School of Finance

University of St.Gallen

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Manuel Ammann
Kristian Blickle
Christian Ehmann

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Announcement Effects of Contingent Convertible Securities: Evidence from the Global Banking Industry

Manuel Ammann[1] Kristian Blickle[1] Christian Ehmann[2]

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Abstract

This paper investigates the announcement effects of contingent convertible securities (CoCo bonds) issued by global banks between January 2009 and June 2014. Using a sample of 34 financial institutions and 87 CoCo bond issues, we examine abnormal stock price reactions and CDS spread changes before and after the announcement dates. We find that the announcement of CoCo bonds correlates with positive abnormal stock returns and negative CDS spread changes in the immediate post-announcement period. The effects are most pronounced for first-time issues. We explain the CDS spread changes by the lower probability of costly bankruptcy proceedings and the abnormal stock returns by a signaling framework that is based on pecking order theory and the cost advantage over equity (tax shield). We also examine the factors that are associated with the post-announcement abnormal stock returns and find that the existence of issuer call provisions reduces the positive abnormal returns.

Keywords: contingent convertible securities, CoCo bonds, announcement effects, event study
JEL Classifications: G01, G14, G21

1 Introduction

During the 2007/08 financial crisis, public-sector capital was frequently used as a fail-safe to prevent the collapse of systemically relevant financial institutions. Increased government debt levels, disgruntled tax payers and a distortion of bankers' economic

[1] University of St. Gallen, Swiss Institute of Banking and Finance, Rosenbergstrasse 52, 9000 St. Gallen, Switzerland. E-mail: manuel.ammann@unisg.ch, kristian.blickle@unisg.ch

[2] **Corresponding author:** Christian Ehmann, University of St. Gallen, Swiss Institute of Banking and Finance, Rosenbergstrasse 52, 9000 St. Gallen, Switzerland. Phone: +41-71-224-70-80. E-mail: christian.ehmann@unisg.ch
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incentives were the ultimate consequences of such support mechanisms. Contingent convertible debt securities, or CoCo bonds, have been regarded as an innovative remedy to mitigate the possibility of a financial institution's default. By automatically being written down or converting into equity capital in the event of certain pre-defined triggers, these hybrid securities ameliorate an entity's capital position at critical times. CoCo bonds have enjoyed interest from both regulators and bank managers since their conceptual creation. In many jurisdictions adopting Basel III, CoCo bonds can be used as core capital to meet regulatory requirements. The advent of the CoCo bond and the concomitant discussions of a "bail-in" could be seen as marking a shift in the way regulators plan to treat destabilized financial institutions in the future.

Accordingly, total global issue volumes of CoCo bonds have reached approximately 115 billion USD since January 2009. While the market for CoCos is still relatively small, as compared to the volumes of bank-issued (non-contingent) subordinated debt and senior unsecured debt instruments, it is steadily growing. In 2013, 26 global financial institutions issued 34 CoCo bonds with a total face value of around 40 billion USD. In the first half of 2014 alone, nominal issue volumes already reached 36.5 billion USD. Exhibit 1 (Appendix) shows the volumes of global contingent convertible bond issues from 1 January 2009 until 30 June 2014. According to an industry report released by Standard and Poor's (2010), CoCo bond volumes are expected to reach 1 trillion USD until the year 2020.

While the announcement effects of conventional convertible securities on issuer stock prices have been widely discussed, research on the announcement effects of contingent convertible bonds that are issued by banking institutions is still absent. Our study fills this gap in the literature and investigates both the abnormal stock price and credit default swap spread reactions to the announcement of CoCos. We make use of a sample of 34 international banks and 87 distinct CoCo bond issues with a total nominal issue volume of around 80 billion USD. As such, we capture a significant portion of this new security market. Following the standard methodology of Brown and Warner (1985) and Campbell, Lo, and MacKinlay (1997), we conduct an event study that investigates the reactions of the CoCo bond issuers' stock prices and CDS spreads in the immediate post-announcement period.

Empirical research on conventional convertible debt securities suggests a negative relationship between an announcement and the post-announcement abnormal stock returns of the issuing entities. Duca, Dutordoir, Veld, and Verwijmeren (2012) report significant negative announcement effects of convertible offerings for firms in the United States between 1984 and 2008. Earlier studies, such as those by Dann and Mikkelson (1984), Billingsley and Smith (1996), Mikkelson and Partch (1986), and Lewis, Rogalski, and Seward (1999) find similar results[2]. The event study results of De Roon and Veld (1998) show positive, yet insignificant announcement effects of convertible bond issues in the Dutch market. Burlacu (2000) finds negative effects in France; Ammann, Fehr, and Seiz (2006) in Germany and Switzerland. Overall, the negative announcement effects of convertible securities are mostly explained as resulting from the negative signal the issues send to incumbent equity owners. For a more detailed discussion on this issue, see Wallace, Glascock, and Schwarz (1995), Stein (1992), or De Spiegeleer, Schoutens, and van Hulle (2014).

Unlike the above-mentioned studies, we find that CoCo bonds have a positive announcement effect on stock prices. Moreover, we find that the CDS spreads of the institutions in our sample narrow significantly in the immediate post-announcement period. Our analysis shows that the sample banks′ announcement of a contingent convertible bond is, on average, correlated with a +1.0% cumulative abnormal stock return

[2] For a comprehensive overview of the literature on conventional convertible bond announcement effects, see De Roon and Veld (1998).

on the days t_0 and t_{+1}. The inclusion of an issuer call provision in the bond structure reverts the positive price effect. Both stock price and CDS effects are more pronounced for first-time issues (i.e., when the issuing institution has no CoCo securities outstanding yet). We postulate that these effects are driven by a bank reducing its probability of default, on the one hand, and by the CoCos' positive signal and cost advantage over equity on the other.

In the past, many banks were saved in times of crisis by government intervention. The recent financial crisis, however, has highlighted the moral hazard implications of explicit or implicit bailout guarantees. Public pressure, motivated in no small part by costs taxpayers were forced to burden, has reduced the future likelihood of a bailout. With the "Bank Recovery and Resolution Directive" of 1 January 2015, the European Commission has created a rulebook for the resolution of failing banks and investment companies that should apply within the EU Member States in the future. This rulebook equips financial supervisory authorities "[…] with comprehensive powers and tools to restructure […], allocating losses to shareholders and creditors following a clearly defined hierarchy" (European Commission, 2014). In the future, neither creditors nor shareholders can rely fully on state aid. Instead, the advent of the CoCo bond marks a new approach to safeguarding institutions from collapse. Since CoCos shore up a bank's capital base during times of instability, they reduce the possibility of a default and the associated costs of restructuring or bankruptcy proceedings. Existing bond holders profit from new securities that rank lower in seniority. Existing conventional debt is less likely to be subject to default or restructuring if the bank's losses can first be absorbed by CoCo bond holders. Particularly when the bank retires existing debt for CoCo bonds, the relative protection of remaining creditors is stronger. This creditor protection should be expressed in a narrowing of an issuer's CDS spreads.

Secondly, CoCos have an advantage over equity in terms of funding costs and the signal they send to equity investors. An entity that issues CoCo bonds may treat these as constituting core capital, despite the debt classification of those instruments. An institution's direct alternative, assuming it needs to increase its capital base, would be to issue equity. Pecking order theory, as developed by Myers and Majluf (1984), stipulates, however, that equity is the least preferred source of financing for an entity in need of capital. A number of empirical studies that followed their theoretical work find negative stock price reactions to the announcements of equity issues (e.g., Asquith and Mullins, 1986; Barclay and Litzenberger, 1988; Masulis and Korwar, 1986; or Spiess and Affleck-Graves, 1995; only to mention a few). Those studies argue that equity issues are a negative signal for investors due to asymmetric information. CoCos, however, are debt instruments that are convertible only under certain distress conditions. Therefore, they rank higher in the pecking order. If an issuer uses a CoCo bond to raise new capital, it implicitly takes a decision against the alternative, which is the issuance of common equity. If market participants anticipate that the bank must increase its capital due to regulatory requirements, and know it can do so either by issuing equity or CoCos, the announcement of a CoCo issue can be a positive signal to investors.

Lastly, CoCo bonds enjoy favorable tax treatment in many jurisdictions. In fact, Avdjiev, Kartasheva, and Bogdanova (2013) estimate that approximately 64% of CoCos outstanding in mid-2013 have tax-deductible coupons. This tax shield lowers funding cost and gives CoCos a cost advantage over common equity. A bank's decision of issuing CoCos is therefore a decision of whether to make use of this tax shield effect or not. Previous studies have shown that the value of such tax shields can be substantial (e.g., see Cooper and Nyborg, 2008; Graham, 2000; Kemsley and Nissim, 2002; or Van Binsbergen, Graham and Yang, 2010). Schepens (2015) furthermore argues that it can be used as an important regulatory instrument, given its impact on a bank's capital structure choice. If market participants anticipate that the bank must increase its capital due to regulatory requirements and know it can do so by taking advantage of the tax shield (CoCos) or not (equity), then the CoCo announcement can be positive news to investors.

The observation that the announcement effects are more pronounced for first-time issues can be explained by the new information about the strategy of the institution, signaling that, with some probability, further issues of CoCos are forthcoming (in lieu of equity issues) in order to meet the increased capital requirements of the future[3].

Our research contributes to two strands of the literature. Firstly, it complements the corporate finance research on abnormal stock returns around announcement dates of hybrid debt securities. As CoCo bonds are a recent development, we add novel information to this particular field. Secondly, our paper adds to the banking literature on market perceptions of a financial institution's risk structure.

The remainder of this paper is structured as follows. Section 2 briefly reviews the design and the general architecture of CoCo bonds. It further describes the dataset in detail and outlines the employed methodology. Section 3 shows the empirical results while section 4 concludes the main findings.

[3] Even institutions that are too-big-to-fail no longer enjoy blanket protection from the state. In Switzerland (an early adopter of Basel III rules), for instance, financial institutions deemed to be of systemic relevance must create a "living will" (FINMA, 2011). This living will, developed with the regulator, ensures the survival of the important functions while allowing the rest of the bank to be liquidated. While this may prove complex in practice, it nevertheless indicates that equity holders and bondholders no longer enjoy outright protection, no matter the size of the institution.

2 Data and Methodology

2.1 Structure and design of contingent convertible securities

Contingent convertible bonds are similar to conventional convertible debt instruments in certain respects. CoCos include standard bond features such as pre-defined maturities or coupons that entitle the investor to regular interest payments in normal times. However, they are mandatorily converted into ordinary shares[4] (or written down) at certain trigger events. Typically (though not exclusively) this occurs when the equity capital of the issuing institution falls below a pre-defined trigger level. The mandatory conversion ensures automatic recapitalization of the bank in financial distress.

Basel III regulation stipulates more stringent equity capital thresholds than Basel II but explicitly allows part of this regulatory capital to be held in the form of CoCo bonds. Under the Basel III framework, contingent convertible securities can either qualify as Additional Tier 1 (AT1) capital or Tier 2 (T2) capital. To qualify as AT1 capital, CoCo bonds must be issued with perpetual maturity and a trigger level of at least 5.125% (Avdjiev et al., 2013). CoCos with fixed maturities or with lower (or otherwise more flexible) trigger mechanisms may only qualify as T2 capital. Avdjiev et al. (2013) describe that CoCo securities with low triggers are not eligible to qualify as AT1 capital since they have a limited loss-absorption capacity. Since January 2012, the ratio of 5.125% CoCos that are emitted have increased significantly. A potential explanation of this continuing trend is the gradually increased core capital requirement for banks that follows from the gradual adoption of the Basel III framework by national institutions.

While regulators typically specify book-value triggers, banks have a plethora of options in designing individual CoCo-security structures. Beside accounting-based

[4] A conversion-to-equity CoCo bond directly increases the core equity tier 1 capital, whereas a CoCo bond with a write-down provision indirectly increases the equity capital by decreasing the outstanding debt.

triggers, these include, for example, market-based triggers or discretionary triggers that are based on a supervisory authority's judgment about a financial institution's solvency. Theoretically, an "optimal" trigger should rely on a measure that most accurately indicates potential distress. Much of the current debate on this topic centers on market-based triggers. Proponents of market-based triggers argue that they are most effective in overcoming inconsistencies in book-value calculations and are least prone to accounting manipulation. However, opponents claim that market prices, particularly those of bank stocks, are a poor indicator of effective risk[5]. Their argument focuses on the notion that unjustifiable conversions could occur during a market panic. The discussion about the optimal design of such securities is hence still ongoing. Given that we differentiate according to regulatory capital (i.e., AT1 vs. T2) as well as the particular conversion type in our analysis below, our study offers a contribution to this discussion.

2.2 Data

The market for contingent capital is relatively young. Between 1 January 2009 and 30 June 2014, 52 global financial institutions issued 126 contingent convertible securities with a cumulated notional volume of approximately 115 billion USD. Lloyds Bank was one of the first entities that issued a large-scale CoCo bond in the fourth quarter of 2009. The UK-based banking corporation issued several so-called "Enhanced Capital Notes" qualifying as lower tier 2 capital with a face value of around 13.7 billion USD, triggering conversion if the corporation's core tier 1 capital falls below 5% (De Spiegeleer et al., 2014). The note was offered in exchange for the group's outstanding subordinated debt and existing hybrid securities. Since then, other multinational banks have followed and have

[5] For a literature summary on the discussion about different contingent capital designs, see Calomiris and Herring (2011).

issued a plethora of such hybrid debt securities with different designs during the period under investigation.

We first gather information on all 126 CoCo securities that have been issued during the period 1 January 2009 until 30 June 2014. Announcement and issue dates, notional issue volumes, conversion mechanisms, event trigger thresholds and other bond-specific criteria are sourced from Bloomberg and the offering memoranda of the securities. Historical stock price data, CDS spreads and historical credit ratings of the bond-issuing institutions are retrieved from DataStream.

CoCo bonds have also been issued by financial institutions other than banks, such as insurance companies or other specialized financial services providers. However, since regulatory requirements and risk structures of other financial services firms might be different and difficult to compare cross-sectionally, we deliberately exclude their securities from our analysis. We focus solely on banking institutions with SIC-Codes: 6000-6159. For the empirical analysis, we furthermore exclude securities for three reasons: Firstly, we remove those issues for which the announcement date is not clearly defined. Secondly, we remove those issues for which announcement information has been released in connection with other company-specific information[6]. Thirdly, we exclude those securities for which no issuer stock price data was available for the period t_{-300} to t_{+30}, whereby t_0 denotes the convertible debt announcement date. Finally, for most analyses, we exclude issues that follow too closely upon one another so that abnormal stock returns cannot be computed.

Our final sample thus consists of 87 CoCo bond issue announcements conducted by 34 financial institutions on 55 different dates. The total notional amount of all analyzed

[6] i.e., such as quarterly results, information about earnings, mergers, takeovers or major divestments, expected dividends, receptions of bail-out capital contributions, significant reductions of balance sheet risk exposures (i.e., through asset sales), or issues of other securities three days before or after the announcement.

CoCo bonds amounts to approximately 78.4 billion USD as of the end of June 2014[7]. In terms of nominal issue volumes, we thus cover almost 70% of the overall CoCo bond market as of the end of the second quarter 2014.

For the analysis of the announcement effects on CDS spreads, it is necessary to reduce the final sample further due to the limited availability of traded 5-year senior credit default swaps. We define the announcement date to be the day on which the information about the convertible debt security issue is made publicly available by an ad-hoc press release. The announcement must include a precise statement of the issue volume and trigger mechanism to be included in the sample. Issue dates are defined as those dates on which the securities are ultimately offered to investors. Those particular dates are disclosed in the securities' offering memoranda.

[7] Securities that have been issued in other currencies than the US dollar have been converted into US dollar based on the exchange rate prevailing on their individual issue dates.

2.3 Descriptive statistics

Applying the filter criteria as described above, our final sample includes 87 contingent convertible securities that have been issued by 34 international banking corporations during the period between 1 January 2009 and 30 June 2014. The announcements were released on 55 different dates. Table 2.3.1 reports the detailed summary statistics of the features of the securities that are included in our final sample.

Table 2.3.1: Summary statistics of the sample CoCo bond features

The table reports the maturity types, regulatory capital classifications, conversion mechanisms, coupon types and other features of the contingent convertible securities included in our final sample. The statistical summary is based on 34 contingent capital issuers and 87 CoCo bonds. Data is reported as of 30 June 2014.

	By number	By issue volume
Maturity type		
Dated securities	64.4%	53.1%
Perpetual securities	35.6%	46.9%
Security features		
Securities with issuer call options	55.2%	66.7%
Securities without issuer call options	44.8%	33.3%
Securities with 5.125% CET1/RWA trigger level	18.4%	25.1%
Regulatory capital classification		
Additional Tier 1 capital (AT1)	37.9%	49.0%
Tier 2 capital (T2)	62.1%	51.0%
Conversion mechanism		
Conversion-to-Equity (CE)	60.9.%	44.7%
Principal write-down (PWD)	39.1%	55.2%
Coupon type		
Fixed coupon	47.1%	35.9%
Fixed-to-floating coupon	42.5%	57.3%
Floating coupon	10.4%	6.8%
Issue currency		
Securities denominated in EUR	23.0%	25.2%
Securities denominated in USD	36.8%	55.6%
Securities denominated other currencies	40.2%	19.2%

More than half of the securities in our final sample are dated and have maturities that range from 4.8 years to 45 years; with the longest bond maturing in 2057. The average maturity of dated securities is approximately 12 years with the majority of bonds having a 10-year maturity structure. Around one third of the sample CoCo bonds are issued with perpetual maturities. Those are eligible to classify as AT1 capital instruments. Their issue volume accounts for approximately half of the total notional volume of all examined securities as of 30 June 2014[8]. All perpetual and some dated securities include call provisions for the issuer. Call provisions are embedded in around 55% of all CoCo bonds that are included in our sample. The average time span between the issue and the first possible call date is approximately 6 years. It is furthermore noteworthy that the great majority of contingent capital issuing institutions that are included in our sample are headquartered in Europe. Although more than half of the total issue volume is denominated in US dollars, our final sample does not include any US-based banks. One potential explanation why US-based financial institutions have not (yet) issued hybrid capital instruments until now is the unfavorable tax treatment of such securities under prevailing U.S. tax law. The interest paid on these instruments is, at the time of the writing of this paper, not deductible from the corporate tax-base under the U.S. tax regime. For a more detailed discussion on the tax issues, see De Spiegeleer et al. (2014).

Regarding the loss absorption mechanism, our data indicates that there is no predominant type on the market. The fraction of securities (by issue volume) with an equity conversion mechanism is around 44.7%, whereas the remainder is structured with full or partial principal write-down provisions. The principal write-downs are either temporary or permanent, whereby most CoCo bonds with write-down provisions make use of full and permanent write-downs.

[8] As measured in US dollar terms.

Of the 87 securities in our final sample, 16 have a CET1/RWA trigger level of exactly 5.125%[9]. Those account for approximately one fourth of the total accumulated issue volume of all sample CoCos and about half of the securities that qualify as AT1 capital. Our data also indicates that the amount of CoCo bonds with such triggers has been steadily increasing since 2009. This has already been documented by Avdjiev et al. (2013), who explain this trend by both the increased capital requirement under the Basel III regime and the relative cost advantage over contingent convertible securities with higher trigger levels. From a theoretical point of view, the issuance of high-trigger CoCos should be more expensive than the issuance of lower-trigger CoCos since the former lead to an earlier loss absorption by the bond holders in the case of conversion. Our data partly supports this hypothesis. However, while we do control for the trigger levels in the multivariate analysis in section 3.5, we do not aim to explain the factors affecting CoCo bond funding costs at issuance.

It should finally be noted that our sample is relatively heterogeneous in terms of the bond-issuing financial institutions. This pertains particularly to the geographical distribution and reach, the entities' balance sheet sizes as well as their target markets. Moreover, they differ fundamentally in terms of their credit risk structures, as indicated by the dispersed cross-sectional distribution of the long-term issuer credit ratings and the large standard deviation of the CDS spread levels at the time of the CoCo bond issue dates. Unfortunately, CDS information is only available for 24 sample banks; all CDS analyses are consequently performed on a sub-sample. Of these, the great majority had an S&P long-term issuer rating in the A or BBB category, with no institution having a credit rating below BB+ at the time of its CoCo bond announcement. The highest issuer credit rating prevailing on an announcement date was AA-. This rating was assigned to 3 institutions in the sample.

[9] 5.125% is the minimum standard for securities to still qualify as tier 1 capital under the Basel III regime.

Table 2.3.2 reports further descriptive statistics about the features of the CoCo bonds in our sample and their issuing institutions. It is noteworthy that the majority of issuing banks were not in dire need of additional capital (as indicated by relatively high tier 1 ratios). Results found in this paper are therefore not driven by underperforming banks reducing their shortcomings.

Table 2.3.2: Descriptive statistics

The table reports descriptive sample statistics as of 30 June 2014. The statistics are based on 87 CoCo bonds that have been issued by 34 banking institutions on 55 different dates. *ISSUESIZE* is the notional amount of an issue. *BSSIZE* is the balance sheet size of an entity as measured by the amount of total assets that is disclosed in the annual report of the year prior to the year of the debt security issuance. *ISSUETIME* is the time span between the announcement date and the issue date. *MATURITY* is the maturity of the dated CoCo securities included in our sample. *CALLTIME* is the time span between the issue date and the first possible call date after issuance of those bonds that include a call provision for the issuer. *VOLATILITY* is the historical volatility of the issuers' stock prices in the estimation window period $T_{ES} = [t_{-110}; t_{-11}]$. *COUPON* is the nominal coupon rate of the hybrid debt securities. *CDS* is the issuers' senior 5-year credit default swap spread level on day t_0. *ΔCDS(+3)* is the difference of the issuers' senior 5-year CDS spread between day t_{+3} and t_0 as measured in basis points. *ΔCDS(+10)* is the difference of the issuers' senior 5-year CDS spread between day t_{+10} and t_0 as measured in basis points. *ΔEQ(t_0)* is the unconditional stock return of the issuers on day t_0. *TIER1* is the tier 1 capital ratio of the 34 financial institutions 6 months prior (rounded to the preceding quarter) to the CoCo bond announcement.

Variable	Unit	Mean	Median	StdDev	Min	Max
ISSUESIZE[1]	mn USD	900.6	800.0	750.5	6.7	3'000.0
BSSIZE[2]	bn USD	896.4	343.3	685.0	2.6	2'815.0
ISSUETIME	days	15.0	9.0	11.2	0.0	42.0
MATURITY	years	12.1	10.2	6.0	4.8	45.3
CALLTIME	years	6.0	5.0	2.3	0.2	12.0
VOLATILITY	%	2.5	2.0	1.9	0.7	13.0
COUPON	%	8.2	7.9	2.7	2.2	16.1
CDS[3]	bps	156.7	128.4	117.2	70.4	844.4
ΔCDS(+3)[3]	bps	-2.7	-1.1	6.9	-36.9	7.4
ΔCDS(+10)[3]	bps	-4.2	-2.0	10.9	-33.9	27.6
ΔEQY(t_0)	%	0.9	0.2	3.3	-6.1	17.7
TIER1	%	12.7	11.8	3.2	8.0	19.7

[1] converted into US dollars with the exchange rates prevailing on the respective issue dates.

[2] converted into US dollars with the exchange rates prevailing on the respective balance sheet dates.

[3] CDS data was available only for 24 financial institutions and 56 CoCo bond announcements, respectively.

2.4 Methodology

To measure the announcement effects of contingent convertible bond issues on stock returns, we conduct an event study following the standard methodology as proposed by Brown and Warner (1985) and Campbell et al. (1997). In the first stage, we define abnormal stock returns based on predictions from a linear market model. We choose various MSCI country financial stock indices as market proxies, thereby controlling for both country-level and industry-sector effects. We define the estimation window as $T_{ES} = [t_x; t_y]$[10], where $x < y < 0$ and t_0 denotes announcement date. We estimate the abnormal returns for the period $T_{EV} = [t_{-10}; t_{+20}]$[11] with $t_0 \in T_{EV}$ and $T_{EV} \not\subset T_{ES}$. We compute the abnormal returns in the period before and after the CoCo bond announcement day for various event windows denoted as τ_{EV}, whereby $\tau_{EV} \subset T_{EV}$. With the above-set specification, the estimation window and the event window do not overlap, as recommended by MacKinlay (1997), so that the parameter estimates are not influenced by the returns around the event date.

We aggregate the abnormal returns in a second step and thereby continue to follow the approach as proposed by Campbell et al. (1997). We compute the cross-sectional means of the banks' abnormal stock returns on specific days within the event window T_{EV} (*MARs*) as well as the average cumulative abnormal returns (*MCARs*) of all securities for certain event window ranges $\tau_{EV} = [t_a; t_b]$, where $a < b$. To draw inferences, we test the null hypothesis that the announcement events[12] do not have any impact on the abnormal stock returns, or, put differently, that *MCAR* is equal to zero using

$$MCAR(t_a, t_b) \sim N\left[0, \text{var}(MCAR(t_a, t_b))\right] \tag{1}$$

[10] To test for robustness, we compute the market model factor loadings for different estimation window ranges by varying the *x* and *y* parameters. The empirical results of those robustness tests are comprehensively described in section 3.4 of this paper.
[11] Event window lengths are also varied for comparative purposes in section 3.
[12] We additionally test issue-date effects in the same manner (see Appendix).

To test for statistical significance, we employ the approach as suggested by Fields and Mais (1991) who test statistical significance based on standardized abnormal returns. The assumption is that abnormal returns are multivariate normal and independent. We therefore test the null hypothesis that the average abnormal return is zero. We compute (t_{SAR}):

$$t_{SAR}(t_a, t_b) = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \sum_{t=t_a}^{t_b} \frac{AR_{it}}{SD_{iT}} \quad (2)$$

where AR_{it} are abnormal returns of bank i for date t and SD_{iT} denotes the standard deviation of the sum of the AR_{it} series over the time period τ_{EV} as computed in Fields and Mais (1991).

In addition to abnormal stock price reactions, we also investigate the sample banks' abnormal credit default swap spread changes. We therefore employ an index-adjustment model as defined by Norden and Weber (2004) with the modifications of Hull, Predescu, and White (2004). Daily index values are computed as the equally weighted cross-sectional mean of all sample CDS spreads for a particular rating category. Index levels were constructed for the two S&P issuer rating categories 1) AAA-A and 2) BBB and lower. To test whether spread changes are significantly different from zero, we apply cross-sectional parametric *t*-tests. For liquidity reasons, the 5-year CDS mid-spreads on the senior US dollar denominated underlying are included in our study[13].

[13] For some few institutions who had no US-dollar denominated debt outstanding, we employ the 5-year senior unsecured Euro-denominated CDS.

3 Results

3.1 Abnormal stock returns following announcement

In this section, we show that the announcement of CoCo bond issues is associated with abnormal positive stock returns. In a first step, we estimate the abnormal stock returns for each individual financial institution *i* in our final sample for each of the days in the time window $T_{EV} = [t_{-10}; t_{+20}]$. We set the estimation window length to $T_{ES} = [t_{-100}; t_{-11}]$. The end of the estimation window is set to t_{-11} in order to avoid the inclusion of return observations in the immediate period prior to the announcement date[14]. The 90-day calibration period should contain a sufficient number of observations in order to ensure an adequate model fit. It should be noted, however, that no uniform consensus on the optimal number of days in an estimation period exists. For a theoretical discussion of this issue, see Sorokina, Booth, and Thornton (2013). In order to test our results for robustness, we vary the lengths of the estimation window in section 3.4.

We analyze the unconditional mean returns (*MR*) for the days following the announcement date. Subsequently, we compute the mean abnormal returns (*MARs*) over all bank stocks for all days t_{-2} to t_{+10}. The abnormal returns are the differences between model predictions (based on the estimation period) and observed returns. In a second step we compute the mean cumulative return (*MCR*) as well as the mean cumulative abnormal returns (*MCARs*) for all stocks *i* for various event window lengths before and after the announcement date t_0. Table 3.1.1 displays the results of the entire sample.

We find that the returns of bank stocks following the announcement of a CoCo bond issue are, on average, positive. Importantly, we find that the mean abnormal returns are significantly positive on the day of the announcement, insinuating that the equity market

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[14] This might, inter alia, decrease the probability of including insider-induced return fluctuations prior to the CoCo bond announcement date.

appreciates the CoCo emission. As can be seen in Panel 1 of Table 3.1.1 returns are 0.31%-pts higher on the announcement day than predicted. While abnormal returns increase to 0.70%-pts on the subsequent day, the effect is no longer significant. Moreover, we find that cumulative abnormal returns, computed over windows that include the announcement day, are significantly positive. As can be seen in Panel 2 of the table below, the effect is more pronounced for shorter window lengths and dissipates somewhat as more time is allowed to pass and other factors influence returns. Mean cumulative abnormal returns range from 0.29%-pts for the two days t_{-1} and t_0 to 1.01%-pts for the two days t_0 and t_{+1}. The effects are economically significant, representing large two-day returns. We furthermore find that the above effects are only present for the announcement date and not the issue date itself, implying that the market prices the effect at announcement. The above analysis is replicated for issue dates. Since the time span between a CoCo bond's announcement and issue date is in some cases very short (for some securities announcement and issue dates even fall on the same day), we define a new sub-sample and exclude those CoCo bonds for which this time span is less than two days (9 issues excluded). This exclusion will ensure that the issue effect is not absorbed by the announcement effect. Exhibit 2 (Appendix) shows the results.

Table 3.1.1: Abnormal stock returns around the CoCo bond announcement date

The table reports the average abnormal stock returns (*MARs*) and the average cumulative abnormal stock returns (*MCARs*) of the 34 banks in our sample for different time periods around the announcement date t_0. The analysis is based on 87 CoCo bond issues that have been announced on 55 different dates and includes both initial and all subsequent bond announcements. *Delta MAR* reports the *MAR* difference to t_0. *MR* reports the cross-sectional mean of the unconditional stock returns. *MCR* reports the mean of the cumulative raw stock returns. Test-statistics are shown in parentheses.

Panel 1

Days (*t*)	-2	-1	0	+1	+2	+3	+4	+5	+10
MR (in %)	0.66	0.25	0.27	0.91**	-0.18	0.35	0.48	0.17	0.15
t-stat	*(1.30)*	*(0.85)*	*(0.75)*	*(2.06)*	*(-0.41)*	*(0.75)*	*(1.17)*	*(0.38)*	*(0.51)*
MAR (in %)	0.55	-0.02	0.31**	0.70	0.13	0.23	0.56	0.10	0.32
Delta MAR	-	-	-	*+0.39*	*-0.18*	*-0.08*	*+0.25*	*-0.21*	*-0.01*
t-test									
t_{SAR}	*(1.22)*	*(0.41)*	*(1.98)*	*(1.08)*	*(0.08)*	*(0.17)*	*(1.04)*	*(-0.29)*	*(0.86)*

*** 1% significance ** 5% significance * 10% significance

Panel 2

τ_{EV} [t_a; t_b]	[-5;-1]	[-1;0]	[-1;+1]	[0;+1]	[0;+5]	[+2;+5]	[2;+10]	[+2;+20]
MCR (in %)	0.54	0.53	1.44***	1.18***	1.99	0.81	0.24	0.59
t-stat	*(0.64)*	*(1.38)*	*(3.19)*	*(2.77)*	*(1.37)*	*(0.57)*	*(0.22)*	*(0.41)*
MCAR (in %)	-0.23	0.29*	0.99**	1.01**	2.03	1.02	0.96	2.02
t-test								
t_{SAR}	*(-0.43)*	*(1.69)*	*(2.01)*	*(2.15)*	*(1.62)*	*(0.49)*	*(0.96)*	*(0.35)*

*** 1% significance ** 5% significance * 10% significance

3.2 Announcement effects: Abnormal CDS spread reactions

To examine potential effects of contingent capital announcements on the issuing entities' credit default swap spread changes, we furthermore investigate the banks' abnormal CDS spread reactions before and after the CoCo bond announcement dates. In a first step, we predict the abnormal CDS spread changes with the rating index model, as described in section 3.3. To draw inferences from those predictions, we aggregate the abnormal changes and test them for statistical significance. Results are shown in Table 3.2.1.

Table 3.2.1: Abnormal CDS spread changes around the CoCo bond announcement date

The table reports the average abnormal CDS spread changes (*ASCs*) and the average cumulative abnormal CDS spread changes (*CASCs*) of the 24 sample banks for which 5-year senior CDS data was available around the CoCo bond announcement date t_0. The data is based on 54 CoCo bond announcements. ΔCDS and ΔCCDS report the absolute average and absolute average cumulative CDS spread changes in basis points, respectively.

Panel 1

Days (t)	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+10**
ΔCDS (in bps)	-0.03	0.07	-0.59	-0.71	-0.59	-1.45***	-0.54*	-0.94	-0.09
t-stat	*(-0.08)*	*(0.10)*	*(-0.85)*	*(-1.32)*	*(-1.12)*	*(-3.54)*	*(-1.89)*	*(-1.45)*	*(-0.19)*
Index Model									
ASC (bps)	-0.10	0.10	0.18	-0.23	-0.17	-0.93***	-1.00	-1.17*	-0.05
t-stat	*(-0.33)*	*(0.13)*	*(0.41)*	*(-0.47)*	*(-0.39)*	*(-2.73)*	*(-0.98)*	*(-1.76)*	*(-0.14)*

*** 1% significance ** 5% significance * 10% significance

Panel 2

τ_{EV} **[t_a; t_b]**	**[-5;-1]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**	**[+2;+5]**	**[2;+10]**	**[+2;+20]**
ΔCCDS (in bps)	-0.34	-0.52	-1.23	-1.30	-4.81***	-3.52***	-3.45**	-3.19
t-stat	*(-0.20)*	*(-0.48)*	*(-1.13)*	*(-1.45)*	*(-3.21)*	*(-3.21)*	*(-2.44)*	*(-1.13)*
Index Model								
CASC (in bps)	0.27	0.28	0.05	-0.05	-3.33	-3.27**	-2.48*	-1.90
t-stat	*(0.19)*	*(0.20)*	*(0.03)*	*(-0.05)*	*(-1.60)*	*(-2.27)*	*(-1.70)*	*(-0.80)*

*** 1% significance ** 5% significance * 10% significance

Our analysis shows that the absolute spread changes (*ΔCDS*) are slightly negative for all days immediately following the CoCo bond announcement. We do not find any statistically significant effects for day t_0 and day t_{+1}, however. Investigating the cumulative abnormal spreads, we find a significant spread tightening in the periods $\tau_{EV}[t_{+2};\ t_{+5}]$ and $\tau_{EV}[t_{+2};\ t_{+10}]$. Our results hence point to a lagged decrease in the abnormal CDS spreads of our sample banks in the period following the announcement date of a contingent capital issue. The slower reaction of CDS markets is slightly surprising, though the effect magnitude remains significant from an economic perspective at 5 bps. However, it appears that the effect is more pronounced for equity holders than for creditors. In order to disentangle the effects for initial and subsequent CoCo bond offerings, we again split the sample and investigate the spread changes within the sub-samples.

3.3 Extension – Initial vs. subsequent CoCo bond offerings

Our empirical results from section 3.1 point to a significant positive announcement effect on both unconditional and abnormal stock returns. However, from a theoretical perspective, it is conceivable that the effect is stronger for initial security offers than for subsequent offerings, as described above.

In order to disentangle the announcement effects for initial and subsequent CoCo bond offerings on abnormal stock returns, we create two new sub-samples: The first sub-sample (*SS1*) includes only announcements of initial security offerings, whereas the second sub-sample (*SS2*) includes only announcements of subsequent security offerings. If an institution in our sample has announced only one CoCo bond during the period January 2009 to June 2014, the announcement is included solely in the first sub-sample *(SS1)*. Results are shown in Tables 3.3.1 and 3.3.2.

Table 3.3.1: Announcement effects of initial CoCo bond announcements

The table reports the average abnormal stock returns (*MARs*) and the average cumulative abnormal stock returns (*MCARs*) of the 34 banks in our newly created sub-sample *(SS1)* for different time periods around the announcement date t_0. The analysis is based on 66 CoCo bond issues and includes solely initial security announcements. *Delta MAR* reports the MAR difference to t_0. *MR* reports the cross-sectional mean of the raw stock returns. *MCR* reports the mean of the cumulative raw returns. Test-statistics are shown in parentheses.

Panel 1

Days (t)	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+10**
MR (in %)	1.09	0.45	-0.08	1.57**	-0.06	0.29	0.34	-0.02	0.41
t-stat	*(1.39)*	*(0.99)*	*(-0.16)*	*(2.35)*	*(-0.09)*	*(0.43)*	*(0.53)*	*(-0.04)*	*(1.10)*
MAR (in %)	1.05**	0.02	0.14	1.09	0.33	0.41	0.76	0.24	0.59
Delta MAR	-	-	-	*+0.95*	*+0.19*	*+0.27*	*+0.62*	*+0.10*	*+0.46*
t-test									
t_{SAR}	*(2.40)*	*(0.43)*	*(1.21)*	*(1.50)*	*(0.76)*	*(0.60)*	*(0.40)*	*(-0.23)*	*(1.08)*

*** 1% significance   ** 5% significance   * 10% significance

Panel 2

τ_{EV} **[t_a; t_b]**	**[-5;-1]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**	**[+2;+5]**	**[2;+10]**	**[+2;+20]**
MCR (in %)	0.88	0.37	1.94***	1.50***	2.09	0.60	0.56	0.74
t-stat	*(0.69)*	*(0.68)*	*(3.17)*	*(2.69)*	*(0.92)*	*(0.26)*	*(0.33)*	*(0.34)*
MCAR (in %)	0.30	0.16	1.25*	1.22*	2.95*	1.73	1.70	3.31
t-test								
t_{SAR}	*(0.44)*	*(1.17)*	*(1.82)*	*(1.90)*	*(1.69)*	*(0.74)*	*(1.05)*	*(0.23)*

*** 1% significance   ** 5% significance   * 10% significance

Table 3.3.2: Announcement effects of subsequent CoCo bond offerings

The table reports the average abnormal stock returns (*MARs*) and the average cumulative abnormal stock returns (*MCARs*) of the 15 banks in our newly created sub-sample *(SS2)* for different time periods around the announcement date t_0. The analysis is based on 21 CoCo bond issues and includes solely subsequent security announcements. *Delta MAR* reports the MAR difference to t_0. *MR* reports the cross-sectional mean of the raw stock returns. *MCR* reports the mean of the cumulative raw returns. Test-statistics are shown in parentheses.

Panel 1

Days (t)	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+10**
MR (in %)	-0.02	-0.06	0.83	-0.16	-0.39	0.45	0.71**	0.39	-0.27
t-stat	*(-0.05)*	*(-0.20)*	*(1.58)*	*(-0.55)*	*(-0.85)*	*(0.83)*	*(2.10)*	*(1.28)*	*(-0.56)*
MAR (in %)	-0.25	-0.08	0.59*	0.07	-0.19	-0.06	0.24	-0.13	-0.12
Delta MAR	-	-	-	*-0.52*	*-0.78*	*-0.65*	*-0.35*	*-0.72*	*-0.71*
t-test									
t_{SAR}	*(-1.09)*	*(0.12)*	*(1.66)*	*(-0.16)*	*(-0.83)*	*(-0.49)*	*(1.18)*	*(-0.17)*	*(0.01)*

*** 1% significance ** 5% significance * 10% significance

Panel 2

τ_{EV} **[t_a; t_b]**	**[-5;-1]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**	**[+2;+5]**	**[2;+10]**	**[+2;+20]**
MCR (in %)	-0.01	0.78	0.61	0.67	1.83*	1.17	-0.27	0.35
t-stat	*(-0.01)*	*(1.64)*	*(1.00)*	*(1.01)*	*(1.78)*	*(1.50)*	*(-0.30)*	*(0.25)*
MCAR (in %)	-1.09	0.51	0.58	0.67	0.53	-0.13	-0.25	-0.06
t-test								
t_{SAR}	*(-1.26)*	*(1.26)*	*(0.94)*	*(1.06)*	*(0.47)*	*(-0.16)*	*(0.23)*	*(0.28)*
Significance								

*** 1% significance ** 5% significance * 10% significance

First-time announcements seem to have a stronger positive abnormal stock return effect than subsequent security offerings. Mean cumulative abnormal returns of initial offerings are significantly positive for $\tau_{EV}[t_{-1};\ t_{+1}]$, $\tau_{EV}[t_0;\ t_{+1}]$ as well as for $\tau_{EV}[t_0;\ t_{+5}]$, amounting to 1.25%-pts, 1.22%-pts, and 2.95%-pts, respectively. While the mean cumulative abnormal return impact of subsequent offers is still positive in the short term (between 0.5 and 0.6%-pts), they are no longer significant.

We furthermore observe a slightly more substantial decrease in abnormal CDS spreads of the banks in our cross-section at the announcement of an initial CoCo bond offering. The cumulative abnormal CDS spreads (*CASCs*) narrow significantly, on average, by around 8 basis points in event window period $\tau_{EV}[t_0;\ t_{+5}]$. Moreover, on all 5 days following the CoCo security announcement, both the unrestricted and the abnormal CDS reaction is negative. Results can be observed in Exhibit 3 (Appendix). It should be noted, however, that the sample size issue is exacerbated for the CDS analysis given the limited availability of data. Overall, the above observations indicate that the signaling hypothesis may hold credence. Banks issuing first-time CoCos are signalling a strategic change towards employing such hybrid capital instruments in order to strengthen their capital base while acknowledging the paradigm shift that limits the possibility of a government sanctioned bailout. Furthermore, they make use of a tax shield effect which might be positively received by shareholders. While there is some indication of positive effects for subsequent issues, possibly in support of the pecking order theory hypothesis, these are less pronounced. It should be noted, however, that the sample involved is relatively small and the strength of the test therefore limited.

3.4 Robustness tests

The *MAR* and *MCAR* results described above are robust to changes in the length of the estimation window. We compute the results for 50-, 75-, and 120-day T_{ES} periods. In all three alternative calibrations, we find a significant positive announcement effect on day t_0 as well as in the event window $\tau_{EV}[t_0;\ t_{+1}]$. The change in the estimation windows does not change the factor loadings, nor does it alter the average R_2 or the out-of-sample root mean squared errors of the market models markedly. We infer that the 90-day window is reasonably chosen. It should lastly be noted that alterations of the estimation window length change the sample slightly. To avoid including CoCo bond announcements in the estimation window, some observations, for banks that issue successive CoCos in relatively small time intervals, are dropped. Conversely, we include previously dropped observations when estimation windows are shortened. The fact that our results do not change supports the notion that our inferences are robust[15]. If we are less stringent with our sample cleaning procedure and include, for instance, issues that coincide with the release of other information, the magnitude of our results is diminished somewhat. This applies more strongly to the effect of abnormal stock returns than to CDS spread changes. It is possible that the effect of stock price movements is highly sensitive to market perceptions that can be influenced by many factors.

Inferences in section 3.2 are also robust to changes of the rating index model. While we initially split the index into the two S&P issuer rating categories 1) AAA to A and 2) BBB and lower, we also compute the results for the total index. We still find CDS spread decreases for both total and initial CoCo bond announcements.

It should be noted that our analysis might suffer from a slight self-selection bias, as our CDS sub-sample includes only those banks for which senior 5-year credit default swaps were available. Those banks that do not have actively traded CDS outstanding are not taken into account, which might have implications on the inferential power of our results. It is furthermore noteworthy that although CDS spreads generally tend to react very fast to the advent of new information, it seems that this is not the case for the investigated contingent capital announcements in our sample. In fact, we do not find any statistically significant effect on the immediate bond announcement day (t_0) or the day after (t_1), neither for initial nor for all hybrid debt securities in our sample. The announcement

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[15] Similarly, excluding individual banks that issue several tranches of CoCos at once (i.e. Lloyds) does not change the results.

effect is rather lagged and most evident in the period 5 to 20 days following the announcement.

3.5 Multivariate analyses

In previous sections, we identified significant positive abnormal stock returns in the immediate period that follows the announcement dates of our sample CoCo bonds. While we control for country-specific effects in the analysis of stock price reactions and entity-specific effects in the CDS spread investigation, we have not yet examined the role of the bond-specific features. In order to identify the design characteristics of the contingent capital securities that might affect the abnormal stock returns, we now regress bond-specific factors on the observed *MARs* and *MCARs* (as computed in section 3.1[16]). Those regressions take the following forms:

$$MAR(t) = \alpha_0 + \alpha_1 BONDSIZE + \alpha_2 TIMESPAN + \alpha_3 REGCAP + \alpha_4 CALL + \alpha_5 CONV + \alpha_6 TRIGGER + \varepsilon$$

$$MCAR(t_a, t_b) = \beta_0 + \beta_1 BONDSIZE + \beta_2 TIMESPAN + \beta_3 REGCAP + \beta_4 CALL + \beta_5 CONV + \beta_6 TRIGGER + \varepsilon$$

Since the size of a CoCo bond issue is likely to be connected with an issuer's post-announcement abnormal stock return, we include the variable *BONDSIZE* in our regression, where *BONDSIZE* is defined as the natural logarithm of the contingent capital security's face value over total capital at issuance as measured in US dollar terms[17]. Since

[16] For econometric issues that might arise from only very few observations, we do not conduct a multivariate analysis for the abnormal CDS spread reactions.

[17] If a bank has announced multiple CoCo bonds (or several CoCo bond tranches) on the same day, we take the aggregated notional value of all those securities. The face values that are issued in currencies other than the US dollar are converted in US dollars with the exchange rate prevailing on their respective issue date. Total capital is computed using last available data and represents size of the bank in the year prior to the issue. The data is winsorized at the 90th percentile to avoid our results being driven by outliers; this slightly reduces the relative *BONDSIZE* for two banks but not the inferences discussed below.

the lag between the announcement and the issue date might have an impact on the *MARs* and *MCARs*, we furthermore control for the variable *TIMESPAN*, which is defined as the number of days between the announcement and the ultimate issue date of the hybrid debt securities. This *TIMESPAN* variable is reported at announcement. In order to investigate to what extent the regulatory capital classification of the issued CoCos affects the abnormal stock price reaction, we also include the dummy variable *REGCAP* in our regression, which takes on the value 1 if the proceeds from the CoCo bond issue are classified as Additional Tier 1 capital and 0 if they are classified as Tier 2 capital. We furthermore control for the contingent capital's conversion mechanism and the inclusion of issuer call provisions with the dummy variables *CONV* and *CALL*, respectively. For a conversion-to-equity mechanism, the variable *CONV* takes on the value 1 and 0 for all other conversion types (e.g., such as temporary or permanent principal write-downs). The dummy variable *CALL* assumes the value 1 if the CoCo bond includes call provisions that may be exercised at the discretion of the issuer and assumes the value 0 for plain vanilla CoCo bonds without any embedded issuer call options. Lastly, we control for the hybrid bonds' trigger level by including the variable *TRIGGER*, which is a dummy variable taking on the value 1 for a conversion trigger level of 5.125% and above. We also examine the relation between the individual regressors by computing their pairwise correlations. The correlation matrix shows that the absolute values of the regressors' correlation coefficients are all below 0.5. We find a moderate positive correlation between the variable *REGCAP* and *TRIGGER* (φ = +0.45), though this is to be expected. CoCo bonds that are classified as AT1 capital are more likely to have a trigger level of exactly 5.125%. Given the small sample size inherent to our analysis, standard errors are inflated to a certain extent. While we are cautious about our inferences, we still find that some of the above-mentioned factors exert a statistically significant influence. Results for the abnormal stock return analysis (*MARs*) for different days t before and after the announcement day t_0 can be found in Table 3.5.1. Additionally, Table 3.5.2 reports the empirical results of the abnormal stock return analysis (*MCARs*) for different event window periods $\tau_{EV}[t_a; t_b]$.

Table 3.5.1: Bond-specific factors and abnormal stock returns (*MARs*)

The table shows the results of the multivariate regressions of the observed *MARs* on the bond-specific variables for different days t before and after the CoCo bond announcement day t_0. T-statistics are shown in parentheses. Coefficient estimates are reported in basis points. The regressions are based on 55 observations. If an institution has announced multiple CoCo bond tranches on the same day, the aggregated notional value of all issued CoCos by this issuer is taken into the regression equation. R_2 are reported in the bottom line of the table.

Days (t)	**0**	**+1**	**+2**	**+3**	**+4**
CONSTANT	-45.1	-268.7	397.1	382.3*	-91.3
	(-0.24)	*(-1.12)*	*(1.66)*	*(1.72)*	*(-0.37)*
BONDSIZE	-18.9	-69.9**	73.2**	64.6**	-9.6
	(-0.71)	*(-2.08)*	*(2.18)*	*(2.08)*	*(-0.27)*
TIMESPAN	3.9	-3.8	1.9	-3.5	-7.0
	(0.80)	*(-0.62)*	*(0.31)*	*(-0.63)*	*(-1.10)*
REGCAP	142.7*	39.3	-30.5	-114.4	20.0
	(1.84)	*(0.40)*	*(-0.31)*	*(-1.27)*	*(0.20)*
CALL	-107.2	-197.3*	95.5	102.6	67.3
	(-1.18)	*(-1.73)*	*(0.84)*	*(0.97)*	*(0.56)*
CONV	32.2	66.9	14.9	43.4	70.3
	(0.48)	*(0.79)*	*(0.18)*	*(0.56)*	*(0.80)*
TRIGGER	-155.8**	49.1	13.9	91.3	88.4
	(-2.19)	*(0.55)*	*(0.16)*	*(1.10)*	*(0.95)*
Adj. R^2	*0.03*	*0.02*	*-0.00*	*0.04*	*-0.02*

*** 1% significance ** 5% significance * 10% significance

Table 3.5.2: Bond-specific factors and cumulative abnormal stock returns (*MCARs*)

The table shows the results of the multivariate regressions of the observed *MCARs* on the bond-specific variables for different event window periods. T-statistics are shown in parentheses. Coefficient estimates are reported in basis points. The regressions are based on 55 observations. If an institution has announced multiple CoCo bond tranches on the same day, the aggregated notional value of all issued CoCos by this issuer is taken into the regression equation. R^2 are reported in the bottom line of the table.

τ_{EV} **[t_a; t_b]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**
CONSTANT	-122.5	-391.2*	-313.8	494.7
	(-0.76)	*(-1.70)*	*(-1.67)*	*(0.55)*
BONDSIZE	-32.9	-102.8***	-88.8***	72.0
	(-1.45)	*(-3.19)*	*(-3.37)*	*(0.57)*
TIMESPAN	3.3	-0.4	0.1	-10.5
	(0.81)	*(-0.08)*	*(0.02)*	*(-0.46)*
REGCAP	29.8	69.0	182.0**	19.8
	(0.45)	*(0.74)*	*(2.39)*	*(0.05)*
CALL	-117.3	-314.6***	-304.5***	108.7
	(-1.52)	*(-2.88)*	*(-3.40)*	*(0.25)*
CONV	-30.4	36.5	99.1	267.9
	(-0.53)	*(0.45)*	*(1.50)*	*(0.84)*
TRIGGER	6.6	55.7	-106.6	*87.3*
	(0.11)	*(0.65)*	*(-1.52)*	*(0.26)*
Adj. R^2	*-0.02*	*0.15*	*0.24*	*-0.07*

*** 1% significance ** 5% significance * 10% significance

We observe a significant negative coefficient for the variable *BONDSIZE* on day t_{+1} in Table 3.5.1, pertaining to daily abnormal announcement effects (*MAR)*. This indicates that larger issues reduce positive abnormal returns associated with the announcement. This may be a function of the higher cost associated with CoCo issues; for larger issues, the costs begin to decrease investor optimism. Alternatively, investors may be more apprehensive about the potential of dilution if the issue represents a larger proportion of the institutions capital base.[18] For the event window period $\tau_{EV}[t_0;\ t_{+1}]$, we find similar results (see Table 3.5.2). The issue size affects the immediate positive announcement effect of the bonds in our sample negatively. The subsequent sign-reversal may be a function of the market appreciating new capital, issued under the auspices of the above-mentioned tax shield. We furthermore find that *CALL* is associated with an *MCAR* reduction in the period $\tau_{EV}[t_0;\ t_{+1}]$. Including a call provision reduces the cumulative abnormal returns by about 300 basis points. This observation is robust over different estimation windows[19]. A call provision enables the issuer to retract the bond in favor of cheaper sources of financing, typically at the issuers discretion. A call provision acts as a negative signal to counteract the positive effect of the issue itself; it may represent lacking commitment on the part of management as regards the purpose of the CoCo in avoiding bankruptcy. It is telling that the negative effect of a call signal is larger, in absolute magnitude, than the original average effect of the emission itself. Whether a bond can be considered Tier 1 capital is also associated with positive abnormal returns. This too follows from the logic of our above argumentation; the market values the bank´s ability of gaining additional Tier1 capital without issuing equity. Finally *TRIGGER* is associated with longer-term positive *MCARs*, indicating that investors place value in CoCo bonds with relatively low financing costs. The persistence of the *TRIGGER* effect is particularly telling.

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[18] In subsequent days, the coefficient becomes positive. This reversal may indicate that, while a larger issue is associated with a lower announcement effect, it allows a bank to grow.

[19] The explanatory power the multivariate model yet decreases for longer event window periods.

4 Conclusion

This paper investigates announcement effects of contingent convertible securities on stock returns and credit default swap spreads. For the CoCo issuers in our sample, we find significant positive abnormal stock price reactions and significant negative abnormal CDS spread changes in the immediate period following the announcement date. These reactions are more pronounced for first-time issuers. Call provisions reduce the size of the effect.

We explain the negative CDS spread reactions by the additional layer of protection that CoCo bonds offer to senior creditors. In the face of a changing regulatory framework that makes government-induced bail-outs less likely, the additional protection can be valuable in future years. Moreover, since CoCos also reduce the likelihood of an all-out default, the bankruptcy risk drops and the CDS spreads therefore narrow.

We explain the positive announcement returns of the banks' stocks by suggesting that the issue of a CoCo bond includes a positive signal for equity investors. The decision in favor of CoCos and against common equity (which ranks lower in the pecking order) might be positively received by market participants. Moreover, with CoCo bonds, a financial institution can exploit the tax shield effect that is associated with those hybrid debt securities. Anticipating that this effect might positively influence shareholder value, equity owners seem to interpret the issuance of CoCo bonds as a positive signal.

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Appendix:

Exhibit 1: Nominal issue volumes of global contingent convertible securities

The graph shows the nominal issue volumes of contingent convertible securities that have been issued by global financial institutions during the period 1 January 2009 to 30 June 2014 on a quarterly basis. Figures are reported in billion US dollars.

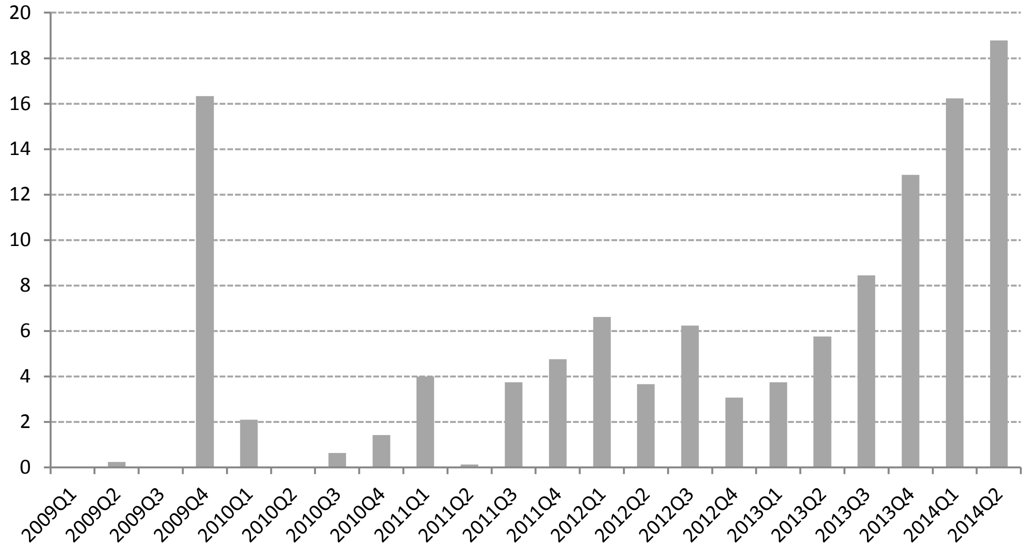

Exhibit 2: Abnormal stock returns around the CoCo bond issue date

The table reports the average abnormal stock returns (*MARs*) and the average cumulative abnormal stock returns (*MCARs*) of the 28 banks in our sub-sample for different time periods around the CoCo bonds' issue dates t_{i0}. The analysis is based on 78 CoCo bond issues that have been issued on 46 different dates and includes both initial and all subsequent bond issues. *Delta MAR* reports the *MAR* difference to t_0. *MR* reports the cross-sectional mean of the raw stock returns. *MCR* reports the mean of the cumulative raw stock returns. Test-statistics are shown in parentheses.

Panel 1

Days (t_i)	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+10**
MAR (in %)	0.49	-0.51	0.07	0.23	-0.05	0.05	0.09	-0.05	0.21
Delta MAR	-	-	-	*+0.16*	*-0.12*	*-0.02*	*+0.02*	*-0.12*	*+0.14*
t-test									
t_{SAR}	*(1.07)*	*(-1.10)*	*(-0.36)*	*(1.09)*	*(0.29)*	*(0.39)*	*(0.24)*	*(-0.04)*	*(0.86)*

*** 1% significance ** 5% significance * 10% significance

Panel 2

τ_{EV} **[t_a; t_b]**	**[-5;-1]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**	**[+2;+5]**	**[2;+10]**	**[+2;+20]**
MCAR (in %)	-0.79	-0.43	-0.20	0.30	0.34	0.04	0.57	-0.43
t-test								
t_{SAR}	*(-0.78)*	*(-1.03)*	*(-0.22)*	*(0.50)*	*(0.73)*	*(0.59)*	*(0.82)*	*(-0.27)*

*** 1% significance ** 5% significance * 10% significance

Exhibit 3: Announcement effects: abnormal CDS spread reactions of initial CoCo bond offering announcements

The table reports the average abnormal CDS spread changes (*ASCs*) and the average cumulative abnormal CDS spread changes (*CASCs*) of the 24 sample banks for which 5-year CDS data was available around the CoCo bond announcement date t_0. The analysis includes solely the initial CoCo bond offerings. ΔCDS and ΔCCDS report the absolute average and absolute average cumulative CDS spread changes in basis points, respectively.

Panel 1

Days (t)	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+10**
ΔCDS (in bps)	0.09	1.25	-0.13	-1.48	-1.72*	-1.09*	-0.37	-2.30*	-0.13
t-stat	*(0.15)*	*(1.07)*	*(-0.11)*	*(-1.34)*	*(-1.77)*	*(-1.91)*	*(-0.82)*	*(-1.70)*	*(-0.27)*
Index Model									
ASC (bps)	0.53	0.11	-0.16	-1.37	-0.78	-1.13**	-2.32	-2.37*	0.09
t-stat	*(1.10)*	*(0.07)*	*(-0.11)*	*(-1.54)*	*(-1.02)*	*(-2.05)*	*(-1.03)*	*(-1.75)*	*(0.20)*

*** 1% significance ** 5% significance * 10% significance

Panel 2

τ_{EV} **[t_a; t_b]**	**[-5;-1]**	**[-1;0]**	**[-1;+1]**	**[0;+1]**	**[0;+5]**	**[+2;+5]**	**[2;+10]**	**[+2;+20]**
ΔCCDS (in bps)	3.20	1.12	-0.36	-1.61	-7.09**	-5.48**	-5.84**	-5.97
t-stat	*(0.95)*	*(0.51)*	*(-0.17)*	*(-1.08)*	*(-2.49)*	*(-2.45)*	*(-2.55)*	*(-1.39)*
Index Model								
CASC (in bps)	2.79	-0.05	-1.42	-1.52	-8.13**	-6.61**	-6.46**	-6.36*
t-stat	*(0.96)*	*(-0.02)*	*(-0.43)*	*(-0.84)*	*(-1.96)*	*(-2.23)*	*(-2.54)*	*(-1.67)*

*** 1% significance ** 5% significance * 10% significance