



Statistical Sciences  
UNIVERSITY OF TORONTO

## SEMINAR

January 21<sup>st</sup>, 2016 at 3:30pm

*\*Refreshments at 3:10pm*

Sidney Smith Hall, Room 2106

Speaker: Christoph Frei, University of Alberta

Hosts: Jamie Stafford and David Fleet

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### **Systemic Influences on Optimal Investment in Stocks and Credit Default Swaps**

Recent events have shown that the dependence structure of financial markets is more complex than what is captured by classical models. For example, during the 2008 financial crisis, the financial instability of some companies spread out to affect other companies, similarly to an infectious disease. The goal of this talk is to analyze how such systemic influences are reflected in optimal investment decisions. To this end, we introduce a model with dependence structure between market risk (risk due to movements in prices) and default risk of the companies. An investor can use stocks and financial instruments called credit default swaps (CDSs) to participate in the market. We derive an explicit expression for the optimal investment strategy in stocks and CDSs. This allows us to analyze the mechanisms driving the optimal investment decisions. We then develop a novel calibration procedure so that we can fit the model to historical time series of stock and CDS data. An empirical analysis reveals the critical role of systemic risk in portfolio monitoring.

This talk is based on joint work with Agostino Capponi (Columbia University).