

Course Outline

Topics in Credit Risk

Winter Intensive: 2020 – FINC.GB.3106.W1

MEETING ROOM – KMEC 4-60

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Aims and Objectives

Fuelled in part by burgeoning growth in the credit derivatives market in late 90's, the market in credit expanded dramatically for 10 years till 2Q 2007. These increased activity levels led to a much greater research focus on credit and one of the features of this work has been the high degree of complementarity between the research carried out by academics and by practitioners, for example, the investment banks and rating agencies.

The credit derivatives market was at the heart of the global financial and economic crisis, having contributed substantially to it by affecting lender incentives once loans were securitized, allowing banks to “game” regulatory capital requirements, and creating opacity due to their over-the-counter (rather than centralized or exchange-based) trading infrastructure. While the market for credit derivatives underwent a significant transformation as a result, a part of its underlying rationale in terms of risk transfer from banking sector to the rest of the economy remains robust.

In the meanwhile, however, we had a sovereign debt crisis in the Western Europe, which highlighted an important nexus between sovereign and financial sector (especially bank) balance-sheets. Credit derivatives can be used with powerful effect to study this nexus and understand its root causes as well as consequences.

The objective of the course is to provide an introduction as well as an in-depth understanding of single-name derivative products, primarily the single-name credit default swaps (CDS), as also index products, with a focus on sovereign CDS and index products. As with any derivatives course, the idea is to learn the key arbitrages between derivatives and cash markets well so that one knows when *the arbitrage breaks down!* Hence, the objective is to provide a balance between developing, on one hand, a sound conceptual framework and, on the other, market understanding and insight, especially with respect to liquidity and counterparty risk effects that are often so important in markets from a practitioner's standpoint. I regard both as essential to the informed practitioner and academic.

In particular, the liquidity in the repo markets for government bonds will become important to understand as well. Along the way, we will look at methods to quantify the systemic risk of the financial sector and regulatory as well as market-based stress-testing of financial firms.

Overall, I want to enable students with using credit derivatives markets as a tool – a barometer of sorts – to understand macro events such as sovereign and financial sector crises, and their inter-linkages.

It should be fun and I welcome you the journey!

Topics Covered

- Introduction to single-name credit derivatives (corporate, sovereign, ...)
- No-arbitrage relationship between underlying bond markets and credit default swaps
- Behavior of CDS-bond basis during 2008-09 global financial crisis and European debt crisis
- Basket default products and index tranches with a focus on sovereign credit index products
- Sovereign Debt Crisis in the Eurozone – Understanding its various dimensions
- Measuring and Managing Systemic Risk, and Stress tests of the Financial Sector

Format and Teaching Methods

The classes will include discussions around empirical facts about credit, lectures on key no-arbitrage relationship between credit derivatives and underlying bond markets, and the use of credit derivatives in understanding the nexus between sovereign and financial sector balance-sheets (crises). Primary reading material will be my slides and handouts. Anything else that is relevant will be circulated over email to the class mailing list. Depending on evolving conditions in Europe, I may schedule a guest lecture on an interesting topical theme.

Reading Materials

Besides my lecture notes and distributed readings, a few chapters of Duffie and Singleton for a primer on credit risk and derivatives may be useful:

Duffie and Singleton (2009): *Credit Risk: Pricing, Measurement, and Management*

Assessment

The grade for the course will be based on a take-home final exam which will require you to conduct credit analysis of an individual sovereign bond market and the related credit derivatives market based on methods learnt in the course. The final exam must be done in groups of four each. This will determine 80% of your grade each. There will also be 20% credit for class participation and bringing to the classroom discussion relevant themes from on-going sovereign and financial credit risk issues at time of the course. Please take class attendance seriously and enrich the classroom experience for yourself and others. No auditing is allowed as per restrictions and guidelines imposed by the Registrar's office.

PLEASE REVIEW THE RULES GOVERNING ACADEMIC INTEGRITY AND THE STERN CODE OF CONDUCT:

http://www.stern.nyu.edu/sites/default/files/assets/documents/con_039512.pdf

Class (date)	Topic
1 (27 January)	Introduction to credit risk: historical default and recovery experience on corporate and sovereign debt Introduction to single-name credit derivatives The changing nature and regulation of credit derivatives
2 (29 January)	No arbitrage relationship between single-name credit default swap (CDS) and bonds CDS auction mechanism Behavior of CDS-Bond basis during the 2007-09 global financial crisis
3-4 (1 February)	Behavior of CDS-Bond basis during the European sovereign debt crisis Basket credit default products and index tranches – focus on sovereign indices Sovereign Debt Crisis in the Eurozone – Understanding its various dimensions and especially the nexus with the banking sector (see the summary diagram below)
5 (3 February)	Sovereign Debt Crisis in the Eurozone – Understanding its various dimensions and especially the nexus with the banking sector
6 (5 February)	Measuring and managing systemic risk of the financial sector Stress-testing the financial sector and implications for sovereign credit risk
(12 February)	Final exam: Project assessing the nexus of credit risk of a <u>sovereign and its financial sector</u> due

Summary

