

Preface

This slim volume logs the development of a cascade of contagious ideas that has occupied my space, time and mind in recent years. There was a clear triggering event that occurred in April 2009. Late in that month, Michael Lynch and his colleagues at MITACS Canada brought together a host of scientists, mathematicians and finance industry participants for three days to brainstorm about underlying causes of the ongoing financial crisis and how mathematical thinking could be brought to bear on it. My role there was as gadfly to provoke discussion on a special topic no one at the meeting was very aware of, namely financial systemic risk.

Since that event introduced me to the subject, I have had many opportunities to present to a diversity of audiences an evolving view of how the architecture of the financial system can be described in terms of network science, and how such a network formulation can be made amenable to a certain type of mathematical analysis. This book is not intended to be a definitive work on the subject of financial systemic risk, and does not try to represent a broad consensus. Instead, it is a personal attempt to crystallize the early results of research that focusses on the basic modelling structure that ensures some kind of mathematical tractability, while allowing a great deal of both reality and complexity in the actual finance network specification. I owe a debt of thanks to a great number of people, especially graduate students and research colleagues, who have listened, commented and added new nodes to this complex network of ideas.

My McMaster colleague, Matheus Grasselli, was instrumental in many ways, not least in providing the original impetus to write this SpringerBrief. Nizar Touzi encouraged and supported me in my first attempt at delivering a minicourse on systemic risk. The scope of this minicourse grew over time: Jorge Zubelli hosted me for an extended period at IMPA, where I delivered another version; Peter Spreij arranged a session for me to speak at the Winter School on Financial Mathematics in Luntenen; James Gleeson provided me with multiple invitations to Limerick. The Fields Institute for Research in Mathematical Sciences gave me encouragement and organized multiple events relevant to my work. The Global Risk Institute for Financial Services, in particular Michel Maila and Catherine Lubochinsky, has

provided substantial financial and moral support for this research. I give my hearty thanks to Mario Wüthrich and Paul Embrechts who hosted my extended stay at ETH Zürich in 2014 where I was extremely fortunate to be able to deliver a Nachdiplom lecture series based on the material contained in this book. Finally, to my wife, Rita Bertoldi, I offer my affectionate acknowledgment of her patient support throughout my lengthy exposure to this dangerous contagion.

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