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Abstract

Using a comprehensive dataset on issuances and holdings of contingent convertible debt instruments (CoCos) issued by European banks we investigate who invests in European CoCos. The results indicate that most European CoCos are not directly held by euro area investors. Foreign investors outside the euro area and investment funds located in Ireland and Luxembourg hold the large majority. Euro area banks, insurers and pension funds only have very limited direct exposures. Households in the euro area hold almost no direct positions in European CoCos, although there could be indirect holdings through non-euro area entities and euro area investment funds. Concerns for contagion through cross-holdings of CoCos by banks seem to be unwarranted.

Keywords: contingent convertible debt, CoCos, banks, systemic risk, securities holdings.
JEL classification: G11, G21, G23.

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1 Introduction

After the global financial crisis of 2008-2009, European banks have been increasingly relying on a new type of debt instrument: contingent convertible debt instruments or CoCos. These instruments enable banks to raise buffer capital at lower costs compared to equity issuances. CoCos are subordinated fixed-income bonds that regularly pay relatively high coupons until a built-in trigger event occurs. This contractual trigger clause is typically activated by a breach in capital requirements, but could also be activated at regulatory discretion when banks get into trouble. When this happens, CoCos either automatically convert to equity or are written down. In this way, CoCos increase banks' loss-absorption capacity. However, depending on the terms of conversion, a trigger event may mean that CoCos holders bear losses before equity is wiped out. CoCos may thus prevent bank failures if the trigger event occurs at a bank that remains a going concern and the bank is automatically recapitalized in times of distress. In theory, CoCos make it more likely that taxpayers will be insulated from losses associated with bailing out banks.(Flannery, 2014; Koziol and Lawrenz, 2012)

On the supply side, the CoCo market in Europe has expanded very rapidly in recent years. Since the first CoCo issuance by Lloyds Banking Group in November 2009, by the end of 2015 64 European banks had raised additional capital through the issuance of CoCos. The majority of these CoCos have been issued by British and Swiss banks. The total outstanding amount of CoCos issued by European banks tripled between 2012 and 2015 to reach a record high of EUR 157 billion.

Banks' appetite to issue CoCos was particularly strong in Europe as new rules and regulations were being shaped in response to the financial crisis. To fulfil regulatory requirements, European institutional frameworks incorporated the use of CoCos, for example in the European implementation of the Basel III Accord, European Capital Requirements Regulation (CRR), the European Bank Recovery and Resolution Directive (BRRD) and the European Banking Authority (EBA) requirements on bank's liquidity coverage ratio (LCR). These regulatory developments also affected important design features of European CoCos,

such as trigger level and maturity period (Boermans et al., 2014; Avdjiev et al., 2015). A burgeoning theoretical literature studies the different CoCo characteristics.[1] However, empirical work on CoCos is still very limited and mostly focuses on bond yields (Hesse, 2016; Vallee, 2015; Avdjiev et al., 2015; Bethke, 2014; Avdjiev et al., 2013).

This study contributes to the empirical literature on the CoCo market. One major gap in the literature is that very little is known about the holders of CoCos. Evidently, European banks are only able to sell CoCos if there are investors willing to buy these securities. The rapid growth of the market thus also implies strong demand for CoCos. However, as noted by Avdjiev et al. (2015): "information on the evolution of CoCo investor base is not systematically collected by supervisors and is rather scarce." In their work they use data from Dealogic from 17 individual bonds with only a total amount outstanding of EUR 13 billion to obtain highly preliminary data from primary market holders of these CoCos to provide details on which investors bought CoCos at the moment of issuance (between April 2013 and March 2014). These initial placement data suggest that private banks and retail investors bought over half of the CoCos, while asset management companies purchased another 27%, and the rest was acquired by hedge funds (9%), banks (3%) and insurers (3%). In terms of geographic allocations the primary market data of Avdjiev et al. (2015) suggest that the main "investors" come from the UK, euro area and the US.

The main contribution of this paper is that we use comprehensive data on both CoCo issuances and holdings to provide insights on who invests in European CoCos. We benefit from a broad data collection of security-by-security holdings from euro area investors to determine who holds European CoCos. In contrast to Avdjiev et al. (2015), we find that most CoCos are not directly held by the euro area banking sector. More specifically, we show that euro area financial investors in general, including banks, insurers and pension funds, only had very limited direct exposures to CoCos by the end of 2015. Foreign investors outside the euro area and euro area investment funds located in Ireland and Luxembourg hold the large majority of

[1]See e.g. Flannery (forthcoming); Chan and van Wijnbergen (2017); Martynova and Perotti (2015); Sundaresan and Wang (2015); Chan and van Wijnbergen (2014); Hilscher and Raviv (2014); Calomiris and Herring (2013); Bolton and Samama (2012); Glasserman and Nouri (2012); Pennacchi et al. (2011).

European CoCos. Households have almost no direct investments in European CoCos, although they could have indirect exposures via investment funds, which we cannot attribute further to the investors in those funds. The findings are highly relevant to increasing our understanding of whether, and if so how CoCos reduce systemic risk in the European banking sector. Policy makers want to know more about the financing conditions of European banks. Like with equity holdings, greater insights about the investor base of European CoCos could point to possible bank's capital funding dependencies on foreign investors. Finally, by shifting risks (outside the European banking sector) to other investors who can better withstand shocks in the banking sector, contagion risks are reduced by CoCo placements. In particular, early concerns about contagion through cross-holdings of each other's CoCos by banks seem unwarranted (Chan and van Wijnbergen, 2014).

This paper is structured as follows. Section 2 provides more information on the granular CoCo data used in this study. Section 3 gives an overview of the results and explains who holds European CoCos and Section 4 concludes.

2 Data

We have manually collected security-by-security CoCo data of European banks over the period 2009-2015. Our sources include Bloomberg, Dealogic, reports by Barclays and Moody's, company websites and individual prospectus information. The data include 194 individual bonds, issued by 64 different European banks.[2] Nearly half (49 percent) of the amount issued stems from banks located in Switzerland and the United Kingdom. EUR 66 billion is issued in euro denominated debt (42 percent) and EUR 63 billion in USD. Most CoCo issuances took place in 2014. By end-2015 the total value of the outstanding European CoCos was EUR 157 billion. These aggregates presented in Figure 1 are comparable to those reported by Boermans et al. (2014) and Avdjiev et al. (2015) as well as to figures published in the Financial Times (2016).

[2] Several banks also issue 'copies' of the regular CoCos under the so-called Rule 144A creating an additional ISIN code for each CoCo. In total we have an additional 19 such instruments included in the holdings analysis.

[Insert Figure 1 about here.]

On the holdings side we use a confidential dataset from the ESCB that contains information on bond holdings of euro area investors (ECB, 2015; Boermans and Vermeulen, 2016). This data was compiled by euro area national central banks under a harmonized, mandatory reporting scheme to ensure high data quality and coverage. The holdings are collected at the individual security level and are made available at the country-sector holder level. We distinguish between the following euro area investor sectors: banks, insurers, pension funds, other financial intermediaries, mutual funds, non-financial corporations and households. Data on individual issuances are matched with holdings data using the ISIN code of individual CoCos.

A major benefit of our holdings data over primary market data is that it covers the 2015 year-end positions of different investor sectors from the euro area. A limitation is that some investors may use investment vehicles like mutual funds to hold indirect positions in CoCos. These holdings would show up as mutual fund holdings. We cannot identify end-investors of these funds because the dataset does not inform us which individual mutual funds hold the CoCos. This is especially relevant for households which often use mutual funds for investments, thus creating a possible downward bias in our estimate of households' total (direct and indirect) exposures. In addition, we do not have information on the holdings of non-euro area investors. Hence, we apply a residual approach to calculate the non-euro area holdings, which we classify as foreign holder sector.

3 Results

Table 1 shows that euro area investors hold EUR 41 billion in European CoCos, which is 26 percent of the total amount outstanding. These results imply that most CoCos are held by investors outside the euro area. Of the euro area investors, investment funds are the main holders of European CoCos. These funds hold EUR 32 billion or 20 percent of the total amount outstanding. Bank holdings are very limited. Euro area banks hold only EUR 2.2 billion, suggesting that cross-holdings among banks do not pose any direct systemic risk.

These limited bank holdings are to be expected, because CoCo bonds issued by banks, like minority stakes in other banks, need to be netted out against capital, effectively imposing a 100% capital requirement making such holdings relatively expensive for banks. The difference with the results reported in (Avdjiev et al., 2015) is most likely due to the fact that they report primary buyers only; the banks holding CoCos in their data are probably primary dealer banks with temporary holdings of CoCos on their balance sheet only.

[Insert Table 1 about here.]

Insurers' and pension funds' total direct exposures to European CoCos are EUR 3.5 billion. This shows that these long-term investors have little interest in bearing the risks of contingent capital. Households in the euro area invest EUR 1.7 billion in CoCos directly. Although non-negligible, households face significant hurdles when investing in these bonds due to the high minimum amounts to be invested. In addition, investments by retail investors have generally been strongly discouraged by regulators. However, we do not know whether households have indirect exposures to CoCos via euro area mutual funds or non-euro area entities. Household investing in bond markets tend to use mutual funds for investments.

Table 1 shows that non-euro area investors hold EUR 116 billion or, using a residual approach, nearly 75 percent of the total amount outstanding of European CoCos. These foreign investors are the dominant holders. As can be seen in Figure 1, however, about half of the issuances stem from banks in the United Kingdom and Switzerland. One may therefore expect an important share of the non-euro area investors to come from these regions, in line with the widely documented home bias in investment portfolios (Boermans and Vermeulen, 2016). On the other hand, only 11 percent is denominated in GBP and only 5 percent in CHF, against for example 40 percent in USD. Taken together, this suggests that a large part of the European CoCo holders may be non-European investors after all.

Table 2 gives a further breakdown of the CoCo holdings by euro area investment funds. The analysis indicates that it is mainly funds from Luxembourg and Ireland that are holding CoCos. This may be due to the relatively large size of these sectors in those countries and

presumably to the tax advantages associated with basing investment funds in those locations. It is also possible that foreign investors (i.e. not from Luxembourg or Ireland) use these funds to channel their capital to CoCos: both countries have large capital inflows from both euro area and non-euro area investors, thus making it difficult to identify the locations of the funds' end-investors (Zucman, 2013).

[Insert Table 2 about here.]

4 Conclusion

This study provides new insights on the ownership of European contingent convertible debt. Better understanding of who holds CoCos in their portfolios is highly relevant from a financial stability perspective. The academic literature has highlighted the increased potential for systemic risk when highly leveraged entities buy CoCos, or when cross-holdings of CoCos emerge within the banking sector. Our empirical analysis suggests that these fears have not materialized. In particular cross-holdings of CoCos by euro area banks are negligible and to the extent that they exist at all probably mainly reflect temporary holdings by primary dealer banks. Overall, euro area financial entities' direct exposures to European CoCos seem very limited.

The data suggest that mostly foreign investors from outside the euro area, possible mainly non-European investors, invest in European CoCos. In addition, investment funds from Luxembourg and Ireland hold significant positions. But we should strike a cautionary note: because of their lack of transparency as to their ultimate beneficial owners and/or their investor base, we cannot exclude the possibility that euro area investors may still be 'end owners' of these CoCos through indirect exposures linked to foreign entities and investment funds. Our findings do highlight that European banks' CoCo financing needs for a significant part depend on the appetite of foreign investors to buy these instruments. Future research in this area is warranted and could benefit from a time-series analysis to show how investment positions in

European CoCos have shifted over time and what the links are between the issuing bank's residence and the location of the holders of CoCos.

References

Avdjiev, S., Bolton, P., Jiang, W., Kartasheva, A. and Bogdanova, B. (2015). CoCo bonds issuance and bank funding costs: An empirical analysis, *Mimeo* .

Avdjiev, S., Kartasheva, A. V. and Bogdanova, B. (2013). CoCos: A primer, *BIS Quarterly Review* **43**.

Bethke, N. (2014). Contingent convertible (coco) bonds: A first empirical assessment of selected pricing models, *Financial Analysts Journal* **70**(2): 59.

Boermans, M., Petrescu, S. and Vlahu, R. (2014). The future of CoCos, *VoxEU* **17 November**.

Boermans, M. and Vermeulen, R. (2016). International investment positions revisited: Investor heterogeneity and individual security characteristics, *DNB Working Paper* **351**.

Bolton, P. and Samama, F. (2012). Capital access bonds: Contingent capital with an option to convert, *Economic Policy* **27**(70): 275–317.

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

Chan, S. and van Wijnbergen, S. (2014). CoCos, contagion and systemic risk, *Tinbergen Institute Discussion Papers* **110**.

Chan, S. and van Wijnbergen, S. (2017). CoCo design, risk shifting incentives and financial fragility, *ECMI Working Paper* **2**.

ECB (2015). Who holds what? New information on securities holdings, *Economic Bulletin* **2**: 72–84.

Financial Times (2016). Global sales of CoCo bonds fall by almost a third in 2016, **14 November**.

Flannery, M. J. (2014). Contingent capital instruments for large financial institutions: A review of the literature, *Annu. Rev. Financ. Econ.* **6**(1): 225–240.

Flannery, M. J. (forthcoming). Stabilizing large financial institutions with contingent capital certificates, *Quarterly Journal of Finance* .

Glasserman, P. and Nouri, B. (2012). Contingent capital with a capital-ratio trigger, *Management Science* **58**(10): 1816–1833.

Hesse, H. (2016). CoCo bonds and risk: The market perception, *Mimeo* .

Hilscher, J. and Raviv, A. (2014). Bank stability and market discipline: The effect of contingent capital on risk taking and default probability, *Journal of Corporate Finance* **29**: 542–560.

Koziol, C. and Lawrenz, J. (2012). Contingent convertibles: Solving or seeding the next banking crisis?, *Journal of Banking and Finance* **36**(1): 90–104.

Martynova, N. and Perotti, E. (2015). Convertible bonds and bank risk-taking, *DNB Working Paper* **480**.

Pennacchi, G., Vermaelen, T. and Wolff, C. (2011). Contingent capital: The case for COERCs, *Journal of Financial and Quantitative Analysis* **49**(3): 541–574.

Sundaresan, S. and Wang, Z. (2015). On the design of ocntingent capital with a market trigger, *Journal of Finance* **70**(2): 881–920.

Vallee, B. (2015). Contingent capital trigger effects: Evidence from liability management exercises, *Mimeo* .

Zucman, G. (2013). The missing wealth of nations: Are Europe and the US net debtors or net creditors?, *Quarterly Journal of Economics* **128**(3): 1321–1364.

Table 1: European CoCo holdings by holder sector

Euro area investors:	**40.93**
Banks	2.23
Insurers	2.82
Investment funds	32.00
Non-financial corporations	0.40
Other financial intermediaries	1.03
Pension funds	0.72
Households	1.73
Foreign investors:	**115.82**
Total	**156.75**

Notes: End 2015 positions at market values (including accrued interest), in bln EUR. The data on households also includes third-party holdings information for euro area custodians. That is, if households buy debt instrument using a non-resident custodian, there investment will still be included in our data as long as a euro area investor uses a custodian located in the euro area. 19 additional Rule 144A instruments were included.

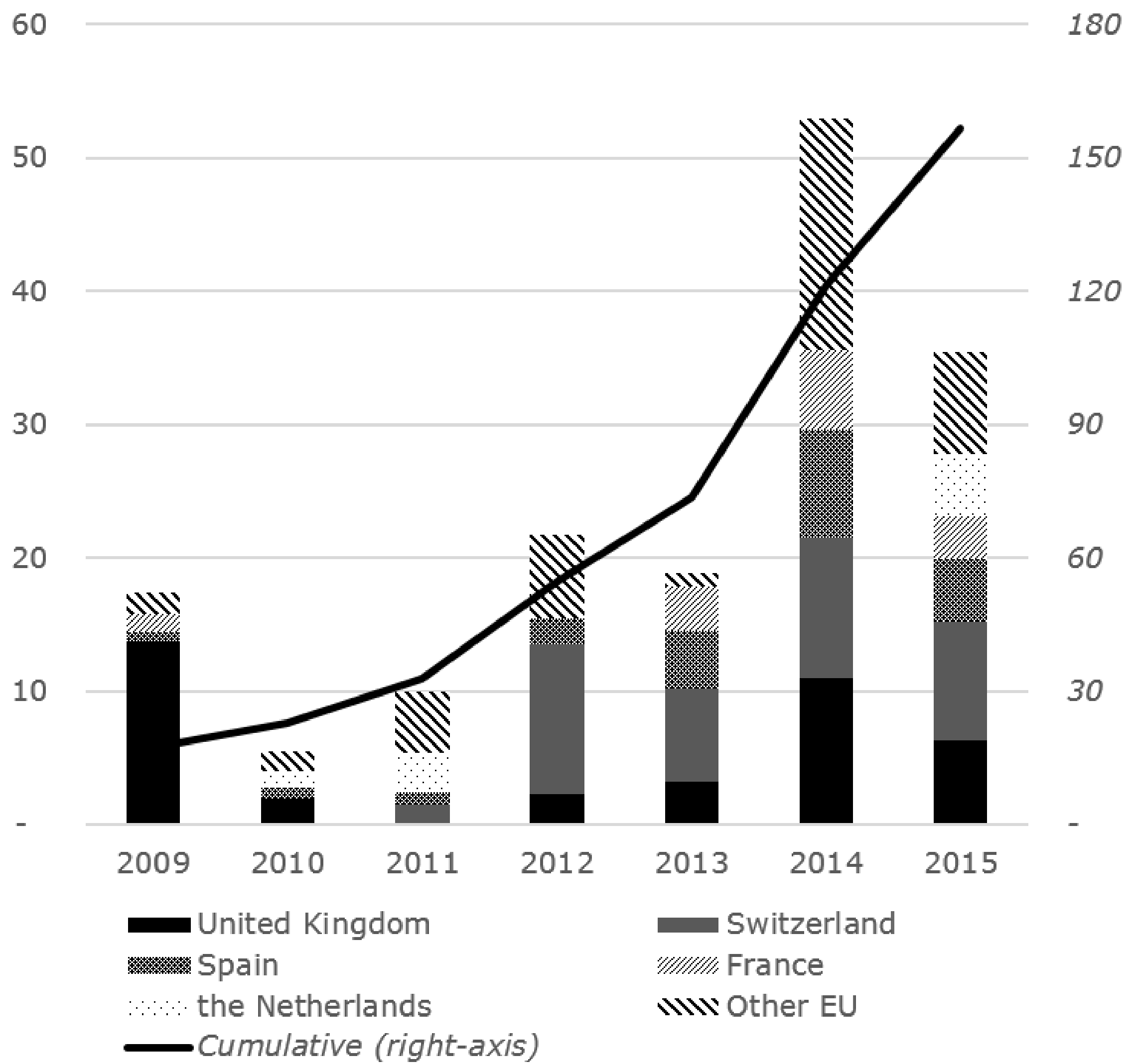
Table 2: European CoCo holdings by euro area investment funds

Luxembourg	14.60
Ireland	8.96
France	4.01
Germany	1.41
Italy	1.15
Finland	0.63
Spain	0.57
the Netherlands	0.53
Other (euro area)	0.14
Total:	32.00

Notes: End 2015 positions at market values (including accrued interest), in bln EUR.

[Figure 1 about here.]

Figure 1: Issuance trends of European CoCos



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