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Regulatory Concerns Related to CoCo Bonds - Mathematical Modeling

A contingent convertible (CoCo) bond begins life as subordinated debt, but converts into common equity when the issuing institution begins to experience financial distress. The rigorous treatment of contingent capital in the academic literature remains in its infancy, and several important questions remain unaddressed. For instance it is not clear (i) whether or not CoCo investors will have incentives to short the issuing institution's stock when conversion is imminent (a serious concern for regulators) or (ii) how much an objective conversion trigger (i.e. one allowing for regulatory discretion) would add to the cost of contingent capital relative to a purely objective trigger (e.g. one based on the firm's Tier 1 equity falling below 4.5% of its risk-weighted assets). In this talk we present a structural model that can be used to gain insights into these issues. The model allows for the market price of the firm's stock to temporarily deviated from its fundamental value (incorporating the impact of large scale short-selling) and allows for the conversion time to be the first event time in a Cox process with intensity driven by the firm's asset value (incorporating the uncertainty inherent in a subjective trigger). Numerical valuation of CoCos in the model will be discussed and numerical results, calibrated to balance-sheet data for Canadian institutions, will be presented. The talk is based on the PhD thesis of Jingya Li (Applied Mathematics, University of Western Ontario).