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Edited by Mario Quagliariello

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Stress-testing the Banking System

Stress tests are used in risk management by banks in order to determine how certain crisis scenarios would affect the value of their portfolios, and by public authorities for financial stability purposes. Until the first half of 2007, interest in stress-testing was largely restricted to practitioners. Since then, the global financial system has been hit by deep turbulences, including the fallout from sub-prime mortgage lending. Many observers have pointed out that the severity of the crisis has been largely due to its unexpected nature and have claimed that a more extensive use of stress-testing methodologies would have helped to alleviate the repercussions of the crisis. This book analyses the theoretical underpinnings, as well as the practical aspects, of applying such methodologies. Building on the experience gained by the economists of many national and international financial authorities, it provides an updated toolkit for both practitioners and academics.

Mario Quagliariello is a senior economist in the Regulation and Supervisory Policies Department of the Bank of Italy. He has been the representative of the Bank of Italy in a number of international working groups dealing with financial stability issues and has published several articles in international and Italian journals. He has a PhD in economics from the University of York.

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Foreword

Past and recent events have shown the disruptive power of financial crises. The direct costs of the crises on the financial system – however measured – are high; indirect effects to the entire economic system may be dramatic and long-lasting.

Looking at the experience of the past century, one remains astonished by the recurring tendency of the financial system to accumulate risk and leverage over a number of years, to then suddenly change sentiment and discard risk sharply and indiscriminately. While markets, asset types, players involved and the triggering event differ from one episode to the next, risk accumulation cycles tend to be similar. Crises have also shown that risks and vulnerabilities for the financial system do not stem only from endogenous developments but – probably much more frequently – are the consequence of changes in the macroeconomic and financial environment.

While these recurrences do not make crises more predictable, they have stimulated public authorities to search for ways of reducing the likelihood and impact of crisis events. One of the main lessons drawn from past turbulences is that it is important to complement the supervision of individual institutions with a constant monitoring of conditions of the system as a whole.

Reducing the impact of financial instability entails the development of a comprehensive kit of tools, ranging from forecasting techniques to preventive policy measures, to effective management and resolution devices. The first line is obviously trying to prevent the crisis from breaking out. The identification of risk sources and the prediction of potential threats are therefore crucial elements of any financial stability toolbox.

In that respect, macroeconomic stress tests are increasingly considered as the basic, indispensable tool of any systematic effort to reduce the likelihood and impact of crisis events. Stress-testing *per se* is not new – it is just an evolution of more primitive ‘what if’ thinking – but it has become much more structured and sophisticated in recent times. Testing the resilience of the financial system to a situation of stress – along with the smooth working of

financial stability arrangements – is a top priority for the authorities responsible for safeguarding financial stability.

This book provides the reader with a systematic presentation of the latest developments in the field of stress-testing, taking advantage of the experience of colleagues from leading financial supervisory authorities and central banks. The first part of the volume introduces the reader to the main methodological aspects of stress-testing and explains the theoretical underpinning of different tools. The second part gives a comprehensive and updated overview of stress-testing approaches in various countries.

Given the difficulty in identifying the next crisis, the design of extreme but plausible stress tests is of great value: if understood and used correctly, they may strengthen the awareness of policy-makers on new risk factors as well as on the resilience of major institutions, markets and infrastructures under stress conditions. While technical aspects are certainly essential for ensuring the reliability and practical usefulness of such simulations, human judgment – as pointed out in many chapters – is also a central component of stress-testing. Therefore, the exchange of experiences among experts of various countries can help improve methodologies and develop a common language for checking the robustness of different approaches and interpreting the outcome of the simulations.

Notwithstanding the undeniable advances of the methodologies and applications, it is fair to say that the framework has not yet reached a steady state. Almost all contributors very openly claim that the challenges for stress-testing are still significant and there is room for further developments.

As Governor Draghi argued in the aftermath of the sub-prime crisis, ‘every crisis leaves policy-makers shaken by the pooriness of their forecasting ability. While it is sometimes possible to see the risk factors clearly, it is nevertheless impossible to predict the precise moment that the market will choose to trigger the crisis, the exact forms this will take or the links decisive for its propagation.’ Indeed, every crisis is a lesson for the authorities and an incentive to enrich the toolkit at their disposal. Any progress in stress-testing methodologies does represent a valuable step in this direction.

Giovanni Carosio
Bank of Italy, Deputy Director General

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The seeds of this book were planted some years ago, when I was a young economist at the Bank of Italy and involved in the technical team responsible for developing new stress-testing methodologies for the incoming Italian Financial Sector Assessment Program (FSAP). I owe many more debts that I can possibly acknowledge, but I wish to thank Maurizio Trapanese, who initiated me to macroprudential analysis, and Sebastiano Laviola, who encouraged me to work on stress tests.

The project of a book on macroeconomic stress tests has become reality because so many colleagues and friends from either the Bank of Italy or other prominent financial institutions have enthusiastically agreed to contribute to it. I am obviously very indebted to all the contributors, but I am particularly grateful to Michael Boss, Mathias Drehmann, Gerald Krenn, Sebastiano Laviola, Juri Marcucci, Claus Puhr, Steffen Sorensen, Marco Stringa, Martin Summer and Maurizio Trapanese, who agreed to write their chapters when the ‘probability of default’ of the project was terribly high.

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