1 Introduction

1.1 MORE FREQUENT, MORE EXPENSIVE, HARDER TO AVOID

Financial crises are a normal feature of contemporary market economies. They are analogous to diseases or natural disasters and, like some diseases and most natural disasters, are currently beyond the ability of science to prevent or to accurately predict. In part this because most of the preconditions of financial crises also occur in situations that do not develop into a crisis. Nevertheless, it is possible to minimize the risks of a crisis and to mitigate the damage when they do happen.

While financial crises usually do not kill people directly, the economic damage can lead to numerous indirect deaths, with monetary costs that are comparable to wars and that are far greater than the largest natural disasters. Compare the Subprime Crisis to recent natural disasters such as Hurricanes Katrina or Harvey. Estimates of the costs vary, but one estimate for Katrina is that it cost $160 billion, with Hurricane Harvey probably somewhat less (Dottle, King, and Koeze, 2017); conservative estimates from the International Monetary Fund (IMF) are that the United States lost output equivalent to more than 2.4 *trillion* dollars from 2008 to 2014, with proportionately similar estimates for other countries. And researchers at the Federal Reserve Bank of San Francisco estimated a persistent output loss from the Subprime Crisis of 7 percent of Gross Domestic Product (GDP) and a lifetime income loss of $70,000 for every US man, woman, and child.[1]

[1] The IMF estimate is conservative because it lowers its estimates of potential output during a recession. In effect, it ignores the long run effect of the crisis in permanently lowering GDP. Researchers at the San Francisco Federal Reserve Bank capture the effect on GDP. Their estimates on lifetime income are in present discounted value terms (Barnichon, Matthes, and Ziegenbein, 2018).

Financial crises throw countries into recession or intensify pre-existing recessions, and lead to years of lost potential output. They can permanently lower economic growth rates through the impacts they have on laid-off workers and idle capital investments. They frequently cause governments to collapse and if contagious, which is often the case, they spread internationally. Unfortunately, financial crises are surprisingly common. Researchers at the IMF identify 219 balance of payments crises, sixty-seven debt crises, 147 banking crises, and 217 currency crises, all between 1970 and 2011, and with many of the different types of crises occurring simultaneously in the same country (Claessens and Kose, 2014: 33; Laeven and Valencia, 2014: 66). Clearly, the world would be better off if there were a way to eliminate crises, but unfortunately, they appear to be becoming more frequent rather than less so.

It is tempting to think that financial crises will never be completely eliminated given the constant evolution of finance and financial technology and the ever-changing stream of new challenges they generate for businesses, policymakers, and regulators. It is certainly true today that the elimination of crises is beyond our reach but it is perhaps too pessimistic to think they will never be eliminated. We once thought something similar about famines and disease, yet the historical record over the last two centuries is one of great advances in feeding a growing population and curing many intractable diseases. In the same way that a medieval peasant could not imagine a green revolution with modern machinery and satellite imaging of crops, so we cannot imagine how a world devoid of financial crises might operate. What would the financial system look like? How would macroeconomic policies work? What additional information would be available?

During a financial crisis, policy first responders are usually overwhelmed by a seemingly impossible and/or incomprehensible set of choices. During the recent Subprime Crisis (2007–2009), the fiscal stimulus response taught in every introductory economics course was limited in the United States by political disagreements, and was

politically impossible in most of Europe. Traditional monetary policy was ineffective while non-traditional monetary policies were untested, and both fiscal and monetary stimuli were challenged by opponents of those in office. The choice between bailouts or doing nothing to help failing financial giants had no agreed answers, and at the scariest moment, as the investment bank Lehman Brothers collapsed in September, 2008, no one was quite sure what was going to happen next or how the spreading crisis might be contained.

Crisis response and crisis mitigation are two areas of ongoing research, along with crisis prevention. When a crisis occurs, it is followed by highly polarized debates and discussions of the potential causes and the weaknesses in the system. Mian, Sufi, and Trebbi (2014) show that political debate in the wake of a crisis usually becomes more polarized even though it frequently leads to legislation and new regulations. Regulation, however, necessarily focuses on the causes of the crisis, which are last year's problems, and cannot anticipate the next wave of financial innovation or macroeconomic shocks that will hit an economy. Regulations and statutes rarely evolve as fast as the economy changes and, consequently, become less effective with time. World events, such as spikes in oil prices, economic policy shifts, or currency appreciation and depreciation, alter international financial flows and create incentives for firms to adopt new strategies, invent new financial instruments, and develop new financial networks. Researchers are looking for ways to create a set of early warning indicators, but even if we had a reliable tool for predicting a crisis, its usefulness would be uncertain since the necessary steps to avoid a crisis might often be beyond the reach of policymakers. For example, we know that large inflows of foreign capital increase the probability of a crisis, but there is no consensus on the definition of "a large capital inflow" nor about the capacity of different countries to safely handle capital inflows. A factor in the Subprime Crisis was the collapse of a housing bubble that was partly fueled by large inflows of foreign capital, but even after the crisis there was no agreement about the role of those inflows, and even if

there was, acting on that knowledge to successfully prevent a crisis would have been politically impossible.

Economists have recognized the need for regulations in banking and finance since the beginning of modern economics. Adam Smith wrote of the folly of unregulated banking (Smith, 1776 [1937]: 308) while more recent arguments stress the problems created by asymmetric or incomplete information. Both historical and current observers of financial crises recognize that the fallout from a collapse in banking or other parts of the financial system has consequences that spillover into the rest of the economy and hurt interests beyond the immediate source of the problems. The breakdown in the financial sector accelerates the collapse of normal economic transactions and occasionally turns ordinary recessions into Great Depressions. This idea, that the financial sector can accelerate an ordinary recession and turn it into something spectacularly destructive, is of relatively recent vintage but is widely agreed.[2] The financial accelerator explains why a recession coupled with a breakdown in finance has a much greater negative impact than the simple credit tightening that is often associated with a recession. It is a matter of degree, but the disappearance of normal credit flows severely affects market economies by limiting the ability of credit and finance to play their essential role in daily economic life. When lenders cannot or will not advance credit, firms have few options but to sell assets, layoff employees, cut output, and leave orders unfilled.

A textbook definition of a financial crisis is a "Major disruption in financial markets characterized by sharp declines in asset prices and firm failures" (Mishkin and Eakins, 2015: 164). This is as good a definition as any, although it makes crises sound somewhat less destructive than they actually are. Reinhart and Rogoff's (2009b) quantitative economic history of financial crisis lists three primary

[2] For example, Nobel laureates that might be characterized as on the political right and left share this view (Lucas, 2012; Stiglitz, 2010). Former Chairman of the Federal Reserve, Ben Bernanke, has written extensively about the financial accelerator (Bernanke, 2000b and 2015: 35).

characteristics as a prolonged and deep collapse in asset prices, declines in employment and output, and a dramatic increase in government debt. This too may not convey a full sense of the destructive power of crises. Other researchers emphasize an increase in unemployment, increased poverty, longer recessions, and even an increase in suicides.[3]

1.2 ECONOMICS, FINANCE, AND HISTORY

This book examines financial crises since 1929 using the tools of economics, finance, and history.[4] The purpose of combing these particular fields is to avoid their individual limits and biases when looking at the complex phenomena of financial crises. Economics, for example, provides a great deal of insight about market forces and incentives, but its tendency to use the concept of equilibrium is sometimes an issue when addressing problems of disequilibria.[5] History provides insight about context and circumstances, but without models from economics and finance, it loses its ability to generalize beyond the specifics of a particular case. Finance is mostly about buying and selling financial instruments, but since the Subprime Crisis there is a general recognition that innovation in the purpose and function of financial institutions, together with

[3] See Bordo, et al. (2001); Reinhart and Rogoff (2009a); Claessens, Kose and Terrones (2009); Claessens and Kose (2014); Laeven and Valencia (2014); and Stiglitz (2016).

[4] This is not a particularly new approach; some of the best analyses of crises have adopted a similar perspective. For example, Kindleberger (1978); Eichengreen (2008, 2015); and Gorton (2012).

[5] Standard economic analysis posits that economic systems tend towards an equilibrium level of activity and factors that interfere with the equilibrium are unusual, pathological, or representative of some type of interference (usually assumed to be governments) that prevents the equilibrium from materializing. Economists such as Hyman Minsky, who hypothesized that there is a natural tendency towards financial disequilibrium, are often rejected or at least ignored. Minsky wrote extensively about the natural tendency of market economies to encounter financial crises. His work was mostly ignored, partly perhaps because his writing was not as clear as it might have been. When the Subprime Crisis of 2007–2009 reached its most frightening phase in 2008, his books were mostly out of print, but used copies were selling on Amazon for hundreds of dollars. Since then, publishers have reprinted his work.

the design of financial instruments that are traded, matter a great deal.[6]

Economic models are powerful tools for understanding the forces that lead up to a crisis, how the crisis unfolds, and how societies ultimately escape from its grip. Economic models, however, are in their relative infancy in explaining how dysfunctional or harmful practices might be a normal part of an economic system. For example, when Charles Prince, CEO of Citigroup, was asked if he wasn't worried about taking on so much debt, he quipped that "... as long as the music is playing, you've got to get up and dance."[7] The relatively new field of behavioral economics identifies this as an example of herd behavior that can have large consequences on individual firms and the entire economy. If Citigroup did not "get up and dance" it would have stood out negatively from other firms since its short run rates of return would have been less than its competitors. So, it did what every other firm was doing. Another problem identified by behavioral economics is overconfidence bias. Overconfidence bias makes no sense if households and firms are completely rational in their behavior, so it is difficult to incorporate into economic models. The Citigroup case also reflects over confidence, but they were far from alone. In the lead up to the Subprime Crisis, many households and businesses took on more debt than they could handle, while believing they could manage any conceivable event that might be thrown at them.

A third problem of great relevance is that of deceptive practices. If an activity is legally permitted and leads to an increase in a firm's profits, or an household's enrichment, then economic theory says that some firms and households will engage in the activity even if it is deceptive. Such activities are possible only when information is

6 The Subprime Crisis largely occurred in shadow banking – a set of bank-like institutions that are technically not banks. Monetary economists were aware of the importance of financial institutions to general economic outcomes many years before the Subprime Crisis.

7 The quote is from an interview he gave to the *Financial Times*, July 7, 2007. Ultimately the large debt load of Citigroup caused it to fail. Prince resigned as CEO in November, 2007.

asymmetrically distributed. For example, buyers and sellers of complex financial instruments or insurance policies often have different information about the asset, with one side knowing something the other does not, and are able to take advantage of the information gap. Asymmetric information can be exploited for profit, particularly when it involves deceptive (but legal) practices. Economic models have begun to incorporate the possibilities for asymmetric information, but the range of possible outcomes is far greater than a simple, socially optimal, economic equilibrium.

Some of the factors that prevent a simple story of economic equilibrium are institutional and not necessarily individual. For example, it has long been recognized that there are forces that prevent prices and wages from easily falling during a recession. Most introductory economics textbooks propose a model of recessions that show rising unemployment leading to falling wages, and an adjustment back to full employment. This is a happy simple story that is easy to show in supply and demand format and even though reality does not happen in the way described, the elegance of the theory, its implication that government action is unnecessary, and the underlying emphasis on self-adjusting economic mechanisms are very attractive, particularly in comparison to a more complicated, messy, empirically accurate, but less elegant reality of wages that are asymmetric in their tendencies to fall or rise.

Historians have rarely worried about the need to explain complex phenomenon with a mathematical model or a geometric diagram. They may not have systematized the concept of asymmetric information, but they have long known about the roles of power and deception in human behavior and the ways that overconfidence and herd behaviors lead to deep crises. Among its many attributes, historical analysis often makes us wary of the idea of a single, unified model of human behavior. Different financial crises, for example, may have some similar patterns but the unique circumstances and characteristics of each one implies that there is no general theory applicable to all times and places. Each and every financial crisis is different and any attempt to

fit them into a single analytical model only distorts the reality of the crisis by leaving out some important factors and exaggerating the roles of others. Even so, advances in our understanding of the causes and consequence of financial crises require us to look for common factors. Every crisis may be unique, but there are factors in common in each one. In particular, economic variables such as credit booms, exchange rates, current account balances, debt levels, and bank failures show up at critical moments. There may not yet be a general theory of crises and there may never be one, but economic analysis enables economic historians to work with the specific attributes of a particular time and place and to put them into a more general framework to highlight the risks and vulnerabilities that appear over and over.

The economic history of crises has always contained an implicit set of assumptions about the financial system even though the assumptions have not been formalized in meaningful ways, largely because the differences in financial instruments and institutions were not viewed as particularly important. More recent macroeconomic analysis has changed this view, however, and added a deeper understanding of financial institutions, financial instruments, and the roles they play in creating vulnerabilities and spreading a crisis once one starts. This is most visible in the ongoing debates over the causes of the Great Depression and in the Federal Reserve's response to the Subprime Crisis. What has emerged is widespread acknowledgement that the financial system is more than a passive actor, that financial institutions and instruments play an active role in determining the path a crisis takes, and in setting an agenda for policymakers concerned about prevention and mitigation of the damage. The Great Depression was as deep as it was partly because the entire financial system collapsed, while part of the reason the Great Recession did not become as destructive was because the Federal Reserve prevented a complete meltdown in the financial system. The Dodd–Frank reform package passed in 2010 is an attempt to reduce the vulnerabilities in the financial system and to create oversight with fewer gaps. Whether it will succeed as hoped is an entirely different issue.

1.3 PLAN OF THE BOOK

Throughout the book I try to find the consensus among economists. In some cases, there is no consensus even when the empirical analysis clearly supports a particular view. In these cases, the lack of consensus is, in my view, a result of ideological considerations. By ideology I mean not only a particular set of political preferences but also cases where a theoretical model is adopted because it has more internal consistency than an alternative, yet it leads to predicted outcomes that are not empirically supported. The world is deeply complicated and the assumption that theory should take precedence over actual measurements is, in my view, not only naive but also a step away from scientifically valid economic analysis. Hence, throughout the book, empirical analysis is given preference over theory when the two do not agree. It is also quite common that neither theory nor empirical analysis are clear in the answers they offer. There is much we do not know, and in those cases a skeptical attitude is most appropriate.

Part 1 is an introduction to financial crises. It provides a taxonomy of crises and describes the five main types that have been analyzed in the literature. While there is some disagreement about the taxonomy, it is not critical. After describing the main types of crises, Chapter 1 turns to a discussion of seven risk factors that appear over and over in the discussion of specific crises. A key point about the risk factors is worth emphasizing: They are risk factors and not determinants of crises. In that sense, they are similar to medical risk factors such as those associated with heart disease. We know that smoking and other behaviors are associated with an increased risk, but many people engage in risky behaviors without negative consequences. Similarly, countries may have asset bubbles, credit booms, excessive debt levels, or one of the other risk factors without experiencing a financial crisis. Given our current state of knowledge, we cannot put precise probabilities on particular risks. This is due in part to the fact that risk intensity depends on a large number of additional factors, such as the quality of a country's

institutions, its role in the global economy, expectations about its future policies, and the ability to respond to changing circumstances, among many others. When crises occur, one or more of these risk factors discussed in Chapter 1 are usually cited as a significant causal factor.

Chapter 2 provides more background for readers unfamiliar with the economic history of globalization since the early nineteenth century. The chapter identifies the five main periods of world economic history since the onset of modern economic growth in the 1820s, and discusses the frequencies and types of financial crises in each period. The chapter largely passes over the first era of growth (1820–1870) in order to focus on the four later eras: the First Wave of Globalization (1870–1914); the Interwar Period (1914–1950); the Bretton Woods Era (1950–1973); and the Second Wave of Globalization (1973-present). While a later chapter discusses the Great Depression which expanded into much of the Interwar Period, this chapter presents the Bretton Woods era as a response to the Great Depression, and the Bretton Woods institutions, consisting of the IMF, the World Bank, and the Bretton Woods exchange rate mechanism, as having been designed with the intention of avoiding a repeat of the Great Depression and the crises of the Interwar Period.[8] The Bretton Woods era restricted international capital flows, fixed most countries' exchange rate to the US dollar, incrementally reduced trade barriers, and had fewer crises than any era since the onset of modern economic growth in the early nineteenth century. It is not an era we can return to, however, as international capital flows and flexible exchange rates, in particular, are too embedded in international economic relations, and the role of the United States as the undisputed world leader of market economies is no longer the case to the same extent it was in the aftermath and

[8] The General Agreement on Tariffs and Trade (GATT) can also be viewed as a creation of Bretton Woods although it came later. In 1995, the GATT was placed under the umbrella of the newly created World Trade Organization (WTO). All of the Bretton Woods institutions, including the GATT, were designed to increase international economic integration while, most importantly, decreasing international economic conflict.