WILEY FINANCE

The HANDBOOK of HYBRID SECURITIES

Convertible Bonds, CoCo Bonds and Bail-In

JAN DE SPIEGELEER
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The Handbook of Hybrid Securities

Convertible Bonds, CoCo Bonds, and Bail-In

Jan De Spiegeleer
Wim Schoutens
Cynthia Van Hulle

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To Klaartje, Charlotte, Pieter-Jan and Willem

Jan

To Ethel, Jente and Maitzanne

Wim

To my mother

Cynthia

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Reading this Book

The target audience for this work on hybrid securities is very broad. The absolute beginner will find in it a sufficient course to become familiar with this asset class. More advanced users working in areas such as trading, portfolio, or risk management will be introduced in detail to the latest advances in numerical techniques to value and hedge these instruments. Hybrid financial instruments combine properties of both shares and corporate bonds into one, but mastering their price dynamics is far from a walk in the park. Blending the properties of two easy-to-understand asset classes such as equity and bonds into a hybrid does not leave us with an instrument having straightforward properties. Hybrids are therefore often misunderstood and mis-sold: what for some looks like an equity instrument with bond-like risk could turn out to deliver a bond-like return with equity volatility. The reality is hence very different from the perceived risk and results in an asset that can have multiple sources of risk: market risk, default risk, different levels of equity and interest rate convexity, etc. In the case of contingent convertibles, the newest category in hybrid debt, there are phenomena such as the "death spiral" that deserve our attention. These are situations where a forced conversion of a bond into shares would trigger a wave of sell orders on the underlying share. This book devotes different chapters to CoCo bonds, including the newly developed pricing models, taking into account different features of these special instruments.

Preferreds or preference shares are on first sight the easiest member of the hybrid family to be understood and fully mastered. The reality is far different, and many investors dealing with this instrument that looks like a bond were confronted with equity-like volatility. This became very clear in the spring of 2008, when US banks chose to strengthen their balance sheet massively through the issuance of preferreds. Traders, portfolio managers, and even retail investors loaded up on these instruments and had to deal with a complete implosion of their portfolio in the heat of the credit crunch. This destructive process was speeded up by the default of Lehman Brothers.

Mastering hybrids is not constrained to financial calculus only. Proposals and regulations such as, for example, Basel III and the Dodd–Frank Act dramatically changed the financial landscape from 2010 onwards. Some hybrid securities are not going to be allowed anymore as regulatory capital. National regulators are now putting the emphasis on instruments that in principle have the capacity to be really loss absorbing through their design. This is where contingent convertibles started to play an important role in 2010. Regulation has clearly been driving innovation and regulators became financial engineers! This is not a book on financial regulation, but it nevertheless covers the big overhauls that reshaped the financial landscape. A handbook can never be of any value to a practitioner if there is no mention at all of what the regulatory implications of each of the different instruments are.

The quantitative part of this book is very pragmatic. The first steps into the landscape of hybrid instruments will take place in a perfect Black–Scholes world. Later on, when using, for example, constant elasticity of variance, the stochastic processes simulating the share price movements become more look-alikes of the real world. Subsequently, we link the default probability of an issuer of hybrid debt to its share price level. In a final step, hybrids are priced as derivative instruments with multiple sources of risk: equity, interest rate, and credit. This multi-factor approach deals with the exact nature of hybrid instruments, where several state variables are at work. The valuation model turns into a blend of debt and equity. The more advanced quantitative audience, consisting of arbitrageurs, portfolio managers, or quantitative analysts, will be introduced to methods such as the American Monte Carlo simulation. All of these techniques are mainstream methods in exotic equity derivative pricing but have not made their landing on the hybrid desks yet. As many numerical examples as possible have been added to enrich this book.

www.allonhybrids.com

On our webpage, www.allonhybrids.com, the interested reader can find more examples and reading material as a supplement to this book. The characteristics of most contingent convertible bonds are provided as well. For each of the CoCo bonds the pricing model is embedded in a spreadsheet that is available for download.

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