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Does contingent capital induce excessive risk-taking?



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ABSTRACT

In this paper, we analyze the effect of the conversion price of CoCo bonds on equity holders' incentives. First, we use an option-pricing context to show that CoCo bonds can magnify equity holders' incentives to increase the riskiness of assets and decrease incentives to raise new equity in a crisis in cases in which conversion transfers wealth from CoCo bond holders to equity holders. Second, we present a clinical study of the CoCo bonds issued so far. We show that (i) almost all existing CoCo bonds are designed in a way that implies a wealth transfer from CoCo bond holders to equity holders at conversion and (ii) this contractual design is reflected in traded prices of CoCo bonds. In particular, CoCo bonds are short volatility with a magnitude five times greater than that which can be observed for straight bonds. These results are robust and economically significant. We conclude that the CoCo bonds issued so far can create perverse incentives for banks' equity holders.

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1. Introduction

Contingent convertible capital (CoCo bonds) has been proposed as an instrument to strengthen the resilience of the financial system and to prevent a taxpayer funded bailout of financial institutions. CoCo bonds are debt instruments which automatically convert into equity in cases of financial distress

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of a single bank and/or the whole financial system. The trigger event is usually defined through the use of a preset regulatory capital ratio (such as the core Tier 1 ratio) falling below a prespecified threshold. Upon conversion, CoCo bond holders receive either a number of shares that is predetermined or that is based on the share price before conversion. The key appeal of CoCo bonds is therefore that it provides an additional source of equity under conditions of distress when other options of raising capital may be extremely costly.¹ CoCo bonds were initially proposed by Flannery (2002). They recently received considerable attention as potential instruments to ease the impact of future financial crises. Ben Bernanke and Timothy Geithner argued in testimony delivered to Congress in April 2010 that contingent capital can act as a shock absorber that “can be used in a crisis to create more capital” (Geithner (2010)). Contingent capital has also been proposed by the Squam Lake Working Group on Financial Regulation, a group of 15 distinguished academics, to be a way of stabilizing large, systemically important financial institutions. Regulatory proposals have been put forward by the Bank for International Settlements (BCBS, 2010), the European Banking Authority (EBA, 2011) as well as the regulatory body in Switzerland.² Moreover, fourteen European banks already issued CoCo bonds whose total value comes to more than USD 60 billion. If converted, these bonds would increase the capital ratios of these banks by an average of approximately 1 percentage point.

The appeal of providing additional equity capital in times of distress is easy to understand. CoCo bonds do, however, also have an impact on banks’ ex ante incentives. This paper makes two main contributions to the discussion on this topic. First, we analyze the effect of the conversion price of CoCo bonds on equity holders’ incentives in a structural model of default. Second, we empirically analyze the incentive effects of recent CoCo bond issuances.

We start by analyzing a first-passage time framework in which default and conversion are triggered by the asset value falling below a prespecified threshold. Standard first-passage time structural models assume that asset values are perfectly observable. However, the measurement of assets can be problematic, in particular for banks and in particular during times of crisis.³ We therefore extend our analysis to a model featuring uncertainty about *today’s* asset value, thereby building upon the model of Duffie and Lando (2001). Conversion and default are triggered by the asset value falling below a prespecified threshold. While regulators know the true asset value and will force conversion or default once the threshold is reached, outside equityholders, debtholders, and CoCo bond holders have only imperfect information about the true asset value. The decision about bank viability is frequently decided by regulators. We believe therefore that such a set-up closely mirrors reality.

We show that CoCo bonds exacerbate the asset substitution and debt overhang problem in cases in which the conversion price is set too high, i.e. the number of shares that the CoCo bond holders receive upon conversion is very low. With a high conversion price a wealth transfer from CoCo bond holders to equity holders takes place at the time of conversion. Roughly speaking, equity holders have to bear the initial losses up to an amount of X . They can impose part of the losses on CoCo bond holders once losses exceed X . Equity holders are therefore better off when being directly below the trigger point rather than being directly above the trigger point. They fully participate in any increases in asset value, while they can impose part of the losses on CoCo bond holders in case of a decrease in asset value. This payoff profile induces destabilizing effects: Bank owners have an increased incentive to take excessive risks if the level of risk is non-contractible (asset substitution) and they have a disincentive to raise new equity in a crisis (debt overhang).

We continue by empirically analyzing both the contract design and the pricing of recent CoCo bond issuances. We show that (i) all recent CoCo bond issuances use regulatory ratios to trigger conversion and (ii) almost all (23 out of 24) issuances have a conversion price that induces a wealth transfer from CoCo bond holders to equity holders upon conversion. This mechanism is also reflected in traded prices. CoCo bond holders are significantly short volatility. The magnitude of this negative vega

¹ In particular, equity issuances may themselves be viewed as revealing bad news about the bank, cf. Myers and Majluf (1984), Duffie (2010), and Calomiris and Herring (2013).

² The Swiss parliament amended the banking law in 2011 in order to allow banks to have CoCo bonds recognized as part of their regulatory capital.

³ Indeed, the main models about the existence of intermediaries crucially depend upon this assumption, cf. for example Diamond (1984).

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