Proposal on How to Best Design

Additional Tier 1 Capital in Australia

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The Australian Prudential Regulation Authority (APRA) discussion paper "Enhancing Bank Resilience: Additional Tier 1 Capital in Australia" notes a major weakness in the current design of AT1 capital. In practice, AT1 capital has failed to act as "going-concern" capital because it has been converted or written down only when issuing banks reached the "point of non-viability," i.e., when they were a "gone-concern." A primary reason why AT1 capital has not converted to equity or been written down at an early stage of bank distress is that banks followed the guidance of Basel III and set conversion or write down triggers based on their Core Equity Tier 1 to Risk-Weighted Assets ratios (CET1/RWA), which is a book value regulatory capital ratio.

For example, Spain's Banco Popular issued AT1 capital designed to convert to equity when its CET1/RWA ratio fell below the "high" 7% CET1/RWA trigger. Yet when depositor runs forced the European Central Bank (ECB) to declare the bank non-viable on 6 June 2017, Banco Popular's last reported 2017Q1 CET1/RWA ratio was over 10%.[1] Similarly, Credit Suisse issued AT1 capital designed to be written down when its CET1/RWA fell below 7%. However, at the time that depositor runs led the Swiss Financial Market Supervisory Authority (FINMA) to declare the bank non-viable on 19 March 2023, its last reported 2022Q4 CET1/RWA ratio was 14.1%.

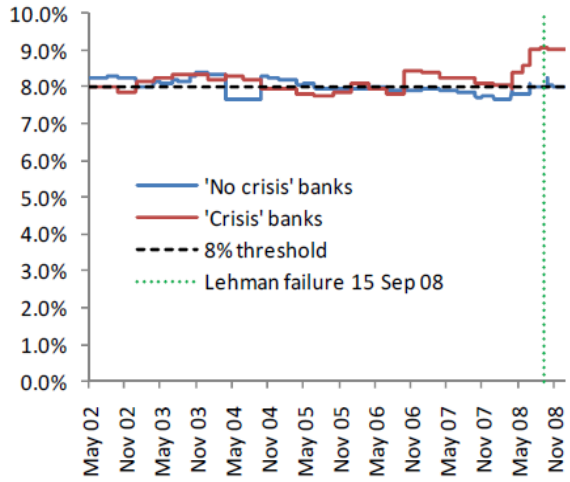
One might conclude from these two episodes that the solution is for bank regulatory authorities to exert their discretion to force AT1 conversions or write-downs at an earlier stage of bank distress prior to depositor runs. Yet as argued by Glasserman and Perotti (2017), political pressures constrain regulatory authorities from mandating a conversion or write-down. Banco Popular and Credit Suisse were considered well-capitalized "on paper" and met required capital levels following their most recent stress tests. Since banks and bank supervisors focus on book value regulatory standards, they will likely fail to act at an early stage when market stress indicates a high likelihood of a bank's economic insolvency. Consequently, regulatory forbearance results whereby AT1 capital fails to convert or be written down until depositor runs give regulators no other choice.

That banks often collapse when their regulatory capital ratios are high but market investors lack confidence in their solvency should come as no surprise given the experience of the 2008-2009 global financial crisis. Kuritzkes and Scott (2009) note that the five large U.S. banks that failed or were distressed acquisitions reported Tier 1 capital ratios between 12.3% and 16.1% at the quarter-end before they closed. More generally, Haldane (2011) shows that prior to the Lehman Brothers failure, regulatory

[1] After the point of non-viability, the European Single Resolution Board's actions resulted in Banco Popular's common equity, AT1 capital, and Tier 2 capital all becoming worthless.

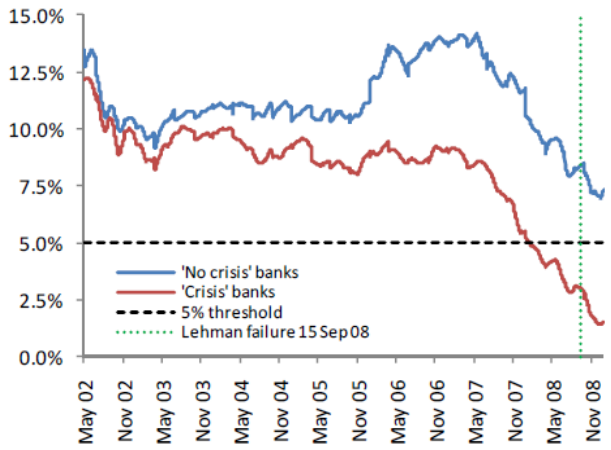
capital ratios of the largest global banks were indistinguishable between those banks that failed or required government support ('Crisis Banks') versus those banks that remained viable ('No Crisis Banks'). However, these banks' market value of common equity to debt ratios were able to predictive which banks fell into these two different groups. Below are Charts 5 and 7 of Haldane (2011) that compare the average Tier 1 capital ratios (left chart) and the average market value of shareholders' equity to total debt ratios (right chart) of 15 crisis banks versus 18 no crisis banks.

Tier 1 Capital Ratios



Sources: Capital IQ and Bank calculations

Market Capitalization to Book Value of Debt



Sources: Capital IQ and Bank calculations

The market value of equity was also a better predictor of the failures of Banco Popular and Credit Suisse compared to their regulatory capital ratios.[2]

Academic proposals for contingent convertibles (CoCos) provided the basis for Basel III's adoption of AT1 capital. However, when Basel III adopted guidelines for conversion or write-down triggers to be set to book value capital ratios, it departed from the original academic concept that CoCos should have market value triggers. See Flannery (2005) and Flannery (2014). Perhaps one reason for the hesitancy of adopting a trigger based on a bank's market value of equity or stock price was the influential paper by Sundaresan and Wang (2015) (SW) which claimed that doing so would lead to multiple equilibria or no equilibrium for the bank's stock price. However, Glasserman and Nouri (2016) and Pennacchi and Tchistyi (2019a) showed that SW's finding of multiple equilibria was due to a mathematical error in the SW

[2] Banco Popular's per share stock price was over €30 in 2007, falling to below €10 in 2011, and below €4 in 2015. Throughout 2017 it traded below €1, and its market value of equity was 12% of its 2017Q1 book value of equity. The market capitalization of Credit Suisse was $45 billion at year-end 2017 and fell to $12 billion at year-end 2022 at which time it was equal to less than 25% of its book value of equity.

paper, and correcting that error led to a unique stock price equilibrium. Furthermore, Pennacchi and Tchistyi (2019b) showed SW's result that under certain conditions there would be no equilibrium stock price was dependent on SW's assumption that CoCos have a fixed maturity. However, a Basel III requirement for CoCos to qualify for AT1 capital is that they have a perpetual maturity, and when that more realistic assumption is made, a unique stock price equilibrium results. In summary, initial theoretical predictions that market value CoCo triggers would cause problems for valuing the bank's stock price were unwarranted.

Another weakness of the current design of AT1 capital is that, in practice, it "absorbs losses." Exposing AT1 investors to bank losses is especially problematic in Australia where retail investors hold substantial amounts of AT1 capital. Compared to large, institutional investors, retail investors tend to be less sophisticated and may not fully understand the risks of losses that they face. The possibility that retail investors may suffer losses can lead to political pressure for government bailouts, as in the case of Italy where retail investors where major holders of subordinated bank bonds.

However, even if all AT1 capital were held by sophisticated institutional investors, AT1 capital that absorbs losses creates moral hazard that promotes excessive risk-taking by issuing banks. Write-downs and conversions that create losses for AT1 investors result in a transfer of gains to the bank's shareholders' equity. Such a situation creates incentives for managers, acting in the interests of shareholders, to take excessive risks since shareholders are potentially be rewarded when risky investments suffer losses.

It is a common misperception that a necessary condition for AT1 capital to stabilize stressed banks is that it absorbs losses.[3] In fact, optimally-designed AT1 capital should make AT1 securities as risk-free as possible. AT1 capital can be risk-free and still recapitalize a bank at conversion while imposing all bank losses on the bank's shareholders. If such a design were possible, it would solve the two aforementioned problems. AT1 capital becomes an attractive investment for retail investors and removes the moral hazard problem of excessive risk-taking.

We next discuss our proposal on how AT1 capital can be reformed in the context of answers to the 5 questions posed by the APRA Discussion paper.

[3] For example, see Tables 1, 2, and 3 of the APRA Discussion paper.

1. What are the best policy options for improving the effectiveness of AT1 to support resilience?

Here we summarize the main features of our policy proposal. The details and analysis of our suggested policy reform of AT1 capital is given in our *Journal of Financial and Quantitative Analysis* article, Pennacchi, Vermaelen, and Wolff (2014).

We recommend a new form of AT1 capital which we term a "call option enhanced reverse convertible" or COERC. COERCs differ from other CoCos in three main ways. First, COERCs convert when a bank's market value of capital-to-debt ratio falls below a prespecified trigger level.[4] This trigger level is set high enough so that it is very likely that the bank remains an adequately capitalized, going concern following conversion. Second, at conversion a large proportion of new shares are issued to COERC investors, which has the *potential* to heavily dilute the bank's initial shareholders. Third, importantly this dilution can be avoided because COERCs also provide the initial shareholders with an option to repurchase the newly issued shares at a price equal to the COERC bonds' par value.[5] This initial shareholder right to repurchase the shares is renounceable, meaning that it can be sold to any third-party investor.

What is the effect of the COERC's contract features? At an early stage of bank distress when the market value capital ratio first falls below the trigger level, a large proportion of new shares would potentially be issued to COERC investors, thereby greatly benefiting COERC investors at the expense of the bank's highly diluted initial shareholders. The threat of heavy dilution coerces each initial shareholder to either: 1) exercise their right to repurchase the shares at the discounted price equal to the COERC's par value or 2) if they are liquidity constrained, sell their valuable, renounceable right to any deep-pocketed investor who will exercise it.[6]

The result is that initial shareholders can prevent a loss from dilution. They, or the buyers of their renounceable new issue rights, pay cash to COERC investors who receive their bond's par value.

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[4] The market value of capital can equal the market value of shareholders' equity plus the market value of COERCs or only the market value of shareholders' equity. Debt equals all other liabilities that not included in capital, such as Tier 2 bonds, senior bonds, and deposits.

[5] While it did not have a market value capital ratio trigger, a December 2013 CoCo issued by Barclays was the first to have such a COERC-like feature. Its prospectus states that Barclays intends to "give shareholders the opportunity to purchase the ordinary shares created on conversion."

[6] The only instance where initial shareholders would not have an incentive to exercise their right to repurchase the new shares would be if there was a very great and sudden crash in the bank's stock value that made the new shares worth less than the COERC's par value. COERC investors would now own these new shares. However, as shown in Pennacchi, Vermaelen, and Wolff (2014), the possibility that COERC investors incur a loss at conversion can be minimized by having a sufficiently high market capital ratio trigger and issuing a sufficiently high proportion of new shares at conversion.

Consequently, even though the bank suffers distress from losses to its asset value, COERC investors do not "absorb" these losses. They receive their par value in cash, which is particularly attractive to fixed-income investors who may not wish to become stockholders. Moreover, since COERCs are nearly risk-free, they are easy to value and suitable for less-sophisticated retail investors.

The COERC's design also creates good incentives in at least two ways. First, because COERC investors have a nearly risk-free investment, initial shareholders absorb the losses from declines in the bank's assets on a one-to-one basis, similar to a case where initial shareholders have unlimited liability. Because shareholders are symmetrically exposed to both upside and downside risk, they do not have an incentive to take excessive risks. Moreover, they are more likely to voluntarily recapitalize the bank even before their market value capital ratio falls to the trigger.[7] Second, incentives by speculators to profit by artificially triggering conversion via stock price manipulation are minimized. Since conversion does not transfer gains or losses between COERC investors and shareholders, there is no profit from taking a position in COERCs or bank shares and then manipulating conversion. Similarly, if stock prices deviate from their fundamentals due to some reason other than manipulation, conversion would not exacerbate these deviations.

In summary, a COERC's design based on a market value capital ratio trigger permits recapitalization of the bank at an early stage of distress while it remains a going concern. Because the bank's shareholders, but not COERC investors, absorb losses, shareholders have incentives to take only appropriate risks. COERCs become close to risk-free making them attractive investments for a wide class of investors, including retail ones.

2. What would be the impact of these options?

If APRA required a COERC design in order for CoCos to qualify as AT1 capital, such a policy would be much more effective in stabilizing banks. COERCs truly function as "going concern" capital, rather than current AT1 capital designs that de facto function only as "gone-concern" capital due to their regulatory capital ratio triggers. Unlike current AT1 capital, COERCs are suitable for retail investors because they do not absorb losses, making them easy to value and nearly risk-free.

3. What transition arrangements could soften these impacts?

[7] Because shareholder incentives are similar to those with unlimited liability, shareholders do not suffer from a Myers (1977) "debt overhang" problem that creates disincentives to issue new equity.

There could be a transition period where current CoCos with a regulatory capital trigger might continue to qualify as AT1 capital. However, since most, if not all, current CoCos are callable, banks would need to call them prior to the end of the transition period and replace them with COERCs in order to retain AT1 capital.

4. Are there other considerations or options that APRA should take into account?

It may be possible for COERCs to include a feature that gives APRA the discretion to force conversion prior to a market capital ratio trigger being breached or waive conversion after the market capital ratio trigger is breached. However, we believe the circumstances where APRA would want to exercise this discretion would be very limited since APRA would need to justify why it believes market investors are mis-valuing the bank's stock. Also, because conversion does not lead to a value transfer between COERC investors and shareholders, harm from conversion due to a possible mis-valuation of the bank's stock is limited.

References

Flannery, M. J. (2005) "No Pain, No Gain? Effecting Market Discipline via 'Reverse Convertible Debentures'," Chapter 5 in H.S. Scott, ed., *Capital Adequacy Beyond Basel*, Oxford University Press. Available at https://ssrn.com/abstract=352762 .

Flannery, M.J (2014) "Contingent Capital Instruments for Large Financial Institutions: A Review of the Literature," *Annual Review of Financial Economics* 6, 225-240.

Glasserman, P., and B. Nouri (2016) "Market-Triggered Changes in Capital Structure: Equilibrium Price Dynamics," Econometrica 84, 2113-2153.

Glasserman, P., and E. Perotti (2017) "The Unconvertible CoCo Bonds," in D. Evanoff, G. Kaufman, A. Leonello, and S. Manganelli (eds.) *Achieving Financial Stability: Challenges to Prudential Regulation*. World Scientific, London. Available at https://pure.uva.nl/ws/files/26887498/The_unconvertible_CoCo_bonds_Glasserman_Perotti_March_2017.pdf .

Haldane, A. (2011) "Capital Discipline," Paper presented at the 2011 American Economic Association Meetings, available at www.bis.org/review/r110325a.pdf.

Kuritzkes, A., and K. Scott (2009) "Markets are the Best Judge of Bank Capital," *Financial Times*. September 23.

Myers, S. (1977) "Determinants of Corporate Borrowing," *Journal of Financial Economics* 5 (2), 147–175.

Pennacchi, G. and A. Tchistyi (2019a) “On Equilibrium When Contingent Capital Has a Market Trigger: A Correction to Sundaresan and Wang Journal of Finance (2015),” *Journal of Finance* 74, 1559-1576.

Pennacchi, G. and A. Tchistyi (2019b) “Contingent Convertibles with Stock Price Triggers: The Case of Perpetuities,” *Review of Financial Studies* 32, 2302-2340.

Pennacchi, G., T. Vermaelen, and C. Wolff (2014) “Contingent Capital: The Case of COERCs,” *Journal of Financial and Quantitative Analysis* 49, 541–74.

Sundaresan, S., and Z. Wang (2015) “On the Design of Contingent Capital with a Market Trigger,” *Journal of Finance* 70, 881–920.