



## Markus K. Brunnermeier and Ricardo Reis: *A crash course on crises: macroeconomic concepts for run-ups, collapses, and recoveries*

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Anjan Thakor<sup>1</sup>

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Markus Brunnermeier and Ricardo Reis have written an excellent book on “macro financial crises” that provides a succinct and highly accessible review of some important ideas that have emerged from research—much of it in the aftermath of the 2007–2009 global financial crisis—about the preconditions, causes and effects of major financial crises, and the panoply of regulatory tools that have been deployed to quell them. The book, which is not limited to just the 2007–2009 crisis, is intended for those seeking an introduction to the literature on the topic and to be used as a supplement for courses dealing with financial crises. Although the treatment captures the richness of the research on various aspects of crises, it does not presuppose knowledge beyond an introductory microeconomics course.

A macro-financial crisis is one that originates in the financial sector, but whose effects ripple significantly through the real economy, affecting economic output, employment, and household consumption. Thus, it requires researchers to not only study financial market fissures that cause the crisis to persist, but also the dynamics of the economic recession that follows in the broader economy and the feedback effects within and across the financial and real sectors that amplify and propagate shocks. The amplification and propagation of these shocks mean that the consequent risks rapidly become systemic and not amenable to dissipation through diversification. In fact, a lack of initial comprehension of this “diversification limitation” during the 2007–2009 financial crisis may have impeded financial regulators all over the world from deploying the appropriate response measures at the

onset of the crisis, with many of the effective tools emerging in real time during the crisis as we learned more.

After an introductory chapter, the book develops its ideas in ten chapters before a short concluding one. Each chapter develops a few key concepts and provides some real-world examples of the ideas at work in practice. These chapters weave a story that starts with the common set of events—most notably asset price bubbles—that seem to precede all macro financial crises, how these events weaken financial institutions by driving up their leverage, and how these weaknesses then enable seemingly idiosyncratic shocks to amplify and propagate through the financial system. This propagation then impacts the real economy via fire sales and liquidity spirals, making it difficult to distinguish between insolvency and illiquidity (a major issue at the start of the 2007–2009 crisis), and frustrating optimal regulatory responses. Consequently, the crisis is prolonged, and the economic funk in the real sector persists well after the crisis in the financial sector has subsided. The authors then discuss how these developments call for regulators to develop the so-called “unconventional” monetary policy tools to end the crisis, taking into account the fact that a crisis can cause the risk profiles of sovereign countries and their banks to become intertwined, creating complications that may exceed the coping capacities of some national governments, sometimes forcing a hands-off approach. Internationally, these events also have implications for capital flows across countries since the effects are not the same for emerging and developed economies.

In what follows, I briefly discuss each chapter, summarizing its key insights and offering a few additional thoughts on factors not covered in the book. Chapter 2 begins by noting that most macro financial crises are preceded by an exponential increase in asset prices. Which asset experiences the price bubble varies from crisis to crisis—tulips during the Dutch tulip crisis (1636) and real estate during

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✉ Anjan Thakor  
thakor@wustl.edu

<sup>1</sup> Olin Business School, Washington University in St. Louis, St. Louis, MO, USA



the 2007–2009 crisis—but the start of the crisis typically coincides with the bursting of the bubble. This chapter discusses why these price bubbles arise, leaning heavily on the idea of “irrational exuberance”, and an important insight is explaining why sophisticated investors—who ostensibly recognize that an unsustainable price bubble is forming—do not trade in a way that keeps the bubble from forming in the first place. One of the reasons is that there are “strategic complementarities” in asset markets—the actions of non-cooperative traders can mutually reinforce each other—so it may make sense for me to hold on to or buy more of an asset even at an inflated price if I think other traders will do the same and the price will keep rising. Whatever the reason, eventually the bubble bursts and this precipitates the crisis. The reason is that sharp declines in the prices of assets that many financial institutions hold causes sharp declines in the values of equity on institutional balance sheets, causing them to both offload the asset—exacerbating the downward price spiral—and reduce new investments, including lending, which then has effects that reverberate through the real sector. The examples in this chapter are the Japanese bubble in the mid-1980s and the 1998–2000 internet bubble. This is an incisive chapter that sets the stage very well for the rest of the book. It would have been useful, however, to discuss a few other factors highlighted in the research that cause irrational price bubbles to form and persist and make the economy less able to withstand the bursting of the bubble. These include very high pre-crisis leverage either on bank balance sheets or household balance sheets or both (which is what we had prior to the 2007–2009 crisis), limited arbitrage that makes it difficult for sophisticated traders with limited borrowing capacities to continue trading “against an irrational market,” willingness of lenders to dilute their screening of borrowers due to high collateral values supported by high asset prices, a long period of low defaults and good business conditions that causes all agents to rationally revise their beliefs that the good times will continue and keeps risk premia low, encouraging more risk taking.<sup>1</sup>

In Chapter 3, the authors address how capital gets misallocated, with the motivation that such misallocation can contribute to pre-crisis price distortions. Financial market depth is noted as a key to minimizing capital misallocation. Since poorer countries typically have shallower financial markets, they experience capital being misallocated both across sectors and within sectors in the economy. One consequence of this is that it diminishes the competitiveness of some firms in the country and also causes credit to be channeled to some firms that should not get it, so that many negative-NPV (net present value) investments are made. When the crisis recedes and capital allocation corrections occur, many

firms find funding being cut off and fail. Thus, having deep and efficient financial markets can complement regulatory efforts to reduce the likelihood of macro financial crises. The examples provided in this chapter include the crisis in Europe following the creation of the euro in 1999 and the 1970s liberalization and subsequent 1982 crash in Chile.

Chapter 4 turns to banks and shadow banks and the roles they play. In a nutshell, the spotlight here is on the evolution of banks from their traditional role of originating and holding loans on their balance sheets and funding these with federally insured deposits, to their new role, in which they originate loans and then securitize them, relying on not just deposits but also unsecured interbank credit and repos (repurchase agreements) for funding. Because these reincarnations of traditional banks face different risks and asset-specific regulations, they also tend to have lower capital ratios and higher funding liquidity risk, and they are more prone to amplify asset price cycles. The main conclusion is that regulation needs to adapt, and it should be dynamic and countercyclical in its requirements (e.g., capital and liquidity requirements). An interesting example here is the Spanish credit boom of 2008. This example highlights the significant differences between European banks and U.S. banks, most notably in the facts that the ratio of bank credit to national GDP is much higher for European countries than for the U.S., and that the largest banks in a typical European country are much larger in proportion to national GDP than the largest banks in the U.S. are relative to U.S. GDP. This brings up the issue of “too big to save” (Demirguc-Kunt and Huizinga 2010).

The book turns next to crashes, triggers, and amplifiers. Chapter 5 discusses how modern financial systems amplify shocks. The main culprit is strategic complementarities—when the entire financial system tries selling assets at the same time, aggregate liquidity evaporates and fire sales result, with steep price drops. The low asset prices prevent banks from rolling over their short-term liabilities. Now if banks were sufficiently well capitalized, they may be able to ride out the storm, but highly leveraged banks cannot do this, so fire sales and liquidity spirals are unavoidable, and these tend to amplify and propagate the initial shocks. Examples are the Irish banking problems in the 2000s and the emerging markets crisis of 1997–1998. This is a very nice, short chapter, with valuable insights. But I would have liked to see two issues discussed more. One is related to additional amplifiers in modern financial systems: mark-to-market accounting, derivatives, high leverage, interconnected financial institutions,<sup>2</sup> and commonality of asset holdings.<sup>3</sup> The other issue is

<sup>2</sup> Indeed, this interconnectedness was one reason why risks in the U.S. financial system were concentrated in a few very large institutions prior to the 2007–2009 crisis, and this impeded the dissipation of these risks through diversification.

<sup>3</sup> See, for example, the discussion in Thakor (2015b).

<sup>1</sup> Shleifer and Vishny (1997) and Thakor (2015a).



the role of bank capital. While the chapter acknowledges that high bank capital can help to prevent amplification of risks, it is also worth additionally noting that high levels of bank capital can not only reduce amplification and propagation of risks, but also provide banks with opportunities to *gain* additional funding and buy additional assets at favorable prices, thereby inducing a reallocation of liquidity and assets from weaker (more highly leveraged) banks to stronger banks.<sup>4</sup> This is policy relevant because it strengthens the regulatory argument for higher bank capital ratios.

Chapter 6 explains the difference between illiquidity (the inability to raise financing for positive-NPV projects even when assets are worth more than liabilities) and insolvency (assets are worth less than liabilities). This is a crucially important issue because knowing which of these two is the driver of a financial crisis informs regulators about how to respond. For example, the 2007–2009 crisis was an insolvency risk crisis in which perceptions that the insolvency risk of financial institutions had risen caused perceived counterparty risk to increase, elevated haircuts in financial contracts and impeded institutional trading, causing liquidity to shrink (and thereby creating the erroneous initial perception that it was a liquidity crisis). In such a crisis, the appropriate regulatory response is to focus on recapitalizing institutions rather than flooding the market with additional liquidity.<sup>5</sup> Examples provided here are the 1931 run on the German banking system and the 2010–2012 Greek sovereign debt crisis.

Chapter 7 discusses how the private and public sectors become linked during financial crises. Outside the U.S., banks hold a lot of their home country's national debt. This chapter explains why and points out that this can lead to a “doom loop,” whereby perceptions of investors that a country's bonds are riskier causes their prices to fall, which depletes bank equity and triggers government guarantees, which worsens fiscal deficits, further reducing government bond values and bank equity, and so on. Examples given are the experience of European banks during 2007–2010 and the Argentinian crisis of 2001–2002.

Chapter 8 examines the “flight to safety” phenomenon, wherein at the onset of a crisis, investors flee to safe assets. Government bonds are the most prominent safe asset, other than cash, but they can lose this safe asset status if the country's overall financial health is called into question. As examples of this, the chapter discusses the flight to safety during the 2020 pandemic, and the across-country differences in government borrowing costs in the euro area during the 2007–2009 crisis.

In its last three chapters, the book turns to international issues as well as monetary and fiscal policies. Chapter 9 discusses how exchange rates respond to financial crises. It presents a model of

exchange rates and recoveries. It points out that in the normal course of events, a crisis would cause currency depreciation that would lead to an exchange rate adjustment that brings the economy back to health. But when a financial crisis occurs and financial markets are imperfect, this adjustment can break down and the amplification of initial shocks can deepen the recession in the real economy rather than restoring its health.

Chapter 10 discusses unconventional monetary policy to deal with crises. It points out that the 2007–2009 crisis forced central banks to develop monetary policy tools not deployed before in any significant way. One of these is paying interest on bank reserves at the central bank, which the chapter points out is better than just creating additional reserves for banks. The other is quantitative easing (QE) which involves the central bank buying government bonds from financial institutions. As examples, the chapter discusses the Bank of Japan's QE program and the ECB's embrace of QE during and after the 2007–2009 crisis. Here it would have been nice to also see a discussion of the initiatives by the U.S. Treasury and Federal Reserve to recapitalize U.S. banks during the 2007–2009 crisis, such as the Capital Purchase Program.

Chapter 11 discusses fiscal policy and real interest rates. It points out how private insurance markets retreat during financial crises, so less idiosyncratic risk can be diversified, leading banks to reduce lending and causing entrepreneurs to do more self-financing and take on more risk. The conclusion here is that fiscal policy should attempt to reduce the demand for safety and provide automatic stabilizers. The Great Depression of 1933 is offered as an example.

Overall, I think this is an excellent book for those who wish to better understand not only financial crisis but how they impact the real economy, and what policymakers can do to minimize the likelihood of crises.

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<sup>4</sup> See the evidence in Berger and Bouwman (2012), and Perignon, Thesmar and Vuillemey (2018).

<sup>5</sup> See Thakor (2015b), for example.

