capital to risk−weighted asset (TRC/RWA). The economic control variables are real GDP growth (RGDP in yearly percentage change) and consumer price index (CPI in yearly percentage change). For our dependent variables, we use YTC_SCORE (= $\frac{\text{CoCo Bond Bid Yield-to-Call}}{\text{CDS Spread}}$) and YTM_SCORE (= $\frac{\text{CoCo Bond Bid Yield-to-Maturity}}{\text{CDS Spread}}$) as for our CoCo bond investors' preference score measures; these are equal to one, two and three if greater or equal to the 25th (YTC_SCORE_25 and YTM_SCORE_25), 50th (YTC_SCORE_50 and YTM_SCORE_50) and 75th (YTC_SCORE_75 and YTM_SCORE_75) percentiles of the overall CoCo bonds within each year, respectively, and zero otherwise. We show the marginal response of buyer's preference probabilities ΔP_{buyers}^{YTC} and ΔP_{buyers}^{YTM} corresponding to each independent and dependent variables. We report χ^2 and R^2 as our goodness−of−fit measures and N as the total number of observations. The standard errors are in parentheses. * stands for significance at the 10% level, ** at the 5% level and *** represents at the 1% level.

	Panel A. YTC_SCORE					
	YTC_SCORE_25		YTC_SCORE_50		YTC_SCORE_75	
	Coeff.	ΔP_{buyers}^{YTC}	Coeff.	ΔP_{buyers}^{YTC}	Coeff.	ΔP_{buyers}^{YTC}
(Intercept)	**11.4***		**-40.345***		**-44.108***	
	(1.678)		**(-4.412)**		**(-3.049)**	
CPN	**1.123****	**0.060****	**2.667***	**0.281***	**3.49***	**0.640***
	(2.046)		**(4.066)**		**(4.491)**	
CPN × TRI	0.577	0.227	**0.966***	**0.335***	0.891	0.311
	(1.261)		**(1.807)**		(1.498)	
CPN × CON	2.058	0.304	1.84	0.245	**2.363***	**0.412***
	(1.716)		(1.407)		**(1.696)**	
CPN × CRD	0.109	0.271	-0.054	0.230	0.05	0.256
	(0.59)		(-0.281)		(0.192)	
TRI	-0.156	0.262	-0.249	0.239	-0.468	0.192
	(-0.266)		(-0.436)		(-0.727)	
TRI × CON	1.615	0.248	**2.291***	**0.488***	1.473	0.215
	(1.476)		**(1.873)**		(1.117)	
CON	0.618	0.628	**-3.32****	**0.012****	**-2.762***	**0.021***
	(0.509)		**(-2.194)**		**(-1.77)**	
CRD	0.08	0.103	**1.294****	**0.348****	**1.555****	**0.452****
	(0.163)		**(2.325)**		**(2.455)**	
MAT	-4.31	0.000	12.309	0.003	18.28	0.997
	(-1.41)		(0.858)		(0.622)	

	Coeff.	ΔP	Coeff.	ΔP	Coeff.	ΔP
AMT	0.053 (0.029)	0.196	0.73 (0.375)	0.385	0.228 (0.107)	0.233
AMT × ROE	0.156 (0.959)	0.254	0.114 (0.659)	0.243	0.277 (1.531)	0.286
AMT × P/B	-2.148 (-1.124)	0.102	**-3.752*** **(-1.816)**	**0.021***	**-5.774**** **(-2.522)**	**0.003****
ROE	-0.236 (-0.898)	0.236	-0.225 (-0.815)	0.238	-0.266 (-0.95)	0.228
P/B	1.921 (0.765)	0.016	**5.649**** **(2.067)**	**0.659****	4.935 (1.632)	0.323
SIZE	0.591 (0.826)	0.130	**1.797*** **(2.36)**	**0.434***	**1.623**** **(2.083)**	**0.364****
TRC/RWA	0.196 (1.129)	0.235	**0.326*** **(1.911)**	**0.267***	**0.459**** **(2.516)**	**0.305****
RGDP	-0.162 (-0.404)	0.253	-0.16 (-0.312)	0.253	-0.41 (-0.734)	0.197
CPI	-0.414 (-0.651)	0.174	-0.38 (-0.55)	0.180	0.379 (0.522)	0.384
Year Fixed Effect			Yes			
Region Fixed Effect			Yes			
χ^2			**386.12*****			
$Pseudo-R^2$			0.761			

Panel B. YTM_SCORE						
	YTM_SCORE_25		YTM_SCORE_50		YTM_SCORE_75	
	Coeff.	ΔP_{buyers}^{YTM}	Coeff.	ΔP_{buyers}^{YTM}	Coeff.	ΔP_{buyers}^{YTM}
(Intercept)	23.549 (1.527)		**-20.386*** **(-1.746)**		**-19.48***** **(-3.552)**	
CPN	**1.987***** **(2.727)**	**0.045****	**3.224***** **(3.788)**	**0.154****	**4.866***** **(4.946)**	**0.795****
CPN × TRI	0.406 (0.866)	0.222	0.792 (1.378)	0.326	0.725 (1.083)	0.305
CPN × CON	0.493 (0.435)	0.214	1.277 (0.971)	0.468	0.359 (0.248)	0.187
CPN × CRD	0.247 (1.28)	0.260	0.31 (1.164)	0.277	0.247 (0.837)	0.260

TRI	0.214 (0.335)	0.301	0.049 (0.074)	0.255	-0.19 (-0.256)	0.201
TRI × CON	**3.722** (**2.079**)	**0.167**	**4.553** (**2.436**)	**0.383**	**4.705** (**2.354**)	**0.446**
CON	-1.633 (-1.113)	0.163	**-5.774*** (**-3.184**)	**0.003***	**-6.159*** (**-2.973**)	**0.002***
CRD	0.802 (1.342)	0.109	**2.061*** (**2.997**)	**0.384***	**2.237*** (**2.754**)	**0.458***
MAT	-27.748 (-2.023)	0.000	-22.467 (-1.635)	0.000	**-11.787** (**-2.148**)	**0.000**
AMT	-1.679 (-0.733)	0.108	-0.879 (-0.358)	0.239	-2.012 (-0.745)	0.077
AMT × ROE	0.061 (0.493)	0.259	-0.014 (-0.102)	0.241	0.048 (0.289)	0.256
AMT × P/B	0.1 (0.042)	0.438	-1.394 (-0.559)	0.098	-1.772 (-0.658)	0.067
ROE	0.086 (0.429)	0.244	0.146 (0.648)	0.259	0.204 (0.783)	0.274
P/B	2.474 (1.009)	0.015	**6.072** (**2.188**)	**0.548**	**5.843*** (**1.941**)	**0.436***
SIZE	0.7 (0.908)	0.115	**2.235** (**2.571**)	**0.534**	**1.635*** (**1.867**)	**0.293***
TRC/RWA	0.018 (0.084)	0.233	0.168 (0.752)	0.270	0.163 (0.701)	0.269
RGDP	0.153 (0.295)	0.237	-0.14 (-0.221)	0.177	0.633 (0.898)	0.383
CPI	**-1.698*** (**-1.839**)	**0.108***	**-1.616*** (**-1.683**)	**0.117***	-1.153 (-1.158)	0.186

Year Fixed Effect	Yes
Region Fixed Effect	Yes
χ^2	**374.89***
$Pseudo-R^2$	0.78

Table 3. Marginal preference responses between CoCo bond buyers and sellers
The following tables show the marginal preference responses between buyers and sellers of CoCo bonds in YTC_SCORE (Panel A and B) and YTM_SCORE (Panel C and D). We show the marginal preference response figures (Panel A and C) and report the dominating party, either buyers or sellers for each significant factor based on their relative marginal preference response strengths (Panel B and D). We use CoCo bond investors' preference score measures; these are equal to one, two and three if greater or equal to the 25th (YTC_SCORE_25 and YTM_SCORE_25), 50th (YTC_SCORE_50 and YTM_SCORE_50) and 75th (YTC_SCORE_75 and YTM_SCORE_75) percentiles of the overall CoCo bonds, respectively, and zero otherwise. We show the marginal response of buyers (ΔP_{buyers}^{YTC} and ΔP_{buyers}^{YTM}) and sellers' ($\Delta P_{sellers}^{YTC}$ and $\Delta P_{sellers}^{YTM}$) preference probabilities corresponding to each independent and dependent variables as in our table 2. * stands for significance at the 10% level, ** at the 5% level and *** represents at the 1% level.

	Panel A. ΔYTC_SCORE					
	YTC_SCORE_25		YTC_SCORE_50		YTC_SCORE_75	
	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$
CPN	**0.060****	**0.940****	**0.281*****	**0.719*****	**0.640*****	**0.360*****
CPN × TRI	0.227	0.773	**0.335***	**0.665***	0.311	0.689
CPN × CON	0.304	0.696	0.245	0.755	**0.412***	**0.588***
CPN × CRD	0.271	0.729	0.230	0.770	0.256	0.744
TRI	0.262	0.738	0.239	0.761	0.192	0.808
TRI × CON	0.248	0.752	**0.488***	**0.512***	0.215	0.785
CON	0.628	0.372	**0.012****	**0.988****	**0.021***	**0.979***
CRD	0.103	0.897	**0.348****	**0.652****	**0.452****	**0.548****
MAT	0.000	1.000	0.003	0.997	0.997	0.003
AMT	0.196	0.804	0.385	0.615	0.233	0.767
AMT × ROE	0.254	0.746	0.243	0.757	0.286	0.714
AMT × P/B	0.102	0.898	**0.021***	**0.979***	**0.003****	**0.997****
ROE	0.236	0.764	0.238	0.762	0.228	0.772
P/B	0.016	0.984	**0.659****	**0.341****	0.323	0.677
SIZE	0.130	0.870	**0.434****	**0.566****	**0.364****	**0.636****
TRC/RWA	0.235	0.765	**0.267***	**0.733***	**0.305****	**0.695****
RGDP	0.253	0.747	0.253	0.747	0.197	0.803
CPI	**0.174***	**0.826***	0.180	0.820	0.384	0.616

	YTC_SCORE_25		YTC_SCORE_50		YTC_SCORE_75	
Panel B. Relative strength dominance between buyers and sellers in ΔYTC_SCORE						
	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$	ΔP_{buyers}^{YTC}	$\Delta P_{sellers}^{YTC}$
CPN	**Seller**[**]		**Seller**[***]		**Buyer**[***]	
CPN × TRI			**Seller**[*]			
CPN × CON					**Seller**[*]	
CPN × CRD						
TRI						
TRI × CON			**Seller**[*]			
CON			**Seller**[**]		**Seller**[*]	
CRD			**Seller**[**]		**Seller**[**]	
MAT						
AMT						
AMT × ROE						
AMT × P/B			**Seller**[*]		**Seller**[**]	
ROE						
P/B			**Buyer**[**]			
SIZE			**Seller**[**]		**Seller**[**]	
TRC/RWA			**Seller**[*]		**Seller**[**]	
RGDP						
CPI	**Seller**[*]					

	YTM_SCORE_25		YTM_SCORE_50		YTM_SCORE_75	
Panel C. Marginal probability change in YTM_SCORE						
	ΔP_{buyers}^{YTM}	$\Delta P_{sellers}^{YTM}$	ΔP_{buyers}^{YTM}	$\Delta P_{sellers}^{YTM}$	ΔP_{buyers}^{YTM}	$\Delta P_{sellers}^{YTM}$
CPN	**0.045**[***]	**0.955**[***]	**0.154**[***]	**0.846**[***]	**0.795**[***]	**0.205**[***]
CPN × TRI	0.222	0.778	0.326	0.674	0.305	0.695
CPN × CON	0.214	0.786	0.468	0.532	0.187	0.813
CPN × CRD	0.260	0.740	0.277	0.723	0.260	0.740

TRI	0.301	0.699	0.255	0.745	0.201	0.799
TRI $\times$ CON	**0.167****	**0.833****	**0.383****	**0.617****	**0.446****	**0.554****
CON	0.163	0.837	**0.003*****	**0.997*****	**0.002*****	**0.998*****
CRD	0.109	0.891	**0.384*****	**0.616*****	**0.458*****	**0.542*****
MAT	0.000	1.000	0.000	1.000	**0.000****	**1.000****
AMT	0.108	0.892	0.239	0.761	0.077	0.923
AMT $\times$ ROE	0.259	0.741	0.241	0.759	0.256	0.744
AMT $\times$ P/B	0.438	0.562	0.098	0.902	0.067	0.933
ROE	0.244	0.756	0.259	0.741	0.274	0.726
P/B	0.015	0.985	**0.548****	**0.452****	**0.436***	**0.564***
SIZE	0.115	0.885	**0.534****	**0.466****	**0.293***	**0.707***
TRC/RWA	0.233	0.767	0.270	0.730	0.269	0.731
RGDP	0.237	0.763	0.177	0.823	0.383	0.617
CPI	**0.108***	**0.892***	0.117	0.883	0.186	0.814

Panel D. Relative strength dominance between buyers and sellers in ΔYTM_SCORE					
	YTM_SCORE_25		YTM_SCORE_50		YTM_SCORE_75	
	ΔP^{YTM}_{buyers}	$\Delta P^{YTM}_{sellers}$	ΔP^{YTM}_{buyers}	$\Delta P^{YTM}_{sellers}$	ΔP^{YTM}_{buyers}	$\Delta P^{YTM}_{sellers}$
CPN	**Seller*****		**Seller*****		**Buyer*****	
CPN $\times$ TRI						
CPN $\times$ CON						
CPN $\times$ CRD						
TRI						
TRI $\times$ CON	**Seller** ***		**Seller** **		**Seller** **	
CON			**Seller** ***		**Seller** ***	
CRD			**Seller** ***		**Seller** ***	
MAT						
AMT						

AMT × ROE			
AMT × P/B			
ROE			
P/B		**Buyer**[**]	**Seller**[*]
SIZE		**Buyer**[**]	**Seller**[*]
TRC/RWA			
RGDP			
CPI	**Seller**[*]		

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

The following tables present the incremental change in CoCo bond's global preference scores based on the 25th, 50th and 75th percentile benchmarks of YTC_SCORE in Panel A (ΔYTC_SCORE_25), B (ΔYTC_SCORE_50) and C (ΔYTC_SCORE_75), respectively. We provide the global preference scores with the incremental changes in significant factors in Table 2 and 3. 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. Buyers' ΔYTC_SCORE_25	
	CPN	Country Average
Australia	0.27%	0.27%
Austria	0.25%	0.25%
Belgium	0.19%	0.19%
Brazil	3.41%	3.41%
China	78.57%	78.57%
Colombia	0.02%	0.02%
Croatia	0.00%	0.00%
Cyprus	0.02%	0.02%
Czech	0.00%	0.00%
Denmark	0.53%	0.53%
Estonia	0.00%	0.00%
Finland	0.59%	0.59%
France	17.79%	17.79%
Georgia	0.01%	0.01%
Germany	0.96%	0.96%
Hungary	0.00%	0.00%
India	0.51%	0.51%
Indonesia	0.00%	0.00%
Ireland	0.11%	0.11%
Israel	0.07%	0.07%
Italy	2.30%	2.30%
Japan	7.24%	7.24%
Luxembourg	0.00%	0.00%
Malaysia	0.34%	0.34%
Mexico	2.12%	2.12%
Netherlands	2.20%	2.20%
New Zealand	0.00%	0.00%
Norway	0.53%	0.53%
Portugal	0.06%	0.06%
Russia	4.15%	4.15%
Slovakia	0.00%	0.00%
South Africa	0.00%	0.00%
Spain	6.20%	6.20%
Sweden	0.62%	0.62%
Switzerland	25.24%	25.24%
Turkey	0.02%	0.02%
United Kingdom	40.93%	40.93%
Factor Average	5.28%	

	CPN	CON	CRD	P/B	SIZE	Country Average
Panel B. Buyers' ΔYTC_SCORE_50						
Australia	1.28%	0.06%	1.59%	3.01%	1.98%	1.58%
Austria	1.17%	0.05%	1.45%	2.74%	1.80%	1.44%
Belgium	0.90%	0.04%	1.12%	2.11%	1.39%	1.11%
Brazil	15.96%	0.69%	19.80%	37.45%	24.64%	19.71%
China	368.04%	16.02%	456.42%	863.48%	568.20%	454.43%
Colombia	0.10%	0.00%	0.13%	0.24%	0.16%	0.13%
Croatia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.07%	0.00%	0.09%	0.17%	0.11%	0.09%
Czech	0.01%	0.00%	0.02%	0.03%	0.02%	0.02%
Denmark	2.46%	0.11%	3.05%	5.77%	3.80%	3.04%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	2.76%	0.12%	3.42%	6.46%	4.25%	3.40%
France	83.32%	3.63%	103.33%	195.48%	128.63%	102.88%
Georgia	0.04%	0.00%	0.05%	0.10%	0.07%	0.05%
Germany	4.51%	0.20%	5.59%	10.57%	6.96%	5.57%
Hungary	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%
India	2.39%	0.10%	2.97%	5.61%	3.69%	2.95%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	0.52%	0.02%	0.65%	1.23%	0.81%	0.65%
Israel	0.31%	0.01%	0.39%	0.73%	0.48%	0.38%
Italy	10.76%	0.47%	13.34%	25.24%	16.61%	13.28%
Japan	33.89%	1.48%	42.03%	79.52%	52.33%	41.85%
Luxembourg	0.01%	0.00%	0.02%	0.03%	0.02%	0.02%
Malaysia	1.59%	0.07%	1.97%	3.72%	2.45%	1.96%
Mexico	9.95%	0.43%	12.34%	23.34%	15.36%	12.28%
Netherlands	10.32%	0.45%	12.80%	24.22%	15.93%	12.74%
New Zealand	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%
Norway	2.47%	0.11%	3.06%	5.79%	3.81%	3.05%
Portugal	0.30%	0.01%	0.37%	0.71%	0.46%	0.37%
Russia	19.42%	0.85%	24.09%	45.57%	29.99%	23.98%
Slovakia	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%
South Africa	0.01%	0.00%	0.02%	0.03%	0.02%	0.02%
Spain	29.06%	1.27%	36.04%	68.18%	44.87%	35.88%
Sweden	2.92%	0.13%	3.62%	6.85%	4.51%	3.61%
Switzerland	118.24%	5.15%	146.64%	277.42%	182.55%	146.00%
Turkey	0.11%	0.00%	0.13%	0.25%	0.16%	0.13%
United Kingdom	191.72%	8.35%	237.76%	449.80%	295.98%	236.72%
Factor Average	24.72%	1.08%	30.66%	58.00%	38.16%	

	CPN	CRD	AMT × P/B	SIZE	TRC/RWA	Country Average
			Panel C. Buyers' ΔYTC_SCORE_75			
Australia	2.92%	2.06%	0.01%	1.66%	1.39%	1.61%
Austria	2.66%	1.88%	0.01%	1.51%	1.27%	1.47%
Belgium	2.05%	1.45%	0.01%	1.17%	0.98%	1.13%
Brazil	36.33%	25.70%	0.15%	20.70%	17.34%	20.05%
China	837.61%	592.65%	3.56%	477.34%	399.88%	462.21%
Colombia	0.24%	0.17%	0.00%	0.13%	0.11%	0.13%
Croatia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.16%	0.11%	0.00%	0.09%	0.08%	0.09%
Czech	0.03%	0.02%	0.00%	0.02%	0.01%	0.02%
Denmark	5.60%	3.96%	0.02%	3.19%	2.67%	3.09%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	6.27%	4.44%	0.03%	3.57%	2.99%	3.46%
France	189.62%	134.17%	0.81%	108.06%	90.53%	104.64%
Georgia	0.10%	0.07%	0.00%	0.06%	0.05%	0.05%
Germany	10.26%	7.26%	0.04%	5.85%	4.90%	5.66%
Hungary	0.01%	0.01%	0.00%	0.01%	0.01%	0.01%
India	5.44%	3.85%	0.02%	3.10%	2.60%	3.00%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	1.19%	0.84%	0.01%	0.68%	0.57%	0.66%
Israel	0.71%	0.50%	0.00%	0.40%	0.34%	0.39%
Italy	24.48%	17.32%	0.10%	13.95%	11.69%	13.51%
Japan	77.14%	54.58%	0.33%	43.96%	36.83%	42.57%
Luxembourg	0.03%	0.02%	0.00%	0.02%	0.01%	0.02%
Malaysia	3.61%	2.55%	0.02%	2.06%	1.72%	1.99%
Mexico	22.64%	16.02%	0.10%	12.90%	10.81%	12.49%
Netherlands	23.49%	16.62%	0.10%	13.39%	11.21%	12.96%
New Zealand	0.01%	0.01%	0.00%	0.01%	0.00%	0.01%
Norway	5.62%	3.97%	0.02%	3.20%	2.68%	3.10%
Portugal	0.69%	0.48%	0.00%	0.39%	0.33%	0.38%
Russia	44.21%	31.28%	0.19%	25.19%	21.10%	24.39%
Slovakia	0.01%	0.01%	0.00%	0.01%	0.01%	0.01%
South Africa	0.03%	0.02%	0.00%	0.02%	0.01%	0.02%
Spain	66.14%	46.80%	0.28%	37.69%	31.58%	36.50%
Sweden	6.65%	4.70%	0.03%	3.79%	3.17%	3.67%
Switzerland	269.11%	190.41%	1.14%	153.36%	128.47%	148.50%
Turkey	0.24%	0.17%	0.00%	0.14%	0.12%	0.13%
United Kingdom	436.32%	308.72%	1.85%	248.65%	208.30%	240.77%
Factor Average	56.26%	39.81%	0.24%	32.06%	26.86%	

Table 5. Global CoCo bond buyers' YTM_SCORE preference scores with incremental factor change

The following tables present the incremental change in CoCo bond's global preference scores based on the 25th, 50th and 75th percentile benchmarks of YTM_SCORE in Panel A (ΔYTM_SCORE_25), B (ΔYTM_SCORE_50) and C (ΔYTM_SCORE_75), respectively. We provide the global preference scores with the incremental changes in significant factors in Table 2 and 3. 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. Buyers' ΔYTM_SCORE_25		
	CPN	TRI × CON	Country Average
Australia	0.20%	0.76%	0.48%
Austria	0.19%	0.69%	0.44%
Belgium	0.14%	0.53%	0.34%
Brazil	2.54%	9.48%	6.01%
China	58.55%	218.52%	138.53%
Colombia	0.02%	0.06%	0.04%
Croatia	0.00%	0.00%	0.00%
Cyprus	0.01%	0.04%	0.03%
Czech	0.00%	0.01%	0.01%
Denmark	0.39%	1.46%	0.93%
Estonia	0.00%	0.00%	0.00%
Finland	0.44%	1.64%	1.04%
France	13.25%	49.47%	31.36%
Georgia	0.01%	0.03%	0.02%
Germany	0.72%	2.68%	1.70%
Hungary	0.00%	0.00%	0.00%
India	0.38%	1.42%	0.90%
Indonesia	0.00%	0.00%	0.00%
Ireland	0.08%	0.31%	0.20%
Israel	0.05%	0.18%	0.12%
Italy	1.71%	6.39%	4.05%
Japan	5.39%	20.12%	12.76%
Luxembourg	0.00%	0.01%	0.00%
Malaysia	0.25%	0.94%	0.60%
Mexico	1.58%	5.91%	3.74%
Netherlands	1.64%	6.13%	3.89%
New Zealand	0.00%	0.00%	0.00%
Norway	0.39%	1.47%	0.93%
Portugal	0.05%	0.18%	0.11%
Russia	3.09%	11.53%	7.31%
Slovakia	0.00%	0.00%	0.00%
South Africa	0.00%	0.01%	0.01%
Spain	4.62%	17.25%	10.94%
Sweden	0.46%	1.73%	1.10%
Switzerland	18.81%	70.21%	44.51%
Turkey	0.02%	0.06%	0.04%
United Kingdom	30.50%	113.83%	72.16%
Factor Average	3.93%	14.68%	

	CPN	TRI × CON	CON	CRD	P/B	SIZE	Country Average
			Panel B. Buyers' ΔYTM_SCORE_50				
Australia	0.70%	1.75%	0.01%	1.75%	2.50%	2.44%	1.52%
Austria	0.64%	1.59%	0.01%	1.60%	2.28%	2.22%	1.39%
Belgium	0.49%	1.23%	0.01%	1.23%	1.75%	1.71%	1.07%
Brazil	8.74%	21.77%	0.15%	21.82%	31.12%	30.36%	18.99%
China	201.63%	501.94%	3.39%	503.18%	717.59%	699.94%	437.94%
Colombia	0.06%	0.14%	0.00%	0.14%	0.20%	0.20%	0.12%
Croatia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.04%	0.10%	0.00%	0.10%	0.14%	0.13%	0.08%
Czech	0.01%	0.02%	0.00%	0.02%	0.03%	0.03%	0.02%
Denmark	1.35%	3.36%	0.02%	3.37%	4.80%	4.68%	2.93%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	1.51%	3.76%	0.03%	3.77%	5.37%	5.24%	3.28%
France	45.65%	113.63%	0.77%	113.91%	162.45%	158.46%	99.14%
Georgia	0.02%	0.06%	0.00%	0.06%	0.08%	0.08%	0.05%
Germany	2.47%	6.15%	0.04%	6.16%	8.79%	8.57%	5.36%
Hungary	0.00%	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%
India	1.31%	3.26%	0.02%	3.27%	4.66%	4.55%	2.85%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	0.29%	0.71%	0.00%	0.72%	1.02%	1.00%	0.62%
Israel	0.17%	0.42%	0.00%	0.43%	0.61%	0.59%	0.37%
Italy	5.89%	14.67%	0.10%	14.71%	20.97%	20.46%	12.80%
Japan	18.57%	46.22%	0.31%	46.34%	66.08%	64.46%	40.33%
Luxembourg	0.01%	0.02%	0.00%	0.02%	0.03%	0.02%	0.02%
Malaysia	0.87%	2.16%	0.01%	2.17%	3.09%	3.02%	1.89%
Mexico	5.45%	13.57%	0.09%	13.60%	19.40%	18.92%	11.84%
Netherlands	5.65%	14.08%	0.10%	14.11%	20.12%	19.63%	12.28%
New Zealand	0.00%	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%
Norway	1.35%	3.37%	0.02%	3.37%	4.81%	4.69%	2.94%
Portugal	0.16%	0.41%	0.00%	0.41%	0.59%	0.57%	0.36%
Russia	10.64%	26.49%	0.18%	26.56%	37.87%	36.94%	23.11%
Slovakia	0.00%	0.01%	0.00%	0.01%	0.01%	0.01%	0.01%
South Africa	0.01%	0.02%	0.00%	0.02%	0.03%	0.03%	0.02%
Spain	15.92%	39.63%	0.27%	39.73%	56.66%	55.27%	34.58%
Sweden	1.60%	3.98%	0.03%	3.99%	5.69%	5.55%	3.47%
Switzerland	64.78%	161.26%	1.09%	161.66%	230.55%	224.88%	140.70%
Turkey	0.06%	0.14%	0.00%	0.15%	0.21%	0.20%	0.13%
United Kingdom	105.03%	261.47%	1.77%	262.11%	373.80%	364.61%	228.13%
Factor Average	13.54%	33.71%	0.23%	33.80%	48.20%	47.01%	29.42%

Panel C. Buyers' ΔYTM_SCORE_75					
	CPN	TRI × CON	CON	CRD	MAT	Country Average
Australia	3.63%	2.03%	0.01%	2.09%	0.00%	1.04%
Austria	3.30%	1.85%	0.01%	1.90%	0.00%	0.95%
Belgium	2.54%	1.43%	0.01%	1.47%	0.00%	0.73%
Brazil	45.17%	25.33%	0.10%	26.01%	0.00%	13.01%
China	1041.57%	584.03%	2.31%	599.75%	0.01%	299.88%
Colombia	0.29%	0.16%	0.00%	0.17%	0.00%	0.08%
Croatia	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.20%	0.11%	0.00%	0.12%	0.00%	0.06%
Czech	0.04%	0.02%	0.00%	0.02%	0.00%	0.01%
Denmark	6.97%	3.91%	0.02%	4.01%	0.00%	2.01%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	7.80%	4.37%	0.02%	4.49%	0.00%	2.24%
France	235.80%	132.22%	0.52%	135.78%	0.00%	67.89%
Georgia	0.12%	0.07%	0.00%	0.07%	0.00%	0.03%
Germany	12.76%	7.15%	0.03%	7.35%	0.00%	3.67%
Hungary	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%
India	6.77%	3.79%	0.01%	3.90%	0.00%	1.95%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	1.48%	0.83%	0.00%	0.85%	0.00%	0.43%
Israel	0.88%	0.49%	0.00%	0.51%	0.00%	0.25%
Italy	30.44%	17.07%	0.07%	17.53%	0.00%	8.76%
Japan	95.92%	53.78%	0.21%	55.23%	0.00%	27.62%
Luxembourg	0.04%	0.02%	0.00%	0.02%	0.00%	0.01%
Malaysia	4.49%	2.52%	0.01%	2.59%	0.00%	1.29%
Mexico	28.15%	15.79%	0.06%	16.21%	0.00%	8.11%
Netherlands	29.21%	16.38%	0.06%	16.82%	0.00%	8.41%
New Zealand	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%
Norway	6.98%	3.92%	0.02%	4.02%	0.00%	2.01%
Portugal	0.85%	0.48%	0.00%	0.49%	0.00%	0.25%
Russia	54.97%	30.82%	0.12%	31.65%	0.00%	15.83%
Slovakia	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%
South Africa	0.04%	0.02%	0.00%	0.02%	0.00%	0.01%
Spain	82.24%	46.12%	0.18%	47.36%	0.00%	23.68%
Sweden	8.26%	4.63%	0.02%	4.76%	0.00%	2.38%
Switzerland	334.64%	187.64%	0.74%	192.69%	0.00%	96.35%
Turkey	0.30%	0.17%	0.00%	0.17%	0.00%	0.09%
United Kingdom	542.57%	304.23%	1.20%	312.42%	0.01%	156.21%
Factor Average	69.96%	39.23%	0.15%	40.28%	0.00%	

Table 6. Global CoCo bond sellers' YTC_SCORE preference scores with incremental factor change

The following tables present the incremental change in CoCo bond's global preference scores based on the 25th, 50th and 75th percentile benchmarks of YTC_SCORE in Panel A (ΔYTC_SCORE_25), B (ΔYTC_SCORE_50) and C (ΔYTC_SCORE_75), respectively. We provide the global preference scores with the incremental changes in significant factors in Table 2 and 3. 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. Sellers' ΔYTC_SCORE_25		
	CPN	Country Average
Australia	4.29%	4.29%
Austria	3.90%	3.90%
Belgium	3.01%	3.01%
Brazil	53.40%	53.40%
China	1231.20%	1231.20%
Colombia	0.35%	0.35%
Croatia	0.01%	0.01%
Cyprus	0.24%	0.24%
Czech	0.05%	0.05%
Denmark	8.23%	8.23%
Estonia	0.00%	0.00%
Finland	9.22%	9.22%
France	278.73%	278.73%
Georgia	0.14%	0.14%
Germany	15.08%	15.08%
Hungary	0.02%	0.02%
India	8.00%	8.00%
Indonesia	0.00%	0.00%
Ireland	1.75%	1.75%
Israel	1.04%	1.04%
Italy	35.98%	35.98%
Japan	113.38%	113.38%
Luxembourg	0.04%	0.04%
Malaysia	5.31%	5.31%
Mexico	33.28%	33.28%
Netherlands	34.53%	34.53%
New Zealand	0.01%	0.01%
Norway	8.26%	8.26%
Portugal	1.01%	1.01%
Russia	64.98%	64.98%
Slovakia	0.02%	0.02%
South Africa	0.04%	0.04%
Spain	97.22%	97.22%
Sweden	9.77%	9.77%
Switzerland	395.56%	395.56%
Turkey	0.36%	0.36%
United Kingdom	641.35%	641.35%
Factor Average	82.70%	

Panel B. Sellers' ΔYTC_SCORE_50						
	CPN	CON	CRD	P/B	SIZE	Country Average
Australia	3.28%	4.50%	2.97%	1.55%	2.58%	2.98%
Austria	2.99%	4.10%	2.71%	1.42%	2.35%	2.71%
Belgium	2.30%	3.16%	2.09%	1.09%	1.81%	2.09%
Brazil	40.84%	56.11%	37.01%	19.36%	32.16%	37.10%
China	941.74%	1293.75%	853.35%	446.29%	741.57%	855.34%
Colombia	0.27%	0.36%	0.24%	0.13%	0.21%	0.24%
Croatia	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.18%	0.25%	0.16%	0.09%	0.14%	0.16%
Czech	0.04%	0.05%	0.03%	0.02%	0.03%	0.03%
Denmark	6.30%	8.65%	5.71%	2.98%	4.96%	5.72%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	7.05%	9.69%	6.39%	3.34%	5.55%	6.40%
France	213.20%	292.89%	193.19%	101.03%	167.88%	193.64%
Georgia	0.11%	0.15%	0.10%	0.05%	0.09%	0.10%
Germany	11.53%	15.84%	10.45%	5.47%	9.08%	10.48%
Hungary	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
India	6.12%	8.41%	5.54%	2.90%	4.82%	5.56%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	1.34%	1.84%	1.22%	0.64%	1.06%	1.22%
Israel	0.80%	1.09%	0.72%	0.38%	0.63%	0.72%
Italy	27.52%	37.81%	24.94%	13.04%	21.67%	25.00%
Japan	86.73%	119.14%	78.59%	41.10%	68.29%	78.77%
Luxembourg	0.03%	0.05%	0.03%	0.02%	0.03%	0.03%
Malaysia	4.06%	5.58%	3.68%	1.92%	3.20%	3.69%
Mexico	25.45%	34.97%	23.07%	12.06%	20.04%	23.12%
Netherlands	26.41%	36.28%	23.93%	12.52%	20.80%	23.99%
New Zealand	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
Norway	6.32%	8.68%	5.72%	2.99%	4.97%	5.74%
Portugal	0.77%	1.06%	0.70%	0.37%	0.61%	0.70%
Russia	49.70%	68.28%	45.04%	23.55%	39.14%	45.14%
Slovakia	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
South Africa	0.03%	0.05%	0.03%	0.02%	0.03%	0.03%
Spain	74.36%	102.16%	67.38%	35.24%	58.56%	67.54%
Sweden	7.47%	10.27%	6.77%	3.54%	5.88%	6.79%
Switzerland	302.56%	415.66%	274.17%	143.38%	238.25%	274.80%
Turkey	0.27%	0.37%	0.25%	0.13%	0.21%	0.25%
United Kingdom	490.57%	673.93%	444.52%	232.48%	386.30%	445.56%
Factor Average	63.25%	86.90%	57.32%	29.98%	49.81%	

Panel C. Sellers' ΔYTC_SCORE_75					
	CPN	CRD	AMT × P/B	SIZE	TRC/RWA	Country Average
Australia	1.64%	2.50%	4.55%	2.90%	3.17%	2.95%
Austria	1.50%	2.27%	4.14%	2.64%	2.89%	2.69%
Belgium	1.15%	1.75%	3.19%	2.03%	2.22%	2.07%
Brazil	20.48%	31.10%	56.65%	36.10%	39.46%	36.76%
China	472.16%	717.12%	1306.21%	832.43%	909.90%	847.57%
Colombia	0.13%	0.20%	0.37%	0.23%	0.26%	0.24%
Croatia	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
Cyprus	0.09%	0.14%	0.25%	0.16%	0.18%	0.16%
Czech	0.02%	0.03%	0.05%	0.03%	0.03%	0.03%
Denmark	3.16%	4.80%	8.74%	5.57%	6.09%	5.67%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	3.53%	5.37%	9.78%	6.23%	6.81%	6.34%
France	106.89%	162.35%	295.71%	188.45%	205.99%	191.88%
Georgia	0.05%	0.08%	0.15%	0.10%	0.11%	0.10%
Germany	5.78%	8.78%	16.00%	10.19%	11.14%	10.38%
Hungary	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%
India	3.07%	4.66%	8.49%	5.41%	5.91%	5.51%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	0.67%	1.02%	1.86%	1.19%	1.30%	1.21%
Israel	0.40%	0.61%	1.10%	0.70%	0.77%	0.72%
Italy	13.80%	20.96%	38.18%	24.33%	26.59%	24.77%
Japan	43.48%	66.04%	120.29%	76.66%	83.79%	78.05%
Luxembourg	0.02%	0.03%	0.05%	0.03%	0.03%	0.03%
Malaysia	2.04%	3.09%	5.63%	3.59%	3.92%	3.65%
Mexico	12.76%	19.38%	35.31%	22.50%	24.59%	22.91%
Netherlands	13.24%	20.11%	36.63%	23.35%	25.52%	23.77%
New Zealand	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%
Norway	3.17%	4.81%	8.76%	5.58%	6.10%	5.68%
Portugal	0.39%	0.59%	1.07%	0.68%	0.74%	0.69%
Russia	24.92%	37.85%	68.94%	43.93%	48.02%	44.73%
Slovakia	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%
South Africa	0.02%	0.03%	0.05%	0.03%	0.03%	0.03%
Spain	37.28%	56.63%	103.14%	65.73%	71.85%	66.93%
Sweden	3.75%	5.69%	10.36%	6.61%	7.22%	6.73%
Switzerland	151.70%	230.40%	419.66%	267.44%	292.33%	272.31%
Turkey	0.14%	0.21%	0.38%	0.24%	0.26%	0.24%
United Kingdom	245.96%	373.56%	680.43%	433.63%	473.98%	441.51%
Factor Average	31.71%	48.17%	87.73%	55.91%	61.11%	

Table 7. Global CoCo bond sellers' YTM_SCORE preference scores with incremental factor change

The following tables present the incremental change in CoCo bond's global preference scores based on the 25th, 50th and 75th percentile benchmarks of YTM_SCORE in Panel A (ΔYTM_SCORE_25), B (ΔYTM_SCORE_50) and C (ΔYTM_SCORE_75), respectively. We provide the global preference scores with the incremental changes in significant factors in Table 2 and 3. 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.

	CPN	TRI × CON	Country Average
	Panel A. Sellers' ΔYTM_SCORE_25		
Australia	4.36%	3.80%	4.08%
Austria	3.97%	3.46%	3.71%
Belgium	3.06%	2.67%	2.86%
Brazil	54.27%	47.33%	50.80%
China	1251.23%	1091.26%	1171.24%
Colombia	0.35%	0.31%	0.33%
Croatia	0.01%	0.01%	0.01%
Cyprus	0.24%	0.21%	0.23%
Czech	0.05%	0.04%	0.04%
Denmark	8.37%	7.30%	7.83%
Estonia	0.00%	0.00%	0.00%
Finland	9.37%	8.17%	8.77%
France	283.26%	247.05%	265.15%
Georgia	0.14%	0.13%	0.14%
Germany	15.32%	13.36%	14.34%
Hungary	0.02%	0.01%	0.01%
India	8.13%	7.09%	7.61%
Indonesia	0.00%	0.00%	0.00%
Ireland	1.78%	1.55%	1.67%
Israel	1.06%	0.92%	0.99%
Italy	36.57%	31.89%	34.23%
Japan	115.23%	100.50%	107.86%
Luxembourg	0.04%	0.04%	0.04%
Malaysia	5.39%	4.70%	5.05%
Mexico	33.82%	29.50%	31.66%
Netherlands	35.09%	30.60%	32.85%
New Zealand	0.02%	0.01%	0.01%
Norway	8.39%	7.32%	7.85%
Portugal	1.02%	0.89%	0.96%
Russia	66.04%	57.59%	61.81%
Slovakia	0.02%	0.01%	0.02%
South Africa	0.05%	0.04%	0.04%
Spain	98.80%	86.17%	92.48%
Sweden	9.93%	8.66%	9.29%
Switzerland	402.00%	350.60%	376.30%
Turkey	0.36%	0.32%	0.34%
United Kingdom	651.78%	568.45%	610.12%
Factor Average	84.04%	73.30%	

	CPN	TRI × CON	CON	CRD	P/B	SIZE	Country Average
Australia	3.86%	2.81%	4.55%	2.81%	2.06%	2.12%	3.04%
Austria	3.51%	2.56%	4.14%	2.56%	1.88%	1.93%	2.76%
Belgium	2.71%	1.97%	3.19%	1.97%	1.45%	1.49%	2.13%
Brazil	48.06%	35.04%	56.66%	34.98%	25.68%	26.45%	37.81%
China	1108.15%	807.84%	1306.39%	806.60%	592.19%	609.84%	871.83%
Colombia	0.31%	0.23%	0.37%	0.23%	0.17%	0.17%	0.25%
Croatia	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Cyprus	0.21%	0.16%	0.25%	0.16%	0.11%	0.12%	0.17%
Czech	0.04%	0.03%	0.05%	0.03%	0.02%	0.02%	0.03%
Denmark	7.41%	5.40%	8.74%	5.39%	3.96%	4.08%	5.83%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	8.30%	6.05%	9.78%	6.04%	4.43%	4.57%	6.53%
France	250.87%	182.88%	295.75%	182.60%	134.06%	138.06%	197.37%
Georgia	0.13%	0.09%	0.15%	0.09%	0.07%	0.07%	0.10%
Germany	13.57%	9.89%	16.00%	9.88%	7.25%	7.47%	10.68%
Hungary	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
India	7.20%	5.25%	8.49%	5.24%	3.85%	3.96%	5.66%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	1.58%	1.15%	1.86%	1.15%	0.84%	0.87%	1.24%
Israel	0.94%	0.68%	1.10%	0.68%	0.50%	0.52%	0.74%
Italy	32.39%	23.61%	38.18%	23.57%	17.31%	17.82%	25.48%
Japan	102.05%	74.39%	120.31%	74.28%	54.54%	56.16%	80.29%
Luxembourg	0.04%	0.03%	0.05%	0.03%	0.02%	0.02%	0.03%
Malaysia	4.78%	3.48%	5.63%	3.48%	2.55%	2.63%	3.76%
Mexico	29.95%	21.84%	35.31%	21.80%	16.01%	16.48%	23.57%
Netherlands	31.08%	22.66%	36.64%	22.62%	16.61%	17.10%	24.45%
New Zealand	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
Norway	7.43%	5.42%	8.76%	5.41%	3.97%	4.09%	5.85%
Portugal	0.91%	0.66%	1.07%	0.66%	0.48%	0.50%	0.71%
Russia	58.48%	42.64%	68.95%	42.57%	31.25%	32.19%	46.01%
Slovakia	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%
South Africa	0.04%	0.03%	0.05%	0.03%	0.02%	0.02%	0.03%
Spain	87.50%	63.79%	103.15%	63.69%	46.76%	48.15%	68.84%
Sweden	8.79%	6.41%	10.37%	6.40%	4.70%	4.84%	6.92%
Switzerland	356.03%	259.54%	419.72%	259.14%	190.26%	195.93%	280.10%
Turkey	0.32%	0.23%	0.38%	0.23%	0.17%	0.18%	0.25%
United Kingdom	577.25%	420.81%	680.52%	420.17%	308.48%	317.67%	454.15%
Factor Average	74.43%	54.26%	87.75%	54.18%	39.78%	40.96%	

Panel B. Sellers' ΔYTM_SCORE_50

	CPN	TRI × CON	CON	CRD	MAT	Country Average
			Panel C. Sellers' ΔYTM_SCORE_75			
Australia	0.93%	2.53%	4.55%	2.47%	4.56%	3.01%
Austria	0.85%	2.30%	4.15%	2.25%	4.15%	2.74%
Belgium	0.66%	1.77%	3.19%	1.73%	3.20%	2.11%
Brazil	11.63%	31.48%	56.71%	30.79%	56.80%	37.48%
China	268.20%	725.74%	1307.47%	710.02%	1309.76%	864.24%
Colombia	0.08%	0.20%	0.37%	0.20%	0.37%	0.24%
Croatia	0.00%	0.00%	0.01%	0.00%	0.01%	0.00%
Cyprus	0.05%	0.14%	0.25%	0.14%	0.25%	0.17%
Czech	0.01%	0.03%	0.05%	0.03%	0.05%	0.03%
Denmark	1.79%	4.85%	8.74%	4.75%	8.76%	5.78%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	2.01%	5.43%	9.79%	5.32%	9.81%	6.47%
France	60.72%	164.30%	295.99%	160.74%	296.51%	195.65%
Georgia	0.03%	0.08%	0.15%	0.08%	0.15%	0.10%
Germany	3.28%	8.89%	16.01%	8.70%	16.04%	10.58%
Hungary	0.00%	0.01%	0.02%	0.01%	0.02%	0.01%
India	1.74%	4.71%	8.49%	4.61%	8.51%	5.61%
Indonesia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	0.38%	1.03%	1.86%	1.01%	1.87%	1.23%
Israel	0.23%	0.61%	1.10%	0.60%	1.11%	0.73%
Italy	7.84%	21.21%	38.21%	20.75%	38.28%	25.26%
Japan	24.70%	66.83%	120.41%	65.39%	120.62%	79.59%
Luxembourg	0.01%	0.03%	0.05%	0.03%	0.05%	0.03%
Malaysia	1.16%	3.13%	5.64%	3.06%	5.65%	3.73%
Mexico	7.25%	19.62%	35.34%	19.19%	35.40%	23.36%
Netherlands	7.52%	20.35%	36.67%	19.91%	36.73%	24.24%
New Zealand	0.00%	0.01%	0.02%	0.01%	0.02%	0.01%
Norway	1.80%	4.87%	8.77%	4.76%	8.78%	5.80%
Portugal	0.22%	0.59%	1.07%	0.58%	1.07%	0.71%
Russia	14.15%	38.30%	69.00%	37.47%	69.13%	45.61%
Slovakia	0.00%	0.01%	0.02%	0.01%	0.02%	0.01%
South Africa	0.01%	0.03%	0.05%	0.03%	0.05%	0.03%
Spain	21.18%	57.31%	103.24%	56.06%	103.42%	68.24%
Sweden	2.13%	5.76%	10.37%	5.63%	10.39%	6.86%
Switzerland	86.17%	233.17%	420.06%	228.12%	420.80%	277.66%
Turkey	0.08%	0.21%	0.38%	0.20%	0.38%	0.25%
United Kingdom	139.71%	378.05%	681.08%	369.86%	682.28%	450.20%
Factor Average	18.01%	48.75%	87.82%	47.69%	87.97%	

Appendix I
Correlation matrix
The following table presents the the Pearson's correlation matrix for the regressors in our sample. * stands for significance at the 10% level, ** at the 5% level and *** represents at the 1% level.

	CPN	MAT	AMT	TRI	CRD	CON	ROE	SIZE	P/B	TRC/RWA	RGDP	CPI
CPN	1***											
MAT	-0.05	1***										
AMT	-0.03	-0.09**	1***									
TRI	-0.02	0.4***	0.1***	1***								
CRD	-0.47***	-0.13***	-0.09	0.15***	1***							
CON	0.09**	0.1***	0.39***	0.28***	0.13***	1***						
ROE	-0.11**	0.04	-0.08*	-0.2***	0.18***	-0.01	1***					
SIZE	-0.22***	-0.07	0.78***	0.09**	0.26***	0.23***	-0.04	1***				
P/B	0.06	0.02	-0.05	-0.07	0.25***	-0.01	0.57***	-0.19***	1***			
TRC/RWA	-0.01	0.08	-0.15***	0.2***	0.17**	-0.06	0.03	-0.17***	0.18***	1***		
RGDP	-0.08*	0.01	0.14***	-0.13***	0.05	0.2***	0.32***	0.1**	0.05	-0.14***	1***	
CPI	0.35***	-0.26***	-0.08*	-0.41***	-0.35***	-0.11***	0.21***	-0.12***	0.05	-0.04	0.17***	1***

Appendix II
Country average response of the CoCo bond's preference score
The following figure shows the country average preference responses for CoCo bond buyers global ΔYTC_SCORE. We take the average of our 25th, 50th, 75th percentiles preference scores for each country in table 4. We show the buyers global ΔYTC_SCORE as a representative one it has the most factors responsive compared to buyers global ΔYTM_SCORE, and sellers global ΔYTC_SCORE and ΔYTM_SCORE while the overall map results are highly similar. The darker shades indicate larger absolute values of the country average preference response.