

CoCos, Bail-In, and Tail Risk

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Overview

- This paper studies the incentive effects of contingent convertible debt (CoCos) in a structural model that assumes a jump diffusion process and allows for endogenous default by the stockholders.
- The authors investigate in a comprehensive way, how Coco's design affects:
 - debt and equity value
 - timing of bankruptcy
 - risk-sensitivity of equity
 - propensity for asset substitution
 - extent of debt overhang as an obstacle to raising capital

Jump-diffusion

model of the firm's income and asset value

- Does the value of financial institutions follow a jump diffusion process?
- A jump in the value of financial institutions is usually a result of fraud or disability to monitor asset value.
- How rare is the frequency of a jump in depository institutions?
 - Empirical calibration?
 - Bank assets may be similar to some portfolio of MBS or CDO (again, problem of limited information/liquidity)

Default: Exogenous vs. Endogenous

- “*Exogenous*” – default event does *not depend on an equity value maximizing decision* by shareholders – results instead from triggering of *covenants* or other *exogenous constraints* (Brennan & Schwartz 1978, Longstaff & Schwartz 1995)
- “*Optimal Default (endogenous)*” – default is triggered by equity holders in a way that maximizes equity value. Shareholders can decide not to default but issue more stock, pay coupon in cases where dilution is better than zero value (Leland, 1994; Mello & Parsons 1992)

Who trigger default in Financial institution in time of systemic crisis?

- *Stockholders* – consistent with the paper view
- *Bondholders/ Subordinated debt holders* – by not willing to provide loans or to deposit at the bank anymore.
- *Secured depositors* – “Run on a bank”
- *Government/Regulators* – according to some capital ratio
- *Maybe the story is more complicated?*
 - None of the above is **entirely accurate ???**
 - All answers are right
 - There is more than one answer

Motivation for having a leverage firm

- According to Leland (1994) framework, the main motivation for having leverage is the tax advantage of debt that allows shareholders to shield part of the income from taxation.
 - Is it the motivation of depository institutions?
 - Are the coupon payments of coco tax deductible?
- Leverage is limited because debt financing increases the likelihood of costly financial distress (deviation from the “Modigliani - Miller world”).
 - What is the flexibility of financial institutions to issue debt in time of financial distress?

Absolute Priority Rule and the government/regulator position

- In the model, absolute priority rule is not respected : Chapter-11 versus Ch-7.
 - Is it the case for depository institutions?
 - What is the FDIC reaction?
 - Is there a need for a model with a new framework where the government may intervene long before a legal bankruptcy event?
- “Out of court” solution is not modeled.
 - What is the government intervention policy?
 - Is the government position taken into account (somehow the motivation for Coco)?

Model Calibration

- In Leland (1994) default occurs far below the point where the value of assets equals the value of the liabilities.
- However, regulated commercial banks need to have some minimum capital adequacy, otherwise the regulator has to take some measures. In the paper, conversion threshold is located far below this capital threshold:
- Debt principal : Deposit+Secured debt +subordinated debt =40+30+15=85
- **Conversion ratio = 75**
- Assets value = 100
 - Does the regulator intervention policy make the presented trigger ineffective?
 - Robustness check of the paper results under a higher conversion trigger.

Results: Motivation for issuing Coco

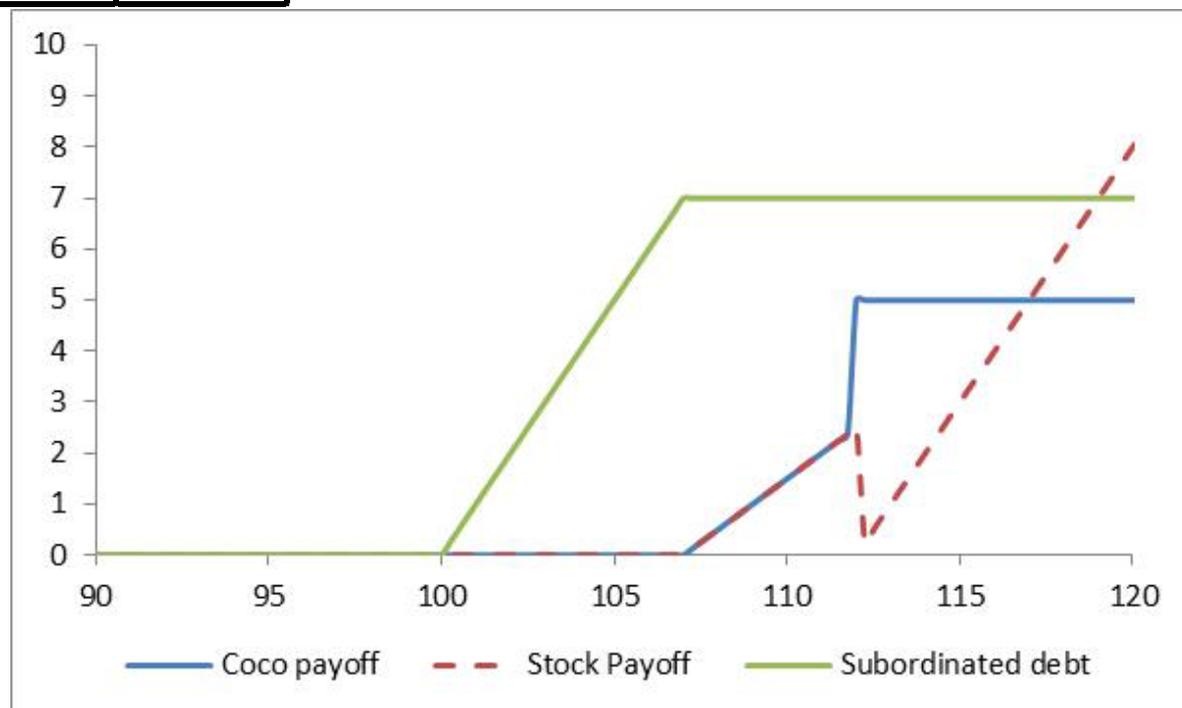
- The authors find out that equityholders have positive motivation to issue Coco.
- The finding is not consistent with the fact that Coco have been never issued voluntarily by financial institutions.

How Coco is treated in the event of default prior to conversion event?

- A well designed coco should include a covenant that avoids “debt overhang” where the default trigger is located below the conversion trigger.
- If not, what is the payoff of the coco in such an early default event?
 - Conversion is enforced after default and the coco holders have identical rights at liquidation as common stockholders?
 - Coco holders are treated as all other subordinated debt holders?
 - Coco holders have priority over subordinated debt holders?
- Can be best analyzed and presented in a one period model and generalized later on by a multi period model.

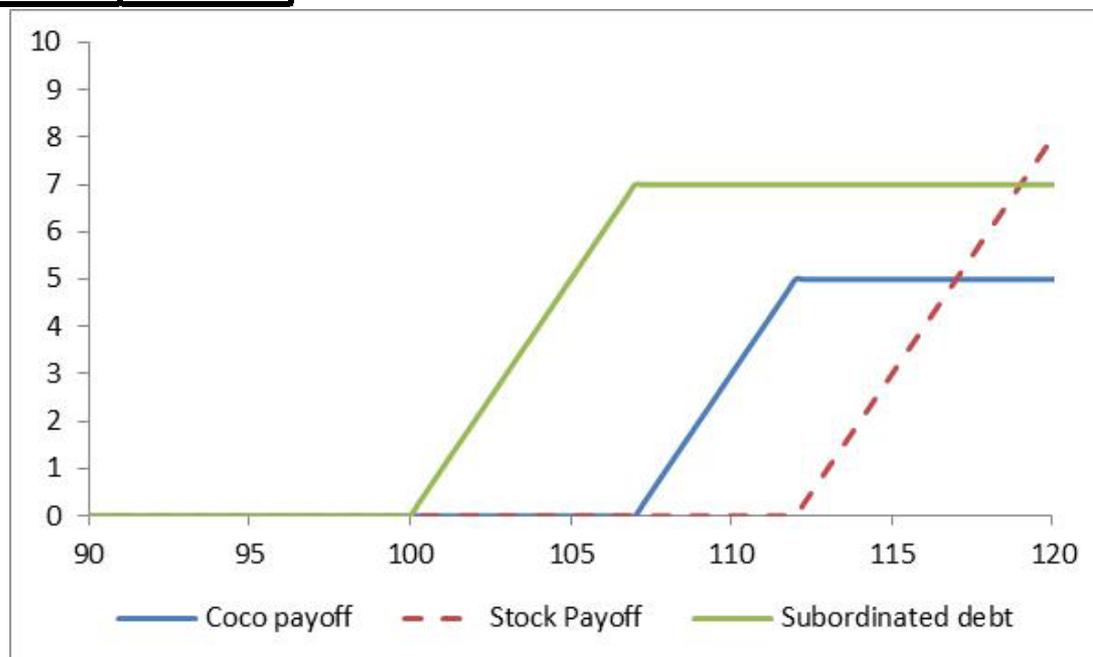
Capital Structure with Coco and Subordinated debt (conversion threshold located below default threshold) – **Coco is converted at default**

Secured debt face value	100
Coco face value	5
Conversion ratio	0.5
Conversion trigger	110
Subordinated debt face value	7



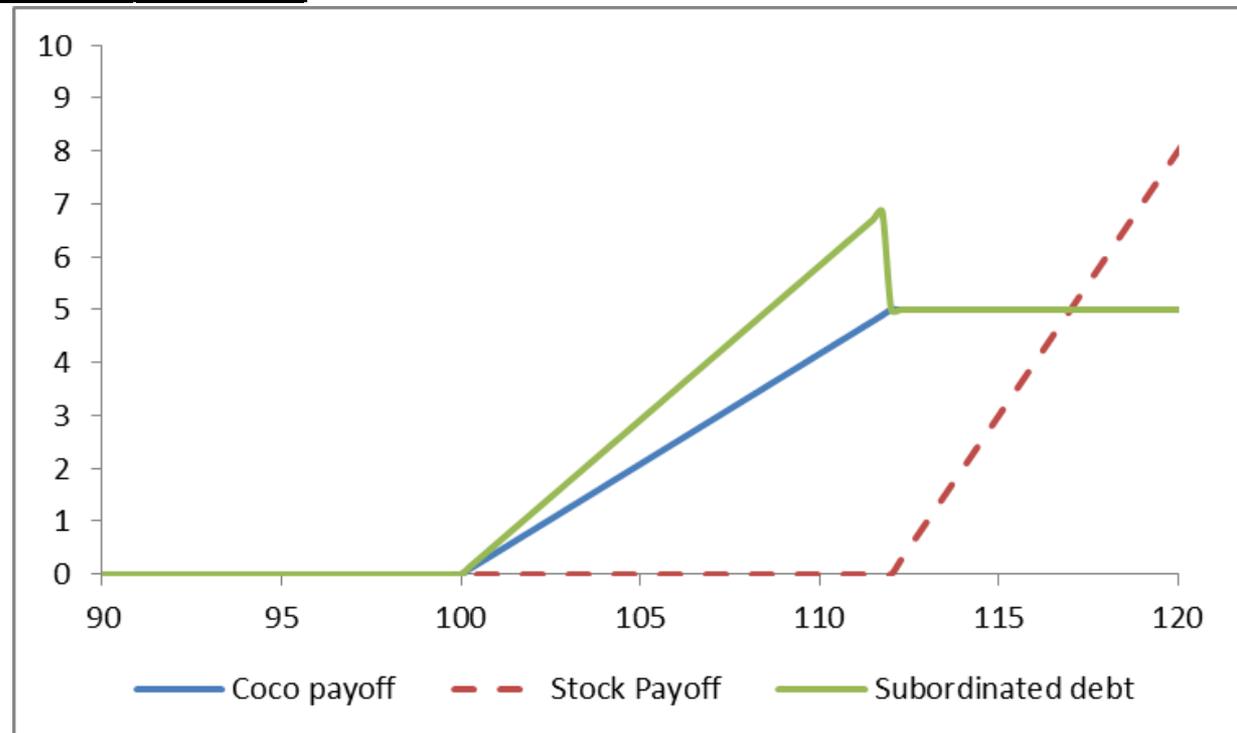
Capital Structure with Coco and Subordinated debt (conversion threshold located below default threshold) – **No conversion at default and coco is subordinated to all other debt instruments**

Secured debt face value	100
Coco face value	5
Conversion ratio	0.5
Conversion trigger	110
Subordinated debt face value	7



Capital Structure with Coco and Subordinated debt (conversion threshold located below default threshold) – **No conversion at default and coco has equal priority as subordinated debt**

Secured debt face value	100
Coco face value	5
Conversion ratio	0.5
Conversion trigger	110
Subordinated debt face value	7



Other Comments

- Too many securities are included as part of a bank capital structure (deposit, secured debt, subordinated debt and coco).
- It may be interesting to check the effect of different alternative capital structures (Hilscher-Raviv 2011):
 - Deposit+coco
 - Deposit+subordinated debt
- The analysis of asset substitution depends on the conversion ratio and the conversion trigger.