

CoCo Design, Risk-Shifting Incentives and Financial Fragility

Stephanie Chan and Sweder van Wijnbergen

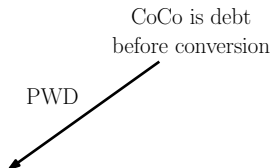
University of Amsterdam

November 9, 2016

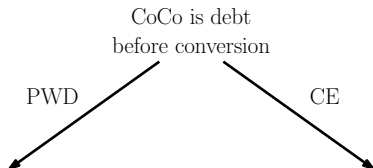
Contingent convertible capital

CoCo is debt
before conversion

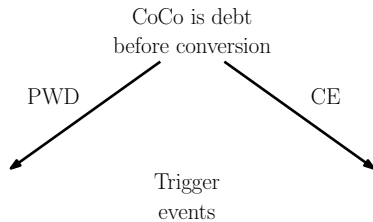
Contingent convertible capital



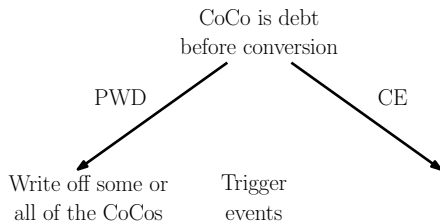
Contingent convertible capital



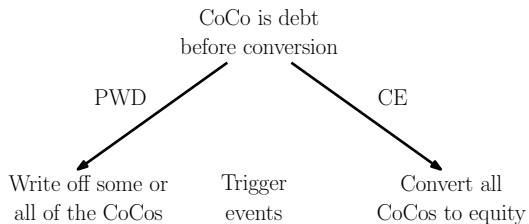
Contingent convertible capital



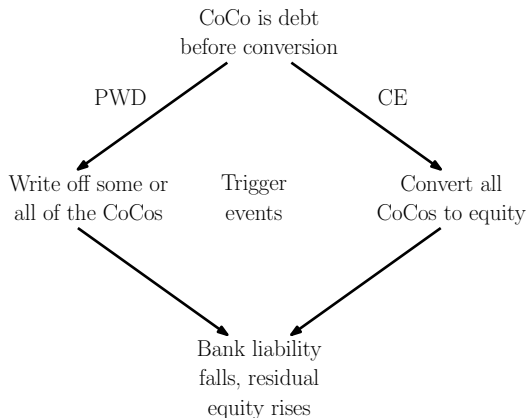
Contingent convertible capital



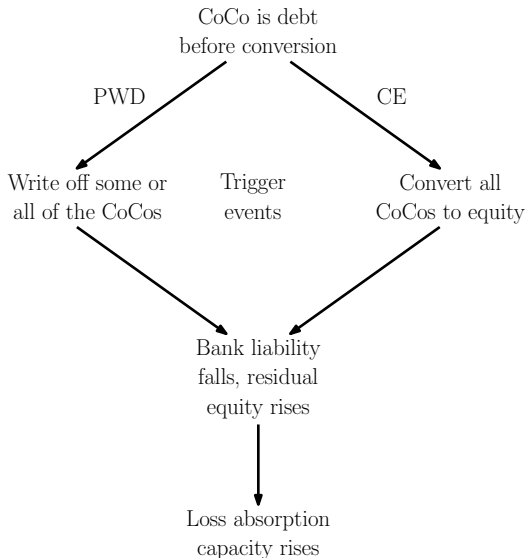
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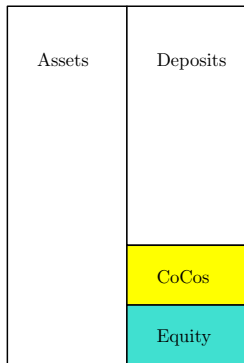


Contingent convertible capital

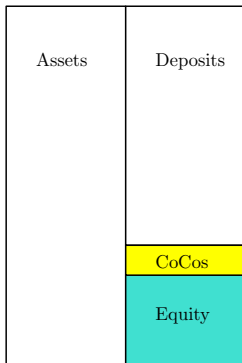


CoCo conversion improves loss absorption capacity

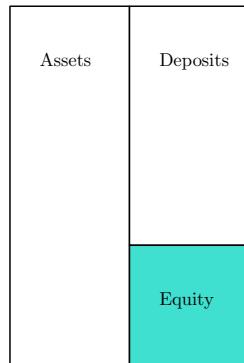
Before Conversion



After Conversion PWD



After Conversion CE



Before conversion, CoCos look like subordinated debt

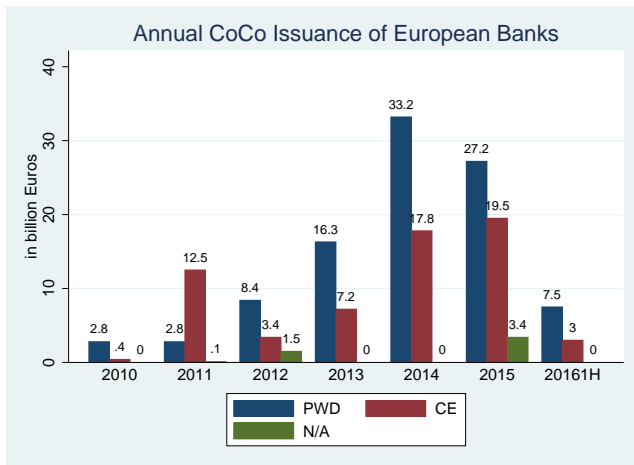
Subordinated Debt

Assets	Deposits
	Sub Debt
	Equity

CoCos Before Conversion

Assets	Deposits
	CoCos
	Equity

Issued CoCos by design



Source: Dealogic

There's more to come though

Basel III states that out of the 8% capital requirement based on risk-weighted assets, 3.5% can be filled with CoCos

Financial Stability Board requires that GSIBs have an additional 8% capital based on risk-weighted assets, also to be filled in with CoCos

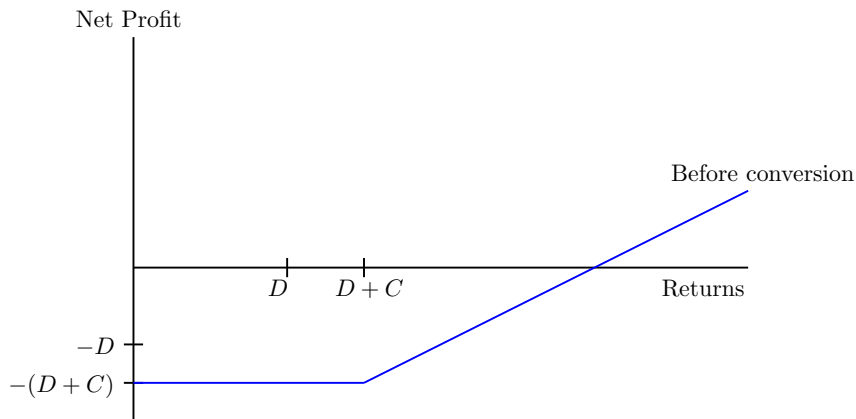
No restriction on CoCo design

Main points

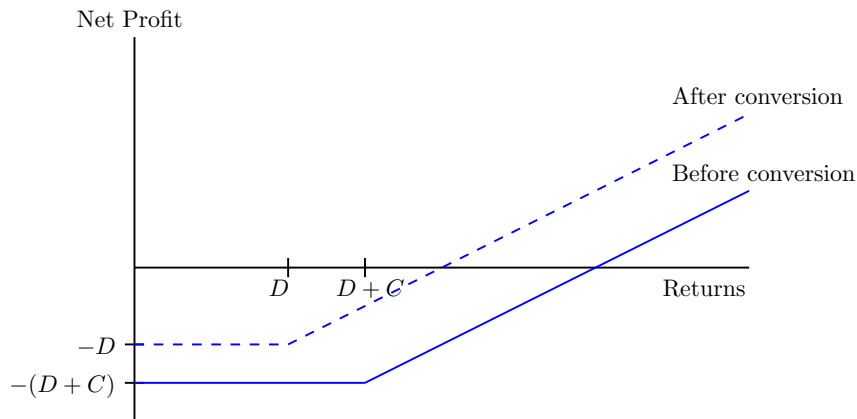
1. PWD CoCo and nondilutive CE CoCo issuers may willingly increase risk compared to subordinated debt issuers
2. Dilutive CE CoCo issuers will reduce risk compared to subordinated debt issuers
3. Subordinated debt may be safer than most of the issued CoCos in regions of high fragility
4. CoCos are not substitutes for equity
 - ▶ Same loss absorption capacity but induce different incentives

Payoff Structure of a CoCo-issuing bank *before* conversion

The same as though the bank issued subordinated debt in place of CoCo

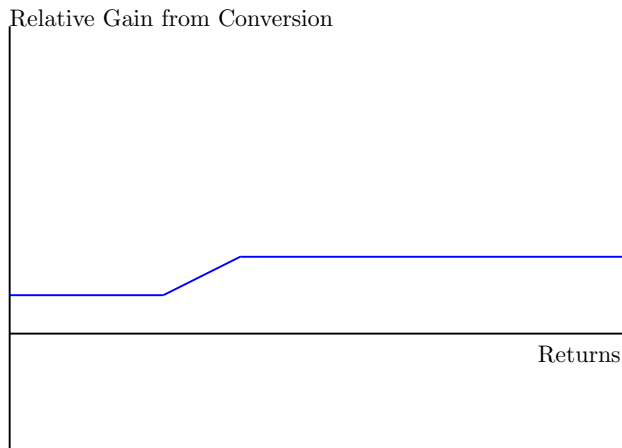


Payoff Structure of a CoCo-issuing bank *after* conversion



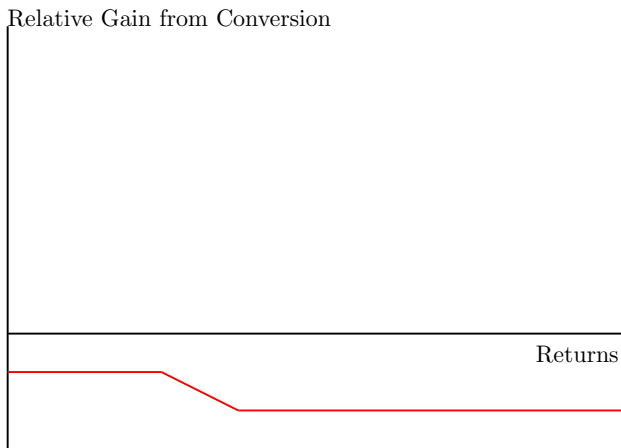
Relative *gain* of existing shareholders from a conversion

No need to share with CoCo holders



Relative *loss* of existing shareholders from a conversion

Share of existing shareholders is diluted by conversion



Our model

- ▶ Analyzes from POV of bank owner-manager
- ▶ And relative to subordinated debt
- ▶ Assumes capital structure is given
- ▶ Bank owner-manager invests in assets, and can choose risk level at the start
- ▶ Risk level affects return distribution, but assume mean-preserving spread
- ▶ Which affects conversion probability

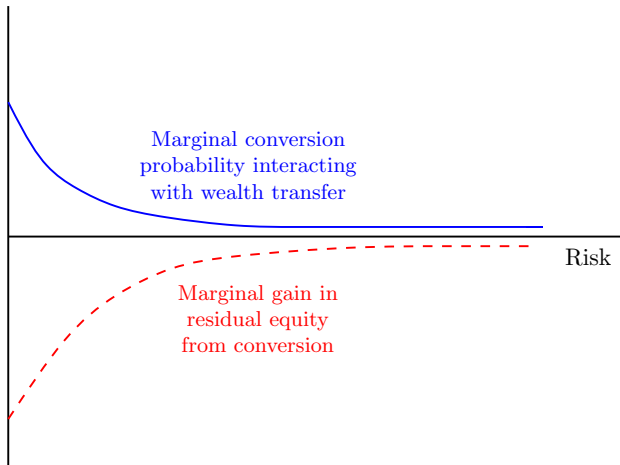
Risk-shifting incentives arise from expected wealth transfers

- ▶ Wealth transfer only occurs upon conversion!
- ▶ Hence, *expected* wealth transfer before conversion.
- ▶ Two generally opposing forces of an increase in initial risk choice:
 - ▶ Conversion probability increases in risk (at a decreasing rate), but interacts with the direction of wealth transfer
 - ▶ Relative gain from conversion decreases in risk (at a decreasing rate), as bank's skin in the game rises

For PWD and nondilutive CE CoCos

The wealth transfer is always *towards* the original shareholder

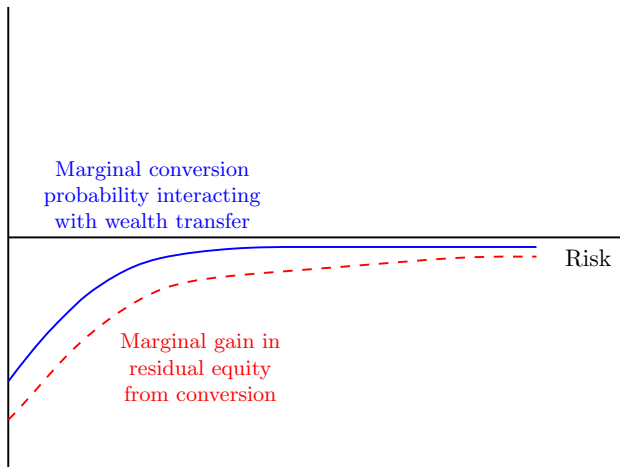
Net effect (relative to subordinated debt) is positive for high levels of risk (high fragility condition). Loss absorption capacity likely to be exercised.



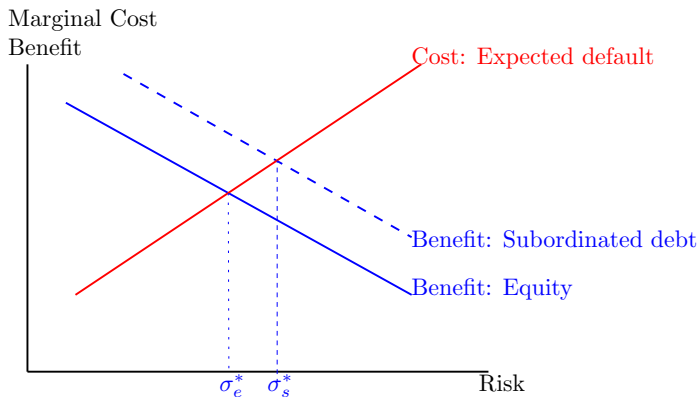
For dilutive CE CoCos

The wealth transfer is always away from the original shareholder

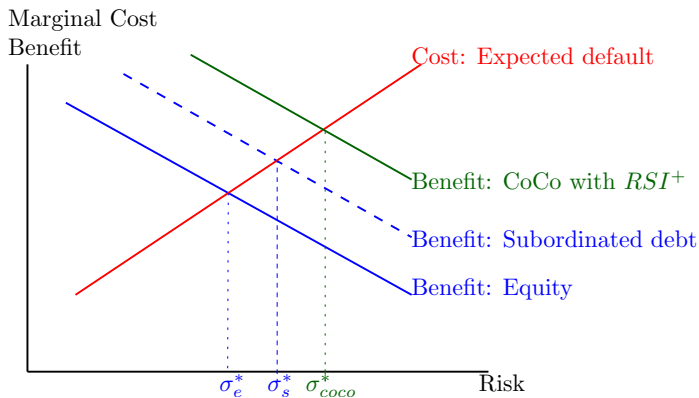
The net effect (relative to subordinated debt) is negative for any level of risk.



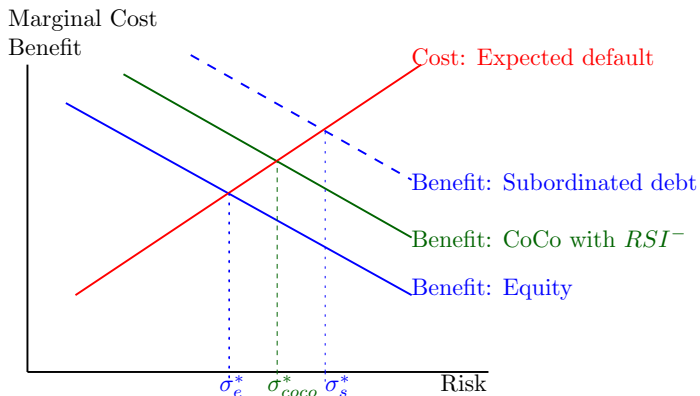
Optimal bank risk choices with PWD and nondilutive CE CoCos



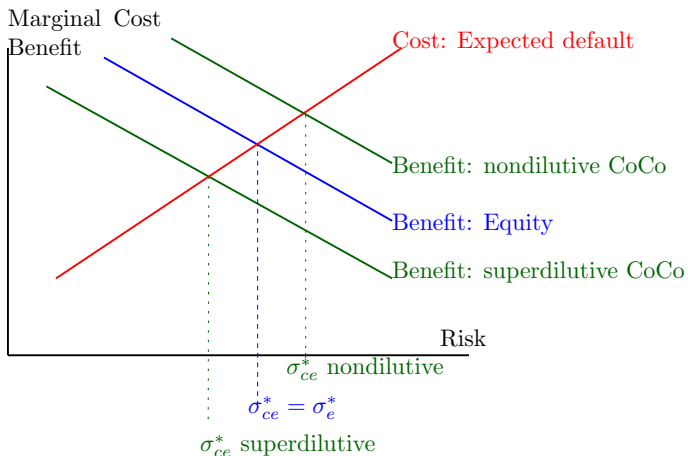
Optimal bank risk choices with PWD and nondilutive CE CoCos



Optimal bank risk choices with dilutive CE CoCos

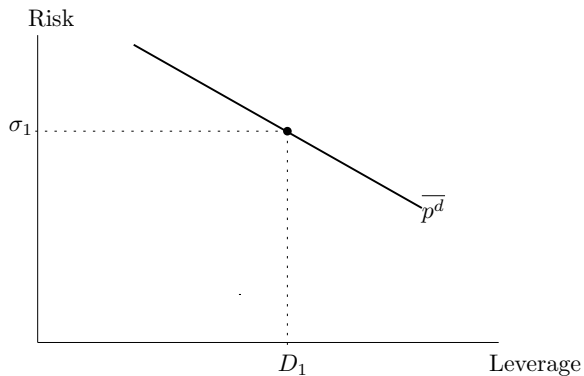


Can CE CoCos improve on equity?



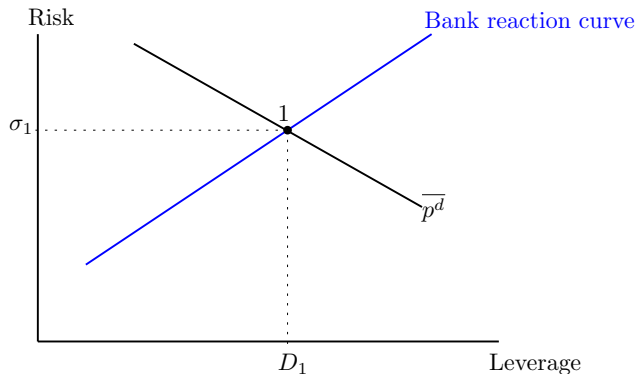
Interaction of CoCos with existing regulation

Target level of default probability implies tradeoff between risk and leverage



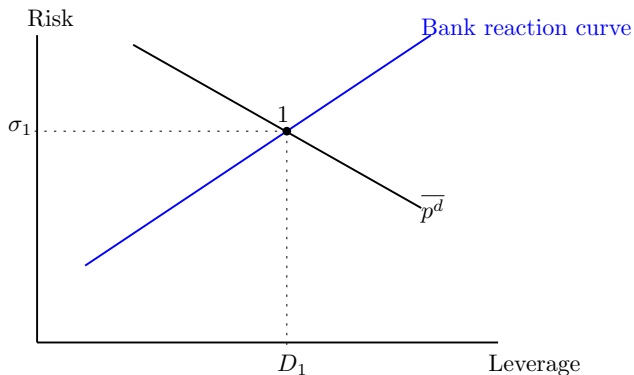
Interaction of CoCos with existing regulation

For a bank, leverage and risk reinforce each other



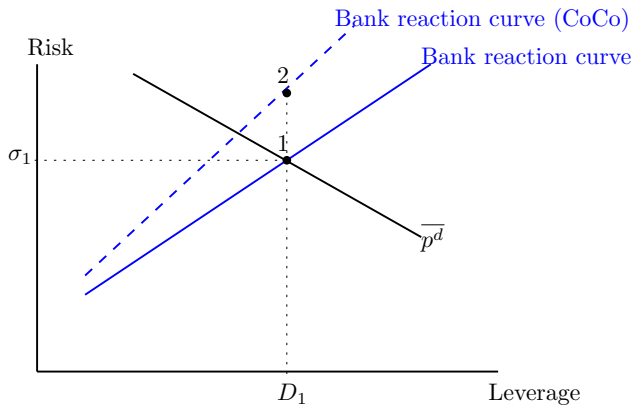
If PWD and nondilutive CE CoCos were introduced

For PWD and nondilutive CE CoCos, the slope increases because $RSI > 0$:



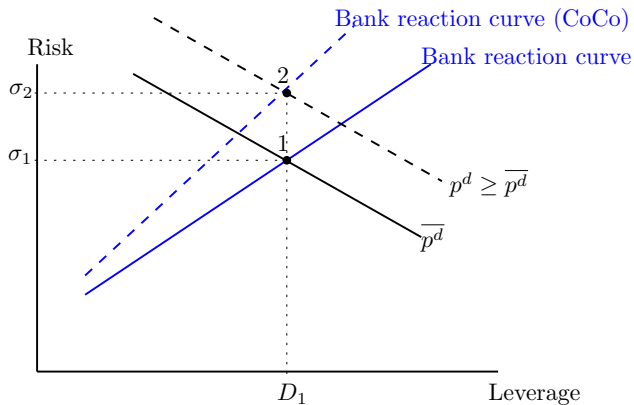
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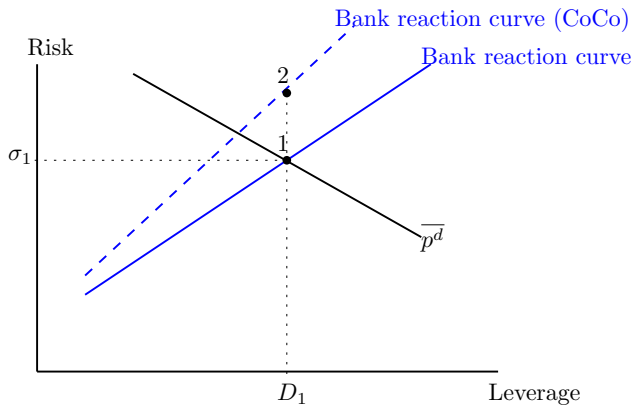
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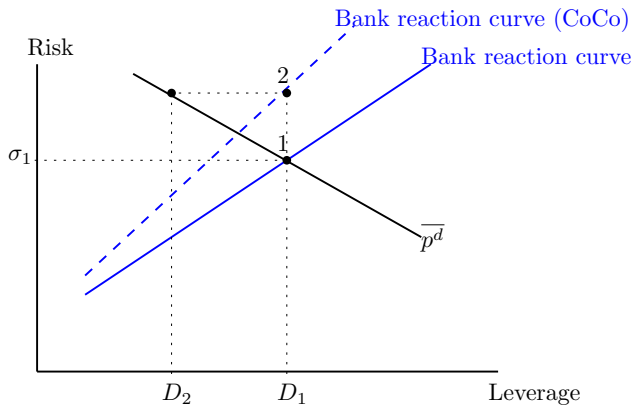
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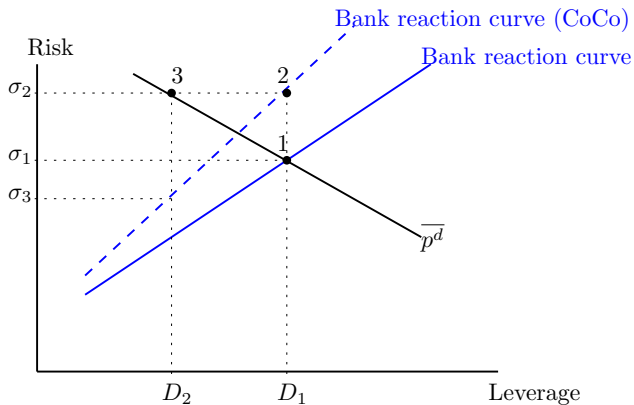
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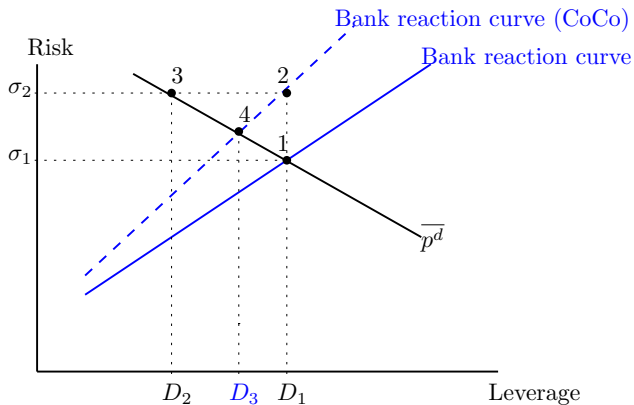
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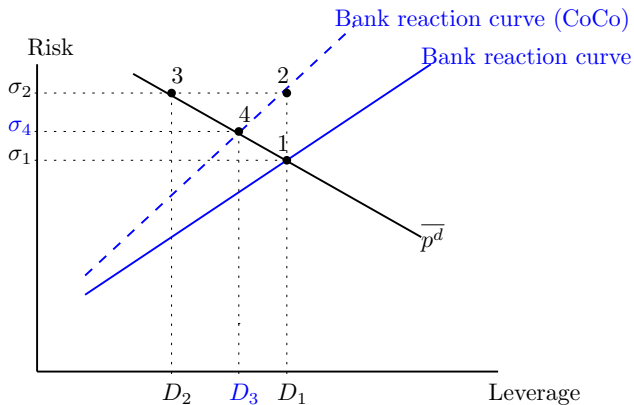
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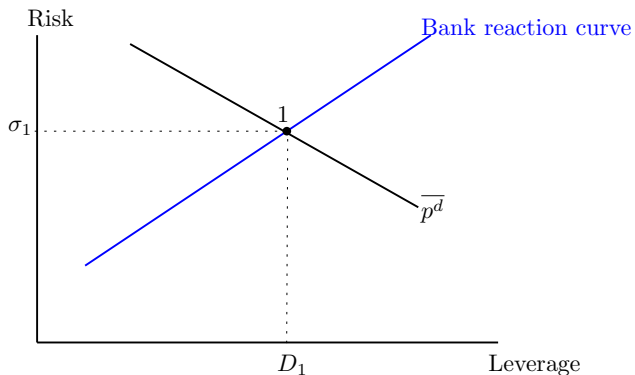
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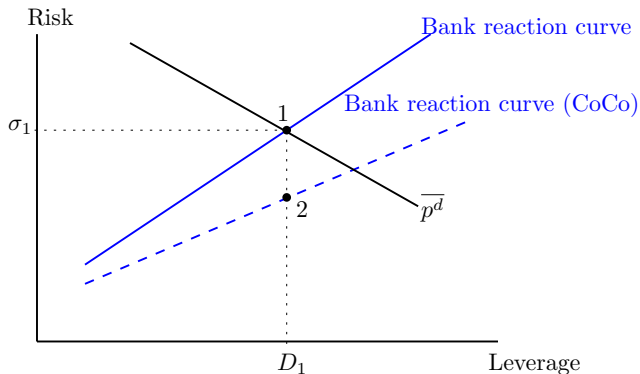
If dilutive CE CoCos were introduced

For dilutive CE CoCos, the slope decreases because $RSI < 0$:



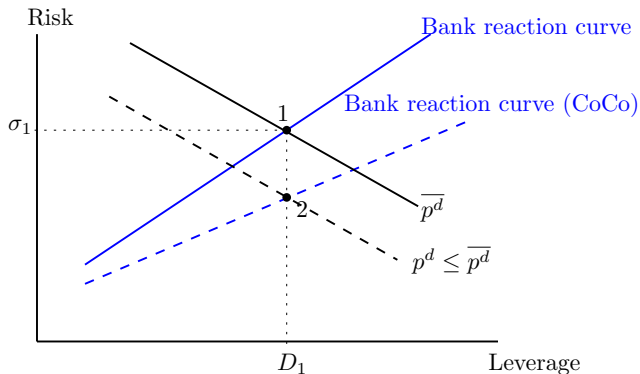
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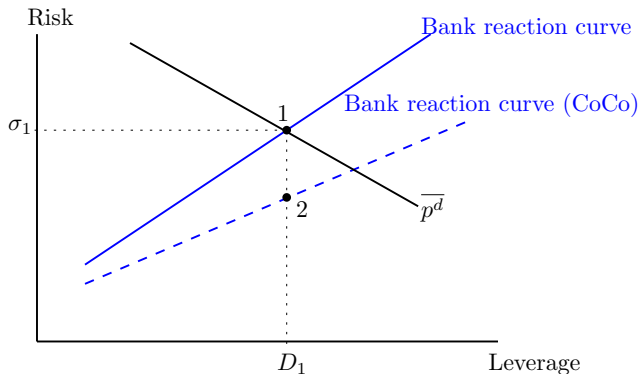
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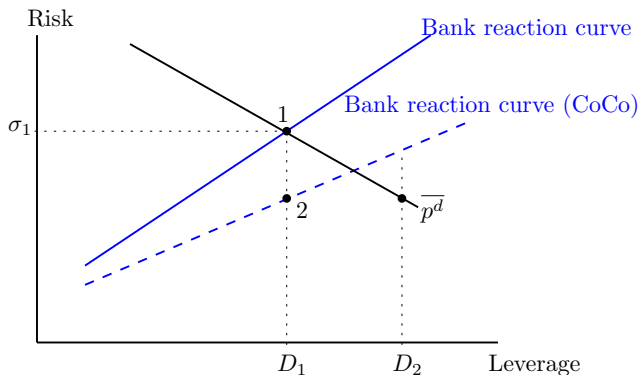
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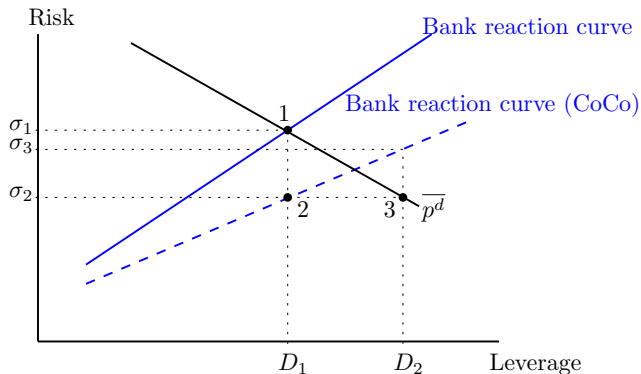
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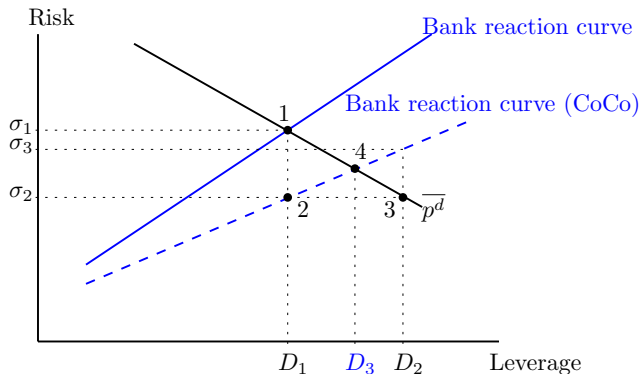
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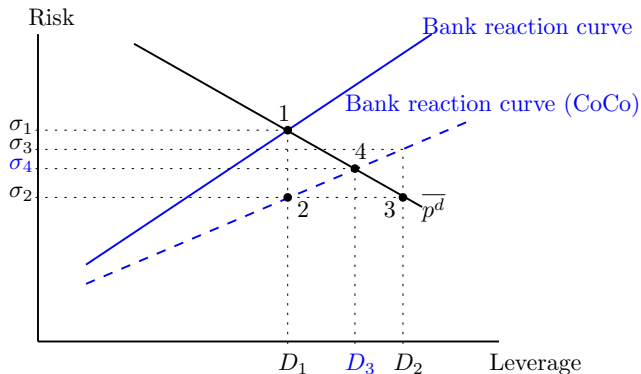
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Can something be done?

- ▶ For PWD CoCos, tradeoff between loss absorption and risk-shifting
 - ▶ Decreasing writedown percentage makes them safer, but decreases loss absorption capacity
 - ▶ Increasing trigger level helps
- ▶ For CE CoCos, make them dilutive
 - ▶ Threat of dilution reduces risk-shifting incentives
 - ▶ While preserving loss absorption capacity

Conclusion

1. Banks that issue CoCos have different risk shifting incentives compared to banks that issue the same amount of debt.
 - ▶ Positive for writedown CoCos and nondilutive equity converters
 - ▶ Negative for dilutive equity converters
2. Direction of risk-shifting incentives affect bank's optimal choice of risk
 - ▶ Subordinated debt may be safer than most of the issued CoCos in regions of high fragility
3. CoCos are not substitutes for equity
 - ▶ Same loss absorption capacity but induce different incentives