Book reviews

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Risk Topography: Systemic Risk and Macro Modeling. By Markus Brunnermeier and Arvind Krishnamurthy (eds). The University of Chicago Press, 2014, ISBN 978-0-226-07773-4, 273 pages. doi:10.1017/S1474747215000104

The Global Financial Crisis (GFC), which started in August 2007 and reached its peak around the collapse of Lehman Brothers in September 2008, adversely impacted the pension and insurance sector. On the asset side, pension plans and insurance providers suffered large losses through their exposures to various asset classes which sharply declined during the GFC. On the other hand, the value of their liabilities increased as central governments tried to stimulate the economy by cutting interest rates.

With the wisdom of hindsight, the existing economic measurement system was not successful in detecting in the financial sector the vulnerability and the build-up of bubbles leading up to the crisis. In this respect, *Risk Topography*, edited by Markus Brunnermeier and Arvind Krishnamurthy, provides an invaluable contribution by examining ways of designing systems which provide better measurement of systemic risk factors. The 16 chapters in this book, contributed by renowned academics, central bankers and market participants, are organized in seven parts.

Part I concerns the conceptual issues related to economic measurement and disclosure. Chapter 1 by Lars Peter Hansen discusses the issues which arise when measuring systemic risk, guided by incomplete theories. Acknowledging that a consensus theoretical model is hard to achieve in the short term, Hansen notes that at early stages empirical approaches are valuable, which should eventually result in new and improved theories. In Chapter 2, Augustin Landier and David Thesmar propose a framework which examines the costs and benefits of disclosing financial data to the public. Lack of transparency of such data is often considered a cause of the GFC. The authors show that the costs of public closures can be reduced with long lags and more aggregated data.

Part II of the book devotes four chapters to various ways of measuring risk exposures. Durrell Duffie in Chapter 3 presents a 10-by-10-by-10 (the exposures of 10 systematically important firms, each with 10 counterparties, to 10 stressful scenarios) approach to monitor the exposure of a group of systemically important financial organizations to a set of stress scenarios. This approach can be readily implemented and extended to a larger group. In Chapter 4, Juliane Beganau, Monika Piazzesi and Martin Schneider point out the lack of information content of reporting the market or book value of assets. With the Flow of Funds data, the authors show that asset positions can be characterized by their exposures to underlying risk factors. Chapter 5 by Robert L. McDonald and Chapter 6 by Viral V. Acharya are complementary in the sense that they both use information of margins which are posted to derivatives to gauge risk exposures and standardize reporting. While McDonald studies derivatives settled by clearinghouses, Acharya focuses on the over-the-counter market.

Part III includes two chapters which discuss the measurement of endogenous components of systemic risk. Markus Brunnermeier, Arvind Krishnamurthy and Gary Gorton in Chapter 7 present a liquidity mismatch index, which can be used to assess systemic risk through market participants' response to liquidity shocks. In Chapter 8, John Geanakoplos and Lasse Heje Pedersen discuss the measurement of leverage. The authors observe that leverage on old loans and leverage on new loans go in opposite directions when asset prices drop and they respectively measure the current and the average credit conditions in the economy. It is hence important to monitor both new and old leverages.

The three chapters in Part IV focus on the short-term funding markets and banks' lending activities. In Chapter 9 Tobias Adrian, Brian Bagalle, Adam Copeland and Antoine Martin discuss the importance of understanding and monitoring the repo market and security lending markets. These markets are essential for trading activities of fixed-income and equity securities. The authors call for better data collections in order to more effectively monitor systemic risks in these markets. Both Chapters 10 and 11 focus on the lending activities of banks. William F. Bassett, Simon Gilchrist, Gretchen C. Weinbach and Egon Zakrajšek in Chapter 10 point out the importance of monitoring new bank lending and propose data required to track flows of new lending. A key question during a period of rapid credit growth (or contraction) is whether it is driven by credit demand or supply. The excessive credit supply during the lead-up to the GFC was driven by relaxed lending standards and resulted in large losses. In Chapter 11, Atif Mian shows that a credit registry system would help policymakers disentangle the credit supply factors from credit demand factors, hence more effectively assessing systemic risks in the banking sector.

Part V of this volume tackles the importance and systems of measuring the household sector. Robert E. Hall in Chapter 12 argues that it is crucial to measure households to better understand the systemic risks in the financial sector and in the overall economy, due to the credit exposure of households to financial institutions. Jonathan A. Parker in Chapter 13 proposes a liabilities, earnings, assets, demographics, and financial sophistication (LEADS) approach, with liabilities, earnings, assets, demographics and financial sophistication as the five key aspects in the measurement system of the household sector. Similar to Chapter 11, Amir Sufi in Chapter 14 describes data and methods for monitoring credit supply expansion, with the focus on the household sector.

Part VI addresses the corporate sector. V.V. Chari in Chapter 15 shows that financial frictions in the non-financial sector can result in macroeconomic consequences. Chari then lays out various ways of obtaining and publicizing the data required to understand financial frictions. Chapter 16 in Part VII, the last part of the book, discusses international issues which arise from the GFC. Eugenio Cerutti, Stijin Claessens and Patrick McGuire list issues and data requirements in understanding the global nature of the banking sector.

Overall, this book provides a rich resource for policymakers as well as academic researchers aiming to improve the economic measurement systems and develop sophisticated theoretical models. Undoubtedly, the implementation of some of the recommended systems should help regulators better assess and manage the systemic risks in the financial markets and in the overall economy. Granted, the data requirement in some chapters is quite demanding, which can substantially increase the collection and reporting costs. Therefore, careful and thorough cost–benefit analyses should be in place to ensure that the margin benefits of the recommended systems dominate the margin costs.

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