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1

Introduction

THE UNITED STATES' financial crisis of 2008–10 and the euro area's sovereign debt crisis of 2010–12 were stark examples of how financial crashes can bring down whole economies. Unlike in previous decades, these crashes were not limited to wild gyrations in asset prices nor to great gains and losses for sharks and fools. They did not only afflict countries where institutional problems and clear fault lines in the way financial markets operate make a crisis a matter of time. Rather, these were *macro-financial* crises. They brought economic hardship to households throughout the world, in rich and emerging countries alike. Financial economists have naturally exerted much effort understanding manias and panics in financial markets, while macroeconomists have always been just as busy making sense of great recessions and depressions.

Over the last decade, instead, there has been an enormous amount of research at the intersection of macroeconomics and finance devoted to times when financial markets and the macroeconomy move violently. Researchers have explored new ideas, new evidence, and new explanations for what we saw, and applied them to not just recent global crises, but also to make sense of regional crashes over the previous 30 years. This book provides a short introduction to some of these ideas.

1.1 Crashes

There are a bewildering number of financial markets. In each of them, people trade in different assets, in different regions, with different counterparties. Asset prices are naturally volatile as they respond to myriad changes in fundamentals, institutional features, and people's beliefs. It is therefore no surprise that, at any point in time, some financial market somewhere will be going through a sharp slump in prices or in volumes of trading.

A financial crisis is much more than this. It is a time when many financial markets show the same pattern of losses, when bad news in one corner quickly spreads to several others, and when one institution's failures make it default on commitments to others, all struck like a row of dominoes. A macro-financial crash is even more than this. It happens when the financial troubles spill to the real economy and back into financial troubles. These crises come with sharp and deep recessions, where millions lose their jobs, income falls, and democratic institutions come under pressure to find others to blame. These crashes are the topic of this book.

While they are extreme in their consequences, crashes are not rare. In the last two decades alone, the two major macroeconomic events affecting many countries at once—the global recession of 2008–10 and the euro area troubles in 2010–12—were macro-financial crashes. So were some of the largest falls in well-being in isolated countries, from Argentina to Turkey to Lebanon. The pandemic recession of 2020–21 threatened to evolve into a new macro-financial crisis, but the financial markets bounced back and the economy showed resilience, even if leading ultimately to high inflation. Similarly, the Russian invasion into Ukraine in February 2022 and subsequent sanctions could have triggered a financial crisis and may still do so. Naturally, economists have worked to figure out why these crashes happen in the first place, how they spread, and how we can mitigate their effects. With this knowledge, scientists can understand why crashes are a feature of modern economies, and policy-makers can be prepared to try to prevent them and respond to them when they happen. Like viruses, financial crises and recessions cannot be eradicated. But, just as scientists strive to learn how viral outbreaks can become pandemics and how to contain them, so do economists when it comes to macro-financial crises.

Unsurprisingly, new concepts to understand these crashes have been developed. Notwithstanding, they are only vaguely known to economists working outside the intersection of macroeconomics and financial economics. Students of economics at the undergraduate and, often, masters levels are for the most part unaware of them. The modern study of crashes has not yet seeped through to textbooks. As a result, in public debates or policy discussions, crashes are sometimes still referred to as aberrations in economic science. Even when people use modern concepts and models of crashes, they often lack an understanding of how they precisely work, how they can be applied, and how they fit together. The goal of this book is to introduce these ideas

at the intersection of macroeconomics and finance. Together they provide a richer account of past crashes and offer insights into potential future crashes.

The book has ten main chapters, each being mostly self-contained and dedicated to one idea. In turn, each chapter is split into three integrated sections. The first introduces one concept in macro-finance aided by one diagram. The second and third apply this concept to two different historical crashes. We rely on intuition, diagrams, and plots, as opposed to formal models, derivations, or econometrics. Our approach is analytical, but we presume only a solid class in introduction to economics from the reader. Every section presents one insight, from a model or a historical event, rather than a discussion of alternatives or an account of the many other factors that would paint a full picture. We attempt to be brief and sharp, while being aware that each of the 30 sections can be expanded into a whole book in itself. Our goal is not to provide a survey for researchers, but rather to provide an entry point to the literature that teachers and students can use in classes to supplement their textbooks. In short, we have tried to provide a crash course on crashes.

1.2 Organization of the Book

The book is split into three parts: i) the run-up to a macro-financial crisis, ii) its trigger, spread, and amplification, and lastly, iii) the recovery and the policies around it.

The first part focuses on the features that feed a crisis. Chapter 2 discusses people's beliefs in a world of pervasive uncertainty about fundamentals as well as about what others will do. These beliefs can sometimes lead to large capital flows toward risky assets, and to swift rises in asset prices. Even if anyone looking at the financial market concludes that there is a bubble, elevated asset prices can persist. But at some point, they no longer do, and what follows is often a violent crash. We explain this by introducing concepts of backward induction, higher-order beliefs, and beauty contests.

The first application is to the Japanese land and stock market bubble of the late 1990s. Its crash was followed by 30 years during which the Japanese economy grew at a significantly slower pace than it had grown during 1955–85. The second application is to the Internet (or dot-com) asset price bubble of 1998–2000, when technological changes came with real investments but also great uncertainty in assessing the fundamental value of financial assets. During this time, sophisticated investors did not lean against the rapidly rising asset

prices but rather rode the bubble. Given the uncertainty, each one individually found this profitable, even if it risked triggering a financial crisis.

Most crashes are also preceded by a rush of capital into the country. The capital flows are drawn by a desire to ride the bubble, and often come in response to financial liberalization or optimism about future growth. Commentators divide themselves between those that applaud the reallocation of capital from rich places to regions that have more potential for growth, and those that warn of dangers and condemn foolish excesses. Chapter 3 introduces the concept of capital misallocation. It explains how large capital flows can be allocated away from sectors where rewards would be higher, and from the most productive firms. Some economic growth can disguise stagnant productivity and zombie firms.

The first application is to the Portuguese slump in the twenty-first century. The euro, and the integration of financial markets in the euro area that came with it, led to large capital flows into the country, which promised prosperity. Instead, the Portuguese economy slumped between 2001 and 2008, and then crashed. Portugal has had its lowest 20-year period of economic growth in the last 140 years. Similar stories apply to Greece and Spain during this period. The second application is to Chile's economy in the 1970s, when a fast-paced financial liberalization and economic growth came to a sudden crash in 1982. Argentina and Uruguay went through a similar, but less dramatic, experience. These crashes in the Southern Cone triggered the first wave of the economic literature on misallocation. The particular experience of Chile is notable because it comes intertwined with the Pinochet regime, which many readers will know about from history books.

The third chapter of this first section introduces the reader to modern financial institutions. Whether they are called banks, shadow banks, or something else, they share the feature of creating liquidity but being prone to runs. The chapter focuses on their balance sheets and how they get funded. This includes a discussion of the incentives for bankers to monitor and manage loans prudently. It also explains how financial institutions obtain their resources from both funders directly as well as from markets, and how the two sources expose them to different risks.

The first application is the housing boom and crash in the United States in 2000–07. We discuss how in the run-up to the crisis, U.S. banks securitized their mortgages to an unprecedented extent, and how this allowed for a credit boom. The second application is on the other side of the Atlantic. During this time, the Spanish banking sector experienced the rise of a sub-sector,

the “Cajas,” which over the prior decades had been relatively stagnant. They mostly dedicated themselves to real estate lending, and their growth came with the rise of a new financial product, mortgage-backed securities, which they supplied in great amounts. Their story has many common elements with the savings and loans crisis of the 1980s United States, or with the rise and fall of Northern Rock in the United Kingdom in the 2000s.

The second part of the book studies the arrival of a crisis. Each chapter introduces a different trigger or amplifier of a crash. Chapter 5 starts with how small shocks can get amplified and become systemic through the links that connect different financial institutions. These links lead to strategic complementarities, a concept that pervades most accounts of runs and crashes. In some cases, they may even lead to multiple equilibria, so that even pure changes in beliefs about what others will do can trigger a crash. The link to the real economy enhances these connections because a fall in lending creates the losses that trigger new rounds of lending cuts.

The first application deals with the 2007–08 banking crisis in Ireland. It discusses how Irish banks became systemic between the 1990s and the 2000s, tied by their common investments in real estate and common sources of funding. The second application deals with the global crisis in 1997–98. Financial troubles that first led to crises in Indonesia, Malaysia, Thailand, and the Philippines triggered crises in Hong Kong, Korea, and Singapore just a few months later. A few more months went by, and the crisis spread to Russia, followed by Brazil, and then Argentina, Chile, Colombia, Mexico, and Venezuela. The crisis was globally systemic, connecting countries that were alike and unlike in similar ways.

Most capital flows across borders through debt contracts. One important property of debt contracts is that they give rise to a definition of the economic solvency of the borrower. Solvency depends on the perception about the future surpluses of an institution, which is studied in chapter 6. The value today of these surpluses depends on the interest rate used to discount them. When interest rates spike, a solvent institution can become illiquid, unable to roll over and service its debt, even though its surpluses have not changed. An outside institution with deep pockets, like the IMF, can eliminate the illiquidity outcomes, but it has to distinguish them from insolvency, a difficult task.

Our first application is to the Greek sovereign crisis of 2010–12, and explores how a series of events that blurred the distinction between insolvency and illiquidity led to Greece’s gradual inability to roll over its debt and, in spite of the IMF’s role, culminated in a sovereign default. The second application is to

the failure of an Austrian bank in 1931 and how it contributed to the arrival of the Great Depression in Europe.

While chapters 5 and 6 focus on the servicing of debt by financial institutions and sovereigns, respectively, chapter 7 turns to the link between the two. Bank funding and public debt are tightly linked. From one direction, banking crises typically come with large fiscal costs. Governments find themselves directly bailing out the banks while collecting fewer taxes and spending more on social payments during the recession. From the other direction, when public debt is riskier, its value falls, and the banks that hold this debt see their balance sheets suffer. This creates a diabolic, or doom, loop tying financial institutions and governments.

Our first application is to European banks in Cyprus, Greece, Ireland, and Italy since 2010. In the previous decade, many of these banks grew large in size, especially relative to the size of the state they are based in, as they took advantage of the E.U. common market and the common currency. Yet, when trouble hit, it was individual states that found themselves on the hook. The second application is the Argentinian crisis of 2001. When governments have trouble rolling over their public debt, a common response is to use their power over domestic banks to have them buy this debt. This form of financial repression was common for decades well before the Argentina crisis, but the events of 2001 illustrate it well.

The final chapter in this section defines the concept of safe assets and discusses another important phenomenon in macro-financial crises: the flight to safety. In a crash, even as the perceived risk across regions, sectors, and institutions rises, the interest rate in some other regions or assets becomes unusually low. Investors shift their portfolios away from the risky assets, and toward assets that they deem safe, even if the relative safety differences are very small. As they fly to safety, they increase the liquidity of the safe asset, and make its price rise, which justifies its perceived safety in the first place. The safety of an asset is in part self-fulfilling.

Our first application is to the euro area sovereign debt crisis of 2010–12, and the flight to safety from the European periphery to its core. While prior to the euro crisis all sovereign bonds were deemed safe, with the onset of this event peripheral countries' government bonds lost their safe asset status. We moved from a risk-on to a risk-off regime. The second application is to the flight of capital from emerging markets to the United States in the second quarter of 2020. These flows occurred despite the fact that, relative to most emerging economies, the United States at the time was more heavily affected by the

pandemic, its economy was suffering more under lockdown measures, and its government finances were under more strain.

The third and final part of the book discusses economic policy responses and how they affect the shape of recoveries. Chapter 9 starts with exchange-rate policies. In a macro-financial crisis, a depreciation of the exchange rate boosts exports, but it also hurts the balance sheets of domestic borrowers if they had borrowed in foreign currency beforehand. The chapter discusses this currency mismatch, the channels for these balance sheet effects, and the financial amplification of the effects. The effects may be larger than the conventional boost that a depreciated exchange rate gives to the trade balance of the country. In that case, some capital controls and foreign exchange interventions may be merited.

We apply these ideas first to the Mexican crisis of 1994. It illustrates the extent of dollarization in many emerging economies, and how it interacts with the depreciation of the exchange rate in a crash to amplify the downturn. The second application is to the worldwide recovery from the 2008–10 global recession. This was the largest global macro-financial crash since the Great Depression. It left scars that impeded a full recovery for a long time. We discuss these scars and show how slow the recovery has been to the point of suggesting that the trend growth of the economy became permanently lower.

Chapter 10 turns to monetary policy. In the decade since the global financial crisis, central banks of almost all advanced economies have adopted two new policies. First, they have increased the size of their balance sheets to satiate the higher, and more volatile, demand for central bank reserves. Secondly, they have used forward guidance and quantitative easing to lower long-term interest rates and stimulate the investment that the crises might have depressed. These policies have been named “unconventional.” However, they have been around for so long, and have been so much more active than the old conventional policy of raising and lowering of short-term interest rates, that understanding them is essential to making sense of what central banks are all about today.

Our first application turns to the Bank of Japan, which since 1998 has been at the forefront of all these changes in monetary policy. Our second application is the ECB between 2008 and 2015. Unlike the Federal Reserve or Bank of England, which adopted these policies as packages, the ECB did them one at a time, making it easier to describe them and see their impacts.

Finally, chapter 11 turns to fiscal policy. A main role of financial markets is to match savers with investment opportunities. The price at which this happens

is referred to as r^* , the interest rate where savings meet investment in a long-run equilibrium. Macro-financial crises, both their causes and their effects, affect what this r^* is. This chapter introduces the concepts of dynamic inefficiency and precautionary savings in discussing the forces affecting r^* , and how these change during financial crises. Fiscal policy, by determining public savings, can be used to affect r^* , especially in the functioning of its automatic stabilizers. Their effectiveness depends on the extent to which government spending crowds out private investment.

The first application is to the savings rate in the United States, the European Union, and the United Kingdom at the end of 2020, and explores what this implies for the likelihood that the pandemic evolves into a macro-financial crisis. The second application is to the recovery of the United States from the Great Depression in the 1930s, and explores the role that fiscal deficits played in it, both through the New Deal, and through military spending associated with World War II.

1.3 Uses of the Book

We had in mind two audiences when writing this book. The first is undergraduate or masters students in economics. Over the years, we have used this book to supplement existing textbooks when teaching classes in intermediate macroeconomics and in money and banking. Every chapter is self-contained, so that instructors can choose which concepts and chapters to use in their classes. We relegate links between the different chapters to endnotes, so readers wanting those connections spelled out can find them there. We assume familiarity only with introductory economics and we pedagogically illustrate economic concepts rather than present them in their generality.

Alternatively, the book could be used as a whole to teach a term-length class in macro-finance. Professional economists wanting to catch up on how research development in these fields fits together should find the book useful as well. We provide slides in our websites to accompany the book, as well as the data sources and calculations behind each figure, so they can be reproduced, modified, and extended.

The second audience is policymakers and members of the informed public wanting to absorb some of the concepts that should be guiding both macroeconomic and financial policy. The book is written as an entryway to their literatures. The discussion is qualitative, isolating economic forces, but

stopping short of quantifying them. We discuss many historical episodes with the goal of sharply illustrating the concepts.

One alternative approach to the material is to skip the crisis applications and get a more theoretical primer on the ingredients of macro-financial crises. Another alternative for those who want to study one particular historical crisis more thoroughly is to look at that section of this book alone to see one economic force in isolation. Whichever way the book is used, we believe that building a good understanding of what was behind a crisis should guide the efforts to prevent another one from arising.

We tried hard to keep the book mercifully short. While we cover much ground, the writing is terse, the analytic discussions are not exhaustive, and we keep all historical details behind each crisis to the bare minimum. If the more curious readers reach the end not fully satisfied and wanting to read more, we will claim success. We use endnotes in each chapter to point to a few readings that elaborate on the models or on the historical episode. The book is not a survey, so those references do not give credit to the intellectual origins of the ideas. They are suggestions on what to read next.¹

1.4 Acknowledgments

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Note

1. The closest books to ours are, perhaps, Kindleberger (1978), Montiel (2014), and Reinhart and Rogoff (2009), as they also introduce theories around macro-financial crashes and illustrate them with historical episodes. The first two are more focussed on the case studies though, rather than the theories, and the third one is focussed on sovereign debt crises.

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