Non-dilutive CoCo Bonds: A Necessary Evil?
Andrea Gamba, Yanxiong Gong, Kebin Ma
Warwick Business School

Abstract
We empirically document and theoretically investigate why non-dilutive CoCos are prevalent, even though advocates of CoCos suggest such securities should be dilutive to reduce bank risk-taking. In an agency model with two subsequent moral hazards, we show that while dilutive CoCos deter ex-ante risk-taking and prevent a bank from being undercapitalized, penalizing existing shareholders with dilution when the bank is already undercapitalized leads to risk shifting. CoCos’ designs and risk implications depend on banks’ equity capitalization, with non-dilutive CoCos particularly attractive to capital-constrained banks, because such securities can maximize the banks’ financing capacity by tackling only the ex-post risk shifting.

CoCo Designs
- X: conversion trigger CoCos are going-concern securities: X > R > D
- F: face value in the non-conversion state (R)
- J: fraction of shares to CoCo holder at conversion (R’)
- A CoCo bond is dilutive if J(R’ – D) > F

Necessary Evil: a compromise in design that sacrifices ideal risk management for financing capacity.

Key Messages:
- Capital-constrained banks prefer the necessary-evil design of CoCo bonds because of its high financing capacity.
- The necessary-evil design must be non-dilutive.
- Non-dilutive CoCos discourage ex-post risk-shifting regardless of banks’ equity capitalization.
- Dilutive CoCos avoid both ex-ante and ex-post risk-shifting when the bank is well-capitalized.
- Dilutive CoCos fail to correct incentives when the bank is under-capitalized.

Empirical Strategy
- Use (all-in-drawn) loan spreads from the syndicated loan market.
- CoCo issuances by G-SIBs from 2009 to 2019
- Treatment: bank being in a country where CoCo is AT1
- Event: issuance of CoCo (first occurrence in 2013)
- Each bank has its own event date.
- Empirical model at loan level:

$$\text{Spread}_{i,t} = a_0 + b_0 \text{DiD}_{i,t} + b_1 \text{DiD}_{i,t-1} + \beta_2 \text{DiD}_{i,t-1} + \text{Treat}_{i} + \gamma_1 \text{X}_{i,t-1} + \gamma_2 Y_{i,t-1} + \epsilon_{i,t}$$

[loan facility i, borrower b, lender l, year t]

AT1 designation of CoCos

AT1 designation of CoCos

Conclusion
The prevalence of non-dilutive CoCos:
- We emphasize agency costs and financing capacity.
- We show that non-dilutive CoCos offer higher financing capacities and therefore are preferred (necessary evil) by constrained banks.
- Evaluate and rationalize CoCos designation in the (AT1) capital stack:
  - better than subordinate debt and equity.
  - CoCos are no substitute for bank equity.

Reference

Table 1: CoCos in UK banks

<table>
<thead>
<tr>
<th>Bank (parent company)</th>
<th>Active CoCos (equity conversion)</th>
<th>% as Tier 1 capital</th>
<th>Conversion price</th>
<th>Market price of bank stock (as at 20 Apr 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSBC</td>
<td>25</td>
<td>13.95%</td>
<td>£2.70 per share</td>
<td>£8.16 per share</td>
</tr>
<tr>
<td>Barclays</td>
<td>11</td>
<td>19.57%</td>
<td>£2.75 per share</td>
<td>£9.11 per share</td>
</tr>
<tr>
<td>London</td>
<td>7</td>
<td>17.37%</td>
<td>£0.61 per share</td>
<td>£8.31 per share</td>
</tr>
<tr>
<td>Standard Chartered</td>
<td>3</td>
<td>11.32%</td>
<td>£2.28 per share</td>
<td>£9.33 per share</td>
</tr>
<tr>
<td>Standard Chartered</td>
<td>4</td>
<td>12.65%</td>
<td>£5.66 per share</td>
<td>£8.04 per share</td>
</tr>
</tbody>
</table>

*In Figure 1-2, blue, red and grey lines represent possible designs of safe, necessary evil and risk-shifting, respectively.

**In Figure 3-4, the numbers stand for the number of moral hazard problems allowed under the design. Black, red and blue lines represent possible designs of CoCo, non-voting shares and subordinated debt, respectively.

Empirical Findings
- CoCo issuers charge higher loan spreads than non-issuers.
- Well-capitalized CoCo issuers charge lower spreads compared to undercapitalized CoCo issuers.
- CoCo issuance reduce banks’ risk-taking in lending activities.

Agency Problem
- Owner/manager banker, with endowment E and access to insured retail deposits D, runs a bank by investing in $1 loan portfolio.
- Assuming D > E < $1, she raises external financing by issuing CoCos.
- We will compare CoCos to other forms of regulatory capital.
- Banker’s moral hazard problems:
  - Inefficient ex-ante-shirking
  - Ex-post risk-shifting

Figure 1: Low agency cost

Figure 2: High agency cost

Figure 3: CoCo vs Non-voting Shares

Figure 4: CoCo vs Subordinated Debt

Figure 5: CoCo vs Non-voting Shares