THIS TIME IS DIFFERENT

Eight Centuries of Financial Folly

CARMEN M. REINHART
KENNETH S. ROGOFF

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PREFACE

This book provides a quantitative history of financial crises in their various guises. Our basic message is simple: We have been here before. No matter how different the latest financial frenzy or crisis always appears, there are usually remarkable similarities with past experience from other countries and from history. Recognizing these analogies and precedents is an essential step toward improving our global financial system, both to reduce the risk of future crisis and to better handle catastrophes when they happen.

If there is one common theme to the vast range of crises we consider in this book, it is that excessive debt accumulation, whether it be by the government, banks, corporations, or consumers, often poses greater systemic risks than it seems during a boom. Infusions of cash can make a government look like it is providing greater growth to its economy than it really is. Private sector borrowing binges can inflate housing and stock prices far beyond their long-run sustainable levels, and make banks seem more stable and profitable than they really are. Such large-scale debt buildups pose risks because they make an economy vulnerable to crises of confidence, particularly when debt is short term and needs to be constantly refinanced. Debt-fueled booms all too often provide false affirmation of a government's policies, a financial institution's ability to make outsized profits, or a country's standard of living. Most of these booms end badly. Of course, debt instruments are crucial to all economies, ancient and modern, but balancing the risk and opportunities of debt is always a challenge, a challenge policy makers, investors, and ordinary citizens must never forget.

In this book we study a number of different types of financial crises. They include sovereign defaults, which occur when a government fails to meet payments on its external or domestic debt obligations or both. Then there are banking crises such as those the world has experienced in spades in the late 2000s. In a typical major banking crisis, a nation finds that a significant part of its banking sector has become insolvent after heavy investment losses, banking panics, or both. Another important class of crises consists of exchange rate crises such as those that plagued Asia, Europe, and Latin America in the 1990s. In the quintessential exchange rate crisis, the value of a country's currency falls precipitously, often despite a government "guarantee" that it will not allow this to happen under any circumstances. We also consider crises marked by bouts of very high inflation. Needless to say, unexpected increases in inflation are the de facto equivalent of outright default, for inflation allows all debtors (including the government) to repay their debts in currency that has much less purchasing power than it did when the loans were made. In much of the book we will explore these crises separately. But crises often occur in clusters. In the penultimate text chapter of the book we will look at situations—such as the Great Depression of the 1930s and the latest worldwide financial crisis—in which crises occur in bunches and on a global scale.

Of course, financial crises are nothing new. They have been around since the development of money and financial markets. Many of the earliest crises were driven by currency debasements that occurred when the monarch of a country reduced the gold or silver content of the coin of the realm to finance budget shortfalls often prompted by wars. Technological advances have long since eliminated a government's need to clip coins to fill a budget deficit. But financial crises have continued to thrive through the ages, and they plague countries to this day.

Most of our focus in this book is on two particular forms of crises that are particularly relevant today: sovereign debt crises and banking crises. Both have histories that span centuries and cut across regions. Sovereign debt crises were once commonplace among the now advanced economies that appear to have "graduated" from periodic

bouts of government insolvency. In emerging markets, however, recurring (or serial) default remains a chronic and serious disease. Banking crises, in contrast, remain a recurring problem everywhere. They are an equal-opportunity menace, affecting rich and poor countries alike. Our banking crisis investigation takes us on a tour from bank runs and bank failures in Europe during the Napoleonic Wars to the recent global financial crises that began with the U.S. subprime crisis of 2007.

Our aim here is to be expansive, systematic, and quantitative: our empirical analysis covers sixty-six countries over nearly eight centuries. Many important books have been written about the history of international financial crises,[1] perhaps the most famous of which is Kindleberger's 1989 book *Manias, Panics and Crashes*.[2] By and large, however, these earlier works take an essentially narrative approach, fortified by relatively sparse data.

Here, by contrast, we build our analysis around data culled from a massive database that encompasses the entire world and goes back as far as twelfth-century China and medieval Europe. The core "life" of this book is contained in the (largely) simple tables and figures in which these data are presented rather than in narratives of personalities, politics, and negotiations. We trust that our visual quantitative history of financial crises is no less compelling than the earlier narrative approach, and we hope that it may open new vistas for policy analysis and research.

Above all, our emphasis is on looking at long spans of history to catch sight of "rare" events that are all too often forgotten, although they turn out to be far more common and similar than people seem to think. Indeed, analysts, policy makers, and even academic economists have an unfortunate tendency to view recent experience through the narrow window opened by standard data sets, typically based on a narrow range of experience in terms of countries and time periods. A large fraction of the academic and policy literature on debt and default draws conclusions based on data collected since 1980, in no small part because such data are the most readily accessible. This approach would be fine except for the fact that financial crises have much longer cycles, and a data set that covers twenty-five years simply cannot give

Latin America during the 1970s. Although we find that during the modern era sovereign external default crises have been far more concentrated in emerging markets than banking crises have been, we nevertheless emphasize that even sovereign defaults on external debt have been an almost universal rite of passage for every country as it has matured from an emerging market economy to an advanced developed economy. This process of economic, financial, social, and political development can take centuries.

Indeed, in its early years as a nation-state, France defaulted on its external debt no fewer than eight times (as we show in chapter 6)! Spain defaulted a mere six times prior to 1800, but, with seven defaults in the nineteenth century, surpassed France for a total of thirteen episodes. Thus, when today's European powers were going through the emerging market phase of development, they experienced recurrent problems with external debt default, just as many emerging markets do today.

From 1800 until well after World War II, Greece found itself virtually in continual default, and Austria's record is in some ways even more stunning. Although the development of international capital markets was quite limited prior to 1800, we nevertheless catalog the numerous defaults of France, Portugal, Prussia, Spain, and the early Italian city-states. At the edge of Europe, Egypt, Russia, and Turkey have histories of chronic default as well.

One of the fascinating questions raised in our book is why a relatively small number of countries, such as Australia and New Zealand, Canada, Denmark, Thailand, and the United States, have managed to avoid defaults on central government debt to foreign creditors, whereas far more countries have been characterized by serial default on their external debts.

Asian and African financial crises are far less researched than those of Europe and Latin America. Indeed, the widespread belief that modern sovereign default is a phenomenon confined to Latin America and a few poorer European countries is heavily colored by the paucity of research on other regions. As we shall see, precommunist China repeatedly defaulted on international debts, and modern-day India and Indonesia both defaulted in the 1960s, long

before the first postwar round of Latin defaults. Postcolonial Africa has a default record that looks as if it is set to outstrip that of any previously emerging market region. Overall, we find that a systematic quantitative examination of the postcolonial default records of Asia and Africa debunks the notion that most countries have avoided the perils of sovereign default.

The near universality of default becomes abundantly clear in part II, where we begin to use the data set to paint the history of default and financial crises in broad strokes using tables and figures. One point that certainly jumps out from the analysis is that the fairly recent (2003–2008) quiet spell in which governments have generally honored their debt obligations is far from the norm.

The history of domestic public debt (i.e., internally issued government debt) in emerging markets, in particular, has largely been ignored by contemporary scholars and policy makers (even by official data providers such as the International Monetary Fund), who seemed to view its emergence at the beginning of the twenty-first century as a stunning new phenomenon. Yet, as we will show in part III, domestic public debt in emerging markets has been extremely significant during many periods and in fact potentially helps resolve a host of puzzles pertaining to episodes of high inflation and default. We view the difficulties one experiences in finding data on government debt as just one facet of the general low level of transparency with which most governments maintain their books. Think of the implicit guarantees given to the massive mortgage lenders that ultimately added trillions to the effective size of the U.S. national debt in 2008, the trillions of dollars in off–balance sheet transactions engaged in by the Federal Reserve, and the implicit guarantees involved in taking bad assets off bank balance sheets, not to mention unfunded pension and medical liabilities. Lack of transparency is endemic in government debt, but the difficulty of finding basic historical data on central government debt is almost comical.

Part III also offers a first attempt to catalog episodes of overt default on and rescheduling of domestic public debt across more than a century. (Because so much of the history of domestic debt has largely been forgotten by scholars, not surprisingly, so too has its his-

one an adequate perspective on the risks of alternative policies and investments. An event that was rare in that twenty-five-year span may not be all that rare when placed in a longer historical context. After all, a researcher stands only a one-in-four chance of observing a "hundred-year flood" in twenty-five years' worth of data. To even begin to think about such events, one needs to compile data for several centuries. Of course, that is precisely our aim here.

In addition, standard data sets are greatly limited in several other important respects, especially in regard to their coverage of the types of government debt. In fact, as we shall see, historical data on domestically issued government debt is remarkably difficult to obtain for most countries, which have often been little more transparent than modern-day banks with their off–balance sheet transactions and other accounting shenanigans.

The foundations of our analysis are built on a comprehensive new database for studying international debt and banking crises, inflation, and currency crashes and debasements. The data come from Africa, Asia, Europe, Latin America, North America, and Oceania (data from sixty-six countries in all, as previously noted, plus selected data for a number of other countries). The range of variables encompasses, among many other dimensions, external and domestic debt, trade, national income, inflation, exchange rates, interest rates, and commodity prices. The data coverage goes back more than eight hundred years, to the date of independence for most countries and well into the colonial period for several. Of course, we recognize that the exercises and illustrations that we provide here can only scratch the surface of what a data set of this scope and scale can potentially unveil.

Fortunately, conveying the details of the data is not essential to understanding the main message of this book: we have been here before. The instruments of financial gain and loss have varied over the ages, as have the types of institutions that have expanded mightily only to fail massively. But financial crises follow a rhythm of boom and bust through the ages. Countries, institutions, and financial instruments may change across time, but human nature does not. As we will discuss in the final chapters of this book, the financial crisis of

the late 2000s that originated in the United States and spread across the globe—which we refer to as the Second Great Contraction—is only the latest manifestation of this pattern.

We take up the latest crisis in the final four chapters before the conclusion, in which we review what we have learned; the reader should find the material in chapters 13–16 relatively straightforward and self-contained. (Indeed, readers interested mainly in lessons of history for the latest crisis are encouraged to jump directly to this material in a first reading.) We show that in the run-up to the subprime crisis, standard indicators for the United States, such as asset price inflation, rising leverage, large sustained current account deficits, and a slowing trajectory of economic growth, exhibited virtually all the signs of a country on the verge of a financial crisis—indeed, a severe one. This view of the way into a crisis is sobering; we show that the way out can be quite perilous as well. The aftermath of systemic banking crises involves a protracted and pronounced contraction in economic activity and puts significant strains on government resources.

The first part of the book gives precise definitions of concepts describing crises and discusses the data underlying the book. In the construction of our data set we have built heavily on the work of earlier scholars. However, our data set also includes a considerable amount of new material from diverse primary and secondary sources. In addition to providing a systematic dating of external debt and exchange rate crises, the appendixes to this book catalog dates for domestic inflation and banking crises. The dating of sovereign defaults on domestic (mostly local-currency) debt is one of the more novel features that rounds out our study of financial crises.

The payoff to this scrutiny comes in the remaining parts of the book, which apply these concepts to our expanded global data set. Part II turns our attention to government debt, chronicling hundreds of episodes of default by sovereign nations on their debt to external creditors. These "debt crises" have ranged from those related to mid-fourteenth-century loans by Florentine financiers to England's Edward III to German merchant bankers' loans to Spain's Hapsburg Monarchy to massive loans made by (mostly) New York bankers to

tory of default.) This phenomenon appears to be somewhat rarer than external default but is far too common to justify the extreme assumption that governments always honor the nominal face value of domestic debt, an assumption that dominates the economics literature. When overt default on domestic debt does occur, it appears to occur in situations of greater duress than those that lead to pure external default—in terms of both an implosion of output and a marked escalation of inflation.

Part IV broadens our discussion to include crises related to banking, currency, and inflation. Until very recently, the study of banking crises has typically focused either on earlier historical experiences in advanced countries, mainly the banking panics before World War II, or on modern-day experiences in emerging markets. This dichotomy has perhaps been shaped by the belief that for advanced economies, destabilizing, systemic, multicountry financial crises are a relic of the past. Of course, the recent global financial crisis emanating out of the United States and Europe has dashed this misconception, albeit at great social cost.

The fact is that banking crises have long plagued rich and poor countries alike. We reach this conclusion after examining banking crises ranging from Denmark's financial panic during the Napoleonic Wars to the recent first global financial crisis of the twenty-first century. The incidence of banking crises proves to be remarkably similar in the high- and the middle- to low-income countries. Banking crises almost invariably lead to sharp declines in tax revenues as well as significant increases in government spending (a share of which is presumably dissipative). On average, government debt rises by 86 percent during the three years following a banking crisis. These indirect fiscal consequences are thus an order of magnitude larger than the usual costs of bank bailouts.

Episodes of treacherously high inflation are another recurrent theme. No emerging market country in history has managed to escape bouts of high inflation. Indeed, there is a very strong parallel between our proposition that few countries have avoided serial default on external debt and the proposition that few countries have avoided serial bouts of high inflation. Even the United States has had

a checkered history, including in 1779, when the inflation rate approached 200 percent. Early on across the world, as already noted, the main device for defaulting on government obligations was that of debasing the content of the coinage. Modern currency presses are just a technologically advanced and more efficient approach to achieving the same end. As a consequence, a clear inflationary bias throughout history emerges. Starting in the twentieth century, inflation spiked radically higher. Since then, inflation crises have stepped up to a higher plateau. Unsurprisingly, then, the more modern period also has seen a higher incidence of exchange rate crashes and larger median changes in currency values. Perhaps more surprising, and made visible only by a broader historical context, are the early episodes of pronounced exchange rate instability, notably during the Napoleonic Wars.

Just as financial crises have common macroeconomic antecedents in asset prices, economic activity, external indicators, and so on, so do common patterns appear in the sequencing (temporal order) in which crises unfold, the final subject of part IV.

The concluding chapter offers some reflections on crises, policy, and pathways for academic study. What is certainly clear is that again and again, countries, banks, individuals, and firms take on excessive debt in good times without enough awareness of the risks that will follow when the inevitable recession hits. Many players in the global financial system often dig a debt hole far larger than they can reasonably expect to escape from, most famously the United States and its financial system in the late 2000s. Government and government-guaranteed debt (which, due to deposit insurance, often implicitly includes bank debt) is certainly the most problematic, for it can accumulate massively and for long periods without being put in check by markets, especially where regulation prevents them from effectively doing so. Although private debt certainly plays a key role in many crises, government debt is far more often the unifying problem across the wide range of financial crises we examine. As we stated earlier, the fact that basic data on domestic debt are so opaque and difficult to obtain is proof that governments will go to great lengths to hide their books when things are going wrong, just as financial insti-

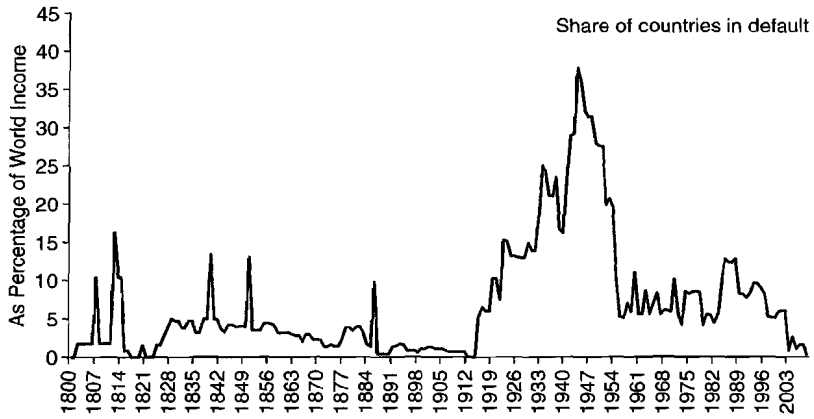

Figure P.1. Sovereign external debt, 1800–2008: Percentage of countries in external default or restructuring weighted by their share of world income.

tutions have done in the contemporary financial crisis. We see a major role for international policy-making organizations, such as the International Monetary Fund, in providing government debt accounts that are more transparent than those available today.

Our immersion in the details of crises that have arisen over the past eight centuries and in data on them has led us to conclude that the most commonly repeated and most expensive investment advice ever given in the boom just before a financial crisis stems from the perception that "this time is different." That advice, that the old rules of valuation no longer apply, is usually followed up with vigor. Financial professionals and, all too often, government leaders explain that we are doing things better than before, we are smarter, and we have learned from past mistakes. Each time, society convinces itself that the current boom, unlike the many booms that preceded catastrophic collapses in the past, is built on sound fundamentals, structural reforms, technological innovation, and good policy.

Given the sweeping data on which this book has been built, it is simply not possible to provide textural context to all the hundreds of episodes the data encompass. Nevertheless, the tables and figures speak very powerfully for themselves of the phenomenal recurrent nature of the problem. Take figure P.1, which shows the percentage of countries worldwide, weighted by GDP, that have been in a state of default on their external debt at any time.

The short period of the 2000s, represented by the right-hand tail of the chart, looks sufficiently benign. But was it right for so many policy makers to declare by 2005 that the problem of sovereign default on external debt had gone into deep remission? Unfortunately, even before the ink is dry on this book, the answer will be clear enough. We hope that the weight of evidence in this book will give future policy makers and investors a bit more pause before next they declare, "This time is different." It almost never is.

- PART I -

FINANCIAL CRISES: AN OPERATIONAL PRIMER

The essence of the this-time-is-different syndrome is simple. It is rooted in the firmly held belief that financial crises are things that happen to other people in other countries at other times; crises do not happen to us, here and now. We are doing things better, we are smarter, we have learned from past mistakes. The old rules of valuation no longer apply. Unfortunately, a highly leveraged economy can unwittingly be sitting with its back at the edge of a financial cliff for many years before chance and circumstance provoke a crisis of confidence that pushes it off.

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VARIETIES OF CRISES AND THEIR DATES

Because this book is grounded in a quantitative and historical analysis of crises, it is important to begin by defining exactly what constitutes a financial crisis, as well as the methods—quantitative where possible—by which we date its beginning and end. This chapter and the two that follow lay out the basic concepts, definitions, methodology, and approach toward data collection and analysis that underpin our study of the historical international experience with almost any kind of economic crisis, be it a sovereign debt default, banking, inflation, or exchange rate crisis.

Delving into precise definitions of a crisis in an initial chapter rather than simply including them in a glossary may seem somewhat tedious. But for the reader to properly interpret the sweeping historical figures and tables that follow later in this volume, it is essential to have a sense of how we delineate what constitutes a crisis and what does not. The boundaries we draw are generally consistent with the existing empirical economics literature, which by and large is segmented across the various types of crises we consider (e.g., sovereign debt, exchange rate). We try to highlight any cases in which results are conspicuously sensitive to small changes in our cutoff points or where we are particularly concerned about clear inadequacies in the data. This definition chapter also gives us a convenient opportunity to expand a bit more on the variety of crises we take up in this book.

The reader should note that the crisis markers discussed in this chapter refer to the measurement of crises within individual countries. Later on, we discuss a number of ways to think about the international dimensions of crises and their intensity and transmission, culminating in our definition of a global crisis in chapter 16. In addition to reporting on one country at a time, our root measures of crisis

thresholds report on only one type of crisis at a time (e.g., exchange rate crashes, inflation, banking crises). As we emphasize, particularly in chapter 16, different varieties of crises tend to fall in clusters, suggesting that it may be possible, in principle, to have systemic definitions of crises. But for a number of reasons, we prefer to focus on the simplest and most transparent delineation of crisis episodes, especially because doing otherwise would make it very difficult to make broad comparisons across countries and time. These definitions of crises are rooted in the existing empirical literature and referenced accordingly.

We begin by discussing crises that can readily be given strict quantitative definitions, then turn to those for which we must rely on more qualitative and judgmental analysis. The concluding section defines *serial default* and the *this-time-is-different syndrome*, concepts that will recur throughout the remainder of the book.

Crises Defined by Quantitative Thresholds: Inflation, Currency Crashes, and Debasement

Inflation Crises

We begin by defining inflation crises, both because of their universality and long historical significance and because of the relative simplicity and clarity with which they can be identified. Because we are interested in cataloging the extent of default (through inflating debt away) and not only its frequency, we will attempt to mark not only the beginning of an inflation or currency crisis episode but its duration as well. Many high-inflation spells can best be described as chronic—lasting many years, sometimes dissipating and sometimes plateauing at an intermediate level before exploding. A number of studies, including our own earlier work on classifying post–World War II exchange rate arrangements, use a twelve-month inflation threshold of 40 percent or higher as the mark of a high-inflation episode. Of course, one can argue that the effects of inflation are pernicious at much lower levels of inflation, say 10 percent, but the costs of sustained moderate inflation are not well established either theoretically or empirically. In our earlier work on the post–World War II era, we chose a 40 percent cutoff

because there is a fairly broad consensus that such levels are pernicious; we discuss general inflation trends and lower peaks where significant. Hyperinflations—inflation rates of 40 percent *per month*—are of modern vintage. As we will see in chapter 12 on inflation crises (especially in table 12.3), Hungary in 1946 (Zimbabwe's recent experience notwithstanding) holds the record in our sample.

For the pre–World War I period, however, even 40 percent *per annum* is too high an inflation threshold, because inflation rates were much lower then, especially before the advent of modern paper currency (often referred to as "fiat" currency because it has no intrinsic value and is worth something only because the government declares by fiat that other currencies are not legal tender in domestic transactions). The median inflation rates before World War I were well below those of the more recent period: 0.5 percent per annum for 1500–1799 and 0.71 percent for 1800–1913, in contrast with 5.0 percent for 1914–2006. In periods with much lower average inflation rates and little expectation of high inflation, much lower inflation rates could be quite shocking and traumatic to an economy—and therefore considered crises.[1] Thus, in this book, in order to meaningfully incorporate earlier periods, we adopt an inflation crisis threshold of 20 percent per annum. At most of the main points at which we believe there were inflation crises, our main assertions appear to be reasonably robust relative to our choice of threshold; for example, our assertion that there was a crisis at any given point would stand up had we defined inflation crises using a lower threshold of, say, 15 percent, or a higher threshold of, say, 25 percent. Of course, given that we are making most of our data set available online, readers are free to set their own threshold for inflation or for other quantitative crisis benchmarks.

Currency Crashes

In order to date currency crashes, we follow a variant of an approach introduced by Jeffrey Frankel and Andrew Rose, who focus exclusively on large exchange rate depreciations and set their basic threshold (subject to some caveats) as 25 percent per annum.[2] This definition is the most parsimonious, for it does not rely on other vari-

ables such as reserve losses (data governments often guard jealously —sometimes long delaying their publication) and interest rate hikes (which are not terribly meaningful in financial systems under very heavy government control, which was in fact the case for most countries until relatively recently). As with inflation, the 25 percent threshold that one might apply to data from the period after World War II—at least to define a severe exchange rate crisis—would be too high for the earlier period, when much smaller movements constituted huge surprises and were therefore extremely disruptive. Therefore, we define as a currency crash an annual depreciation in excess of 15 percent. Mirroring our treatment of inflation episodes, we are concerned here not only with the dating of the initial crash (as in Frankel and Rose as well as Kaminsky and Reinhart) but with the full period in which annual depreciations exceeded the threshold.[3] It is hardly surprising that the largest crashes shown in table 1.1 are similar in timing and order of magnitude to the profile for inflation crises. The "honor" of the record currency crash, however, goes not to Hungary (as in the case of inflation) but to Greece in 1944.

Currency Debasement

The precursor of modern inflation and foreign exchange rate crises was currency debasement during the long era in which the principal means of exchange was metallic coins. Not surprisingly, debasements were particularly frequent and large during wars, when drastic reductions in the silver content of the currency sometimes provided sovereigns with their most important source of financing.

In this book we also date currency "reforms" or conversions and their magnitudes. Such conversions form a part of every hyperinflation episode in our sample; indeed it is not unusual to see that there were several conversions in quick succession. For example, in its struggle with hyperinflation, Brazil had no fewer than four currency conversions from 1986 to 1994. When we began to work on this book, in terms of the magnitude of a single conversion, the record holder was China, which in 1948 had a conversion rate of three million to one. Alas, by the time of its completion, that record was surpassed by

TABLE 1.1
Defining crises: A summary of quantitative thresholds

Crisis type	Threshold	Period	Maximum (percent)
Inflation	An annual inflation rate of 20 percent or higher. We examine separately the incidence of more extreme cases in which inflation exceeds 40 percent per annum.	1500–1790 1800–1913 1914–2008	173.1 159.6 9.63E+26[a]
Currency crash	An annual depreciation versus the U.S. dollar (or the relevant anchor currency—historically the U.K. pound, the French franc, or the German DM and presently the euro) of 15 percent or more.	1800–1913 1914–2008	275.7 3.37E+9
Currency debasement: Type I	A reduction in the metallic content of coins in circulation of 5 percent or more.	1258–1799 1800–1913	−56.8 −55.0
Currency debasement: Type II	A currency reform whereby a new currency replaces a much-depreciated earlier currency in circulation.	The most extreme episode is the recent Zimbabwean conversion at a rate of ten billion to one.	

[a]In some cases the inflation rates are so large (as in Hungary in 1946, for example) that we ate forced to use scientific notation. Thus, E+26 means that we have to add zeroes and move the decimal point twenty-six places to the right in the 9.63 entry.

Zimbabwe with a ten-billion-to-one conversion! Conversions also follow spells of high (but not necessarily hyper) inflation, and these cases are also included in our list of modern debasements.

The Bursting of Asset Price Bubbles

The same quantitative methodology could be applied in dating the bursting of asset price bubbles (equity or real estate), which are

commonplace in the run-up to banking crises. We discuss these crash episodes involving equity prices in chapter 16 and leave real estate crises for future research.[4] One reason we do not tackle the issue here is that price data for many key assets underlying financial crises, particularly housing prices, are extremely difficult to come by on a long-term cross-country basis. However, our data set does include housing prices for a number of both developed and emerging market countries over the past couple of decades, which we shall exploit later in our analysis of banking crises.

Crises Defined by Events: Banking Crises and External and Domestic Default

In this section we describe the criteria used in this study to date banking crises, external debt crises, and domestic debt crisis counterparts, the last of which are by far the least well documented and understood. Box 1.1 provides a brief glossary to the key concepts of debt used throughout our analysis.

Banking Crises

With regard to banking crises, our analysis stresses events. The main reason we use this approach has to do with the lack of long-range time series data that would allow us to date banking or financial crises quantitatively along the lines of inflation or currency crashes. For example, the relative price of bank stocks (or financial institutions relative to the market) would be a logical indicator to examine. However, doing this is problematic, particularly for the earlier part of our sample and for developing countries, where many domestic banks do not have publicly traded equity.

Another idea would be to use changes in bank deposits to date crises. In cases in which the beginning of a banking crisis has been marked by bank runs and withdrawals, this indicator would work well, for example in dating the numerous banking panics of the

BOX 1.1
Debt glossary

External debt The total debt liabilities of a country with foreign creditors, both official (public) and private. Creditors often determine all the terms of the debt contracts, which are normally subject to the jurisdiction of the foreign creditors or to international law (for multilateral credits).

Total government debt (total public debt) The total debt liabilities of a government with both domestic and foreign creditors. The "government" normally comprises the central administration, provincial governments, federal governments, and all other entities that borrow with an explicit government guarantee.

Government domestic debt All debt liabilities of a government that are issued under and subject to national jurisdiction, regardless of the nationality of the creditor or the currency denomination of the debt; therefore, it includes government foreign-currency domestic debt, as defined below. The terms of the debt contracts can be determined by the market or set unilaterally by the government.

Government foreign-currency domestic debt Debt liabilities of a government issued under national jurisdiction that are nonetheless expressed in (or linked to) a currency different from the national currency of the country.

Central bank debt Not usually included under government debt, despite the fact that it usually carries an implicit government guarantee. Central banks usually issue such debt to facilitate open market operations (including sterilized intervention). Such debts may be denominated in either local or foreign currency.

1800s. Often, however, banking problems arise not from the liability side but from a protracted deterioration in asset quality, be it from a collapse in real estate prices (as in the United States at the outset of the 2007 subprime financial crisis) or from increased bankruptcies in the nonfinancial sector (as in later stages of the financial crisis of the late 2000s). In this case, a large increase in bankruptcies or nonperforming loans could be used to mark the onset of the crisis. Unfortunately, indicators of business failures and nonperforming loans are usually available sporadically, if at all, even for the modern period

in many countries. In any event, reports of nonperforming loans are often wildly inaccurate, for banks try to hide their problems for as long as possible and supervisory agencies often look the other way.

Given these data limitations, we mark a banking crisis by two types of events: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions (as in Venezuela in 1993 or Argentina in 2001) and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions (as in Thailand from 1996 to 1997). We rely on existing studies of banking crises and on the financial press. Financial stress is almost invariably extremely great during these periods.

There are several main sources for cross-country dating of crises. For the period after 1970, the comprehensive and well-known studies by Caprio and Klingebiel—the most updated version of which covers the period through 2003—are authoritative, especially in terms of classifying banking crises into systemic versus more benign categories. Kaminsky and Reinhart, and Jácome (the latter for Latin America), round out the sources.[5] In addition, we draw on many country-specific studies that pick up episodes of banking crisis not covered by the multicountry literature; these country-specific studies make an important contribution to this chronology.[6] A summary discussion of the limitations of this event-based dating approach is presented in table 1.2. The years in which the banking crises began are listed in appendixes A.3 and A.4 (for most early episodes it is difficult to ascertain exactly how long the crisis lasted).

External Debt Crises

External debt crises involve outright default on a government's external debt obligations—that is, a default on a payment to creditors of a loan issued under another country's jurisdiction, typically (but not always) denominated in a foreign currency, and typically held mostly by foreign creditors. Argentina holds the record for the largest default; in 2001 it defaulted on more than $95 billion in external

TABLE 1.2
Defining crises by events: A summary

Type of crisis	Definition and/or criteria	Comments
Banking crisis Type I: systemic (severe) Type II: financial distress (milder)	We mark a banking crisis by two types of events: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions.	This approach to dating the beginning of banking crises is not without drawbacks. It could date crises too late, because the financial problems usually begin well before a bank is finally closed or merged; it could also date crises too early, because the worst of a crisis may come later. Unlike in the case of external debt crises (see below), which have well-defined closure dates, it is often difficult or impossible to accurately pinpoint the year in which the crisis ended.
Debt crisis External	A sovereign default is defined as the failure of a government to meet a principal or interest payment on the due date (or within the specified grace period). These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation.	Although the time of default is accurately classified as a crisis year, in a large number of cases the final resolution with the creditors (if it ever did take place) seems indeterminate. For this reason we also work with a crisis dummy that picks up only the first year.
Domestic	The definition given above for an external debt crisis applies. In addition, domestic debt crises have involved the freezing of bank deposits and/or forcible conversions of such deposits from dollars to local currency.	There is at best some partial documentation of recent defaults on domestic debt provided by Standard and Poor's. Historically, it is very difficult to date these episodes, and in many cases (such as those of banking crises) it is impossible to ascertain the date of the final resolution.

debt. In the case of Argentina, the default was managed by reducing and stretching out interest payments. Sometimes countries repudiate the debt outright, as in the case of Mexico in 1867, when more than $100 million worth of peso debt issued by Emperor Maximilian was repudiated by the Juarez government. More typically, though, the government restructures debt on terms less favorable to the lender than were those in the original contract (for instance, India's little-known external restructurings in 1958–1972).

External defaults have received considerable attention in the academic literature from leading modern-day economic historians, such as Michael Bordo, Barry Eichengreen, Marc Flandreau, Peter Lindert, John Morton, and Alan Taylor.[7] Relative to early banking crises (not to mention domestic debt crises, which have been all but ignored in the literature), much is known about the causes and consequences of these rather dramatic episodes. The dates of sovereign defaults and restructurings are those listed and discussed in chapter 6. For the period after 1824, the majority of dates come from several Standard and Poor's studies listed in the data appendixes. However, these are incomplete, missing numerous postwar restructurings and early defaults, so this source has been supplemented with additional information.[8]

Although external default dates are, by and large, clearly defined and far less contentious than, say, the dates of banking crises (for which the end is often unclear), some judgment calls are still required, as we discuss in chapter 8. For example, in cataloging the number of times a country has defaulted, we generally categorize any default that occurs two years or less after a previous default as part of the same episode. Finding the end date for sovereign external defaults, although easier than in the case of banking crises (because a formal agreement with creditors often marks the termination), still presents a number of issues.

Although the time of default is accurately classified as a crisis year, in a large number of cases the final resolution with the creditors (if it ever was achieved) seems interminable. Russia's 1918 default following the revolution holds the record, lasting sixty-nine years. Greece's default in 1826 shut it out of international capital

markets for fifty-three consecutive years, and Honduras's 1873 default had a comparable duration.[9] Of course, looking at the full default episode is useful for characterizing borrowing or default cycles, calculating "hazard" rates, and so on. But it is hardly credible that a spell of fifty-three years could be considered a crisis—even if those years were not exactly prosperous. Thus, in addition to constructing the country-specific dummy variables to cover the entire episode, we have employed two other qualitative variables aimed at encompassing the core crisis period surrounding the default. The first of these records only the year of default as a crisis, while the second creates a seven-year window centered on the default date. The rationale is that neither the three years that precede a default nor the three years that follow it can be considered a "normal" or "tranquil" period. This technique allows analysis of the behavior of various economic and financial indicators around the crisis on a consistent basis over time and across countries.

Domestic Debt Crises

Domestic public debt is issued under a country's own legal jurisdiction. In most countries, over most of their history, domestic debt has been denominated in the local currency and held mainly by residents. By the same token, the overwhelming majority of external public debt—debt under the legal jurisdiction of foreign governments—has been denominated in foreign currency and held by foreign residents.

Information on domestic debt crises is scarce, but not because these crises do not take place. Indeed, as we illustrate in chapter 9, domestic debt crises typically occur against a backdrop of much worse economic conditions than the average external default. Usually, however, domestic debt crises do not involve powerful external creditors. Perhaps this may help explain why so many episodes go unnoticed in the mainstream business and financial press and why studies of such crises are underrepresented in the academic literature. Of course, this is not always the case. Mexico's much-publicized near-default in 1994–1995 certainly qualifies as a "famous" domestic default crisis, although not many observers may realize that the bulk of

the problem debt was technically domestic and not external. In fact, the government debt (in the form of *tesobonos*, mostly short-term debt instruments repayable in pesos linked to the U.S. dollar), which was on the verge of default until the country was bailed out by the International Monetary Fund and the U.S. Treasury, was issued under domestic Mexican law and therefore was part of Mexico's domestic debt. One can only speculate that if the *tesobonos* had not been so widely held by nonresidents, perhaps this crisis would have received far less attention. Since 1980, Argentina has defaulted three times on its domestic debt. The two domestic debt defaults that coincided with defaults on external debt (1982 and 2001) attracted considerable international attention. However, the large-scale 1989 default that did not involve a new default on external debt—and therefore did not involve nonresidents—is scarcely known in the literature. The many defaults on domestic debt that occurred during the Great Depression of the 1930s in both advanced economies and developing ones are not terribly well documented. Even where domestic defaults are documented in official volumes on debt, it is often only footnotes that refer to arrears or suspensions of payments.

Finally, some of the domestic defaults that involved the forcible conversion of foreign currency deposits into local currency have occurred during banking crises, hyperinflations, or a combination of the two (defaults in Argentina, Bolivia, and Peru are in this list). Our approach to constructing categorical variables follows that previously described for external debt default. Like banking crises and unlike external debt defaults, for many episodes of domestic default the endpoint for the crisis is not easily established.

Other Key Concepts

Serial Default

Serial default refers to multiple sovereign defaults on external or domestic public (or publicly guaranteed) debt, or both. These defaults may occur five or fifty years apart, and they can range from wholesale default (or repudiation) to partial default through rescheduling (usually stretching interest payments out at more favorable terms for the debtor). As we discuss in chapter 4, wholesale default is actually quite rare, although it may be decades before creditors receive any type of partial repayment.

The This-Time-Is-Different Syndrome

The essence of the this-time-is-different syndrome is simple.[10] It is rooted in the firmly held belief that financial crises are things that happen to other people in other countries at other times; crises do not happen to us, here and now. We are doing things better, we are smarter, we have learned from past mistakes. The old rules of valuation no longer apply. The current boom, unlike the many booms that preceded catastrophic collapses in the past (even in our country), is built on sound fundamentals, structural reforms, technological innovation, and good policy. Or so the story goes.

In the preamble we have already provided a theoretical rationale for the this-time-is-different syndrome based on the fragility of highly leveraged economies, in particular their vulnerability to crises of confidence. Certainly historical examples of the this-time-is-different syndrome are plentiful. It is not our intention to provide a catalog of these, but examples are sprinkled throughout the book. For example, box 1.2 exhibits a 1929 advertisement that embodies the spirit of "this time is different" in the run-up to the Great Depression, and box 6.2 explores the Latin American lending boom of the 1820s, which marked the first debt crisis for that region.

A short list of the manifestations of the syndrome over the past century is as follows:

1. The buildup to the emerging market defaults of the 1930s

Why was this time different?	*The thinking at the time: There will never again be another world war; greater political stability and strong global growth will be sustained indefinitely; and debt burdens in developing countries are low.*

BOX 1.2

The this-time-is-different syndrome on the eve of the Crash of 1929

FAMOUS WRONG GUESSES IN HISTORY

when all Europe guessed wrong

The date—October 3rd, 1719. The scene—*Hotel de Nevers*, Paris. A wild mob—fighting to be heard. "Fifty shares!" "I'll take two hundred!" "Five hundred!" "A thousand here!" "Ten thousand!"

Shrill cries of women. Hoarse shouts of men. Speculators all—exchanging their gold and jewels or a lifetime's meager savings for magic shares in John Law's Mississippi Company. Shares that were to make them rich overnight.

Then the bubble burst. Down—down went the shares. Facing utter ruin, the frenzied populace tried to "sell". Panic-stricken mobs stormed the *Banque Royale*. No use! The bank's coffers were empty. John Law had fled. The great Mississippi Company and its promise of wealth had become but a wretched memory.

Today you need not guess.

HISTORY sometimes repeats itself—but not invariably. In 1719 there was practically no way of finding out the *facts* about the Mississippi venture. How different the position of the investor in 1929!

Today, it is inexcusable to buy a "bubble"—inexcusable because unnecessary. For now every investor—whether his capital consists of a few thousands or mounts into the millions—has at his disposal facilities for obtaining the *facts*. Facts which—as far as is humanly possible—eliminate the hazards of speculation and substitute in their place sound principles of investment.

STANDARD STATISTICS

200 VARICK ST.

New York, New York (now the home of Chipotle Mexican Grill)

Saturday Evening Post, September 14, 1929

Note: This advertisement was kindly sent to the authors by Professor Peter Lindert.

The major combatant countries in World War I had built up enormous debts. Regions such as Latin America and Asia, which had escaped the worst ravages of the war, appeared to have very modest and manageable public finances. The 1920s were a period of relentless global optimism, not dissimilar to the five-year boom that preceded the worldwide financial crisis that began in the United States in mid-2007. Just as global peace was an important component of the 2000s dynamic, so was the widely held view that the experience of World War I would not soon be repeated.

In 1929, a global stock market crash marked the onset of the Great Depression. Economic contraction slashed government resources as global deflation pushed up interest rates in real terms. What followed was the largest wave of defaults in history.

2. The debt crisis of the 1980s

Why was this time different?

The thinking at the time: Commodity prices are strong, interest rates are low, oil money is being "recycled," there are skilled technocrats in government, money is being used for high-return infrastructure investments, and bank loans are being made instead of bond loans, as in the interwar period of the 1920s and 1930s. With individual banks taking up large blocks of loans, there will be incentive for information gathering and monitoring to ensure the monies are well spent and the loans repaid.

After years of secular decline, the world experienced a boom in commodity prices in the 1970s; commodity-rich Latin America seemed destined to reap enormous profits as world growth powered higher and higher prices for scarce material resources. Global inflation in the developed world had led to a long period of anomalously low real interest rates in rich countries' bond markets. And last but not least, there had been essentially no new defaults in Latin America for almost a generation; the last surge had occurred during the Great Depression.

Many officials and policy economists spoke very approvingly of the loans from Western banks to developing countries. The banks were said to be performing an important intermediation service by taking oil surpluses from the Organization of Petroleum Exporting Countries and "recycling" them to developing countries. Western banks came into the loop because they supposedly had the lending and monitoring expertise necessary to lend en masse to Latin America and elsewhere, reaping handsome markups for their efforts.

The 1970s buildup, like so many before it, ended in tears. Steeply higher real interest rates combined with a collapse of global commodity prices catalyzed Mexico's default in August 1983, and shortly thereafter the defaults of well over a dozen other major emerging markets, including Argentina, Brazil, Nigeria, the Philippines, and Turkey. When the rich countries moved to tame inflation in the early 1980s, steep interest rate hikes by the central banks hugely raised the carrying costs of loans to developing countries, which were typically indexed to short-term rates (why that should be the case is an issue we address in the chapter on the theory of sovereign debt). With the collapse of global demand, commodity prices collapsed as well, falling by 70 percent or more from their peak in some cases.

3. The debt crisis of the 1990s in Asia

Why was this time different? *The thinking at the time: The region has a conservative fiscal policy, stable exchange rates, high rates of growth and saving, and no remembered history of financial crises.*

Asia was the darling of foreign capital during the mid-1990s. Across the region, (1) households had exceptionally high savings rates that the governments could rely on in the event of financial stress, (2) governments had relatively strong fiscal positions so that most borrowing was private, (3) currencies were quasi-pegged to the dollar, making investments safe, and (4) it was thought that Asian countries never have financial crises.

In the end, even a fast-growing country with sound fiscal policy is not invulnerable to shocks. One huge weakness was Asia's exchange rate pegs against the dollar, which were often implicit rather than explicit.[11] These pegs left the region extremely vulnerable to a crisis of confidence. And, starting in the summer of 1997, that is precisely what happened. Governments such as Thailand's ultimately suffered huge losses on foreign exchange intervention when doomed efforts to prop up the currency failed.[12] Korea, Indonesia, and Thailand among others were forced to go to the International Monetary

Fund for gigantic bailout packages, but this was not enough to stave off deep recessions and huge currency depreciations.

4. The debt crisis of the 1990s and early 2000s in Latin America

Why was this time different? *The thinking at the time: The debts are bond debts, not bank debts. (Note how the pendulum swings between the belief that bond debt is safer and the belief that bank debt is safer.) With orders of magnitude more debt holders in the case of bonds than in the case of international banks, countries will be much more hesitant to try to default because renegotiation would be so difficult (see instance 2 earlier).*

During the early 1990s, international creditors poured funds into a Latin American region that had only just emerged from a decade of default and stagnation. The credit had been channeled mainly through bonds rather than banks, leading some to conclude that the debts would be invulnerable to renegotiation. By spreading debt claims out across a wide sea of bond holders, it was claimed, there could be no repeat of the 1980s, in which debtor countries had successfully forced banks to reschedule (stretch out and effectively reduce) debt repayments. Absent the possibility of renegotiation, it would be much harder to default.

Other factors were also at work, lulling investors. Many Latin American countries had changed from dictatorships to democracies, "assuring greater stability." Mexico was not a risk because of the North American Free Trade Agreement, which came into force in January 1994. Argentina was not a risk, because it had "immutably" fixed its exchange rate to the dollar through a currency board arrangement.

Eventually, the lending boom of the 1990s ended in a series of financial crises, starting with Mexico's December 1994 collapse. What followed included Argentina's $95 billion default, the largest in history at that time; Brazil's financial crises in 1998 and 2002; and Uruguay's default in 2002.

5. The United States in the run-up to the financial crisis of the late 2000s (the Second Great Contraction)

Why was this time different?

The thinking at the time: Everything is fine because of globalization, the technology boom, our superior financial system, our better understanding of monetary policy, and the phenomenon of securitized debt.

Housing prices doubled and equity prices soared, all fueled by record borrowing from abroad. But most people thought the United States could never have a financial crisis resembling that of an emerging market.

The final chapters of this book chronicle the sorry tale of what unfolded next, the most severe financial crisis since the Great Depression and the only one since World War II that has been global in scope. In the intervening chapters we will show that the serial nature of financial crises is endemic across much of the spectrum of time and regions. Periods of prosperity (many of them long) often end in tears.

- 2 -

DEBT INTOLERANCE: THE GENESIS OF SERIAL DEFAULT

Debt intolerance is a syndrome in which weak institutional structures and a problematic political system make external borrowing a tempting device for governments to employ to avoid hard decisions about spending and taxing.

This chapter lays out a statistical framework for thinking about serial default in terms of some countries' inability to resist recurrent exposure to debt default relapses. The reader wishing to avoid the modest amount of technical discussion in the next two chapters can readily skip ahead to the chapter on external default without any important loss of continuity.

Debt intolerance is defined as the extreme duress many emerging markets experience at external debt levels that would seem quite manageable by the standards of advanced countries. The duress typically involves a vicious cycle of loss in market confidence, spiraling interest rates on external government debt, and political resistance to repaying foreign creditors. Ultimately, default often occurs at levels of debt well below the 60 percent ratio of debt to GDP enshrined in Europe's Maastricht Treaty, a clause intended to protect the euro system from government defaults. Safe debt thresholds turn out to depend heavily on a country's record of default and inflation.[1]

Debt Thresholds

This chapter constitutes a first pass at understanding why a country might be vulnerable to recurrent default, then proceeds to form a

quantitative measure of vulnerability to marginal rises in debt, or "debt intolerance."

Few macroeconomists would be surprised to learn that emerging market countries with overall ratios of public debt to GNP above, say, 100 percent run a significant risk of default. Even among advanced countries, Japan's debt of about 170 percent of its GNP (depending on the debt definition used) is considered problematic (Japan holds massive foreign exchange reserves, but even its net level of debt of about 94 percent of GNP is still very high).[2] Yet emerging market default can and does occur at ratios of external debt to GNP that are far lower than these, as some well-known cases of external debt default illustrate (e.g., Mexico in 1982, with a ratio of debt to GNP of 47 percent, and Argentina in 2001, with a ratio of debt to GNP slightly above 50 percent).

Our investigation of the debt thresholds of emerging market countries begins by chronicling all episodes of default or restructuring of external debt for middle-income countries for the years 1970–2008, where default is defined along the lines described in chapter 1 on definitions of default.[3] This is only our first pass at listing sovereign default dates. Later we will look at a far broader range of countries across a far more sweeping time span. Table 2.1 records the external debt default dates. For each middle-income country, the table lists the first year of the default or restructuring episode and the ratios of external debt to GNP and external debt to exports at the end of the year of the credit event, that is, when the technical default began.[4] Obviously the aforementioned defaults of Mexico in 1982 and Argentina in 2001 were not exceptions, nor was the most recent default, that of Ecuador in 2008. Table 2.2, which is derived from table 2.1, shows that external debt exceeded 100 percent of GNP in only 16 percent of the default or restructuring episodes, that more than half of all defaults occurred at levels below 60 percent, and that there were defaults against debt levels that were below 40 percent of GNP in nearly 20 percent of the cases.[5] (Arguably, the thresholds of external debt to GNP reported in table 2.1 are biased upward because the ratios of debt to GNP corresponding to the years of the credit events are driven up by the real depreciation in the ex-

TABLE 2.1

External debt at the time of default: Middle-income countries, 1970–2008

	Year of default or restructuring	Ratio of external debt to GNP at the end of the year of default or restructuring	Ratio of external debt to exports at the end of the year of default or restructuring
Albania	1990	16.6	98.6
Argentina	1982	55.1	447.3
	2001	50.8	368.1
Bolivia	1980	92.5	246.4
Brazil	1983	50.1	393.6
Bulgaria	1990	57.1	154.0
Chile	1972	31.1	n.a.
	1983	96.4	358.6
Costa Rica	1981	136.9	267.0
Dominican Republic	1982	31.8	183.4
Ecuador	1984	68.2	271.5
	2000	106.1	181.5
	2008	20.0	81.0
Egypt	1984	112.0	304.6
Guyana	1982	214.3	337.7
Honduras	1981	61.5	182.8
Iran	1992	41.8	77.7
Iraq	1990	n.a.	n.a.
Jamaica	1978	48.5	103.9
Jordan	1989	179.5	234.2
Mexico	1982	46.7	279.3
Morocco	1983	87.0	305.6
Panama	1983	88.1	162.0
Peru	1978	80.9	388.5
	1984	62.0	288.9
Philippines	1983	70.6	278.1
Poland	1981	n.a.	108.1
Romania	1982	n.a.	73.1
Russian Federation	1991	12.5	n.a.
	1998	58.5	109.8
South Africa	1985	n.a.	n.a.
Trinidad and Tobago	1989	49.4	103.6
Turkey	1978	21.0	374.2
Uruguay	1983	63.7	204.0
Venezuela	1982	41.4	159.8
Yugoslavia	1983	n.a.	n.a.
Average		69.3	229.9

Sources: Reinhart, Rogoff, and Savastano (2003a), updated based on World Bank (various years), *Global Development Finance*.

Notes: Income groups are defined according to World Bank (various years), *Global Development Finance*. n.a., not available. Debt stocks are reported at end of period. Hence, taking the ratio of debt to GNP at the end of the default year biases ratios *upward*, because in most cases defaults are accompanied by a sizable depreciation in the real exchange rate.

TABLE 2.2
External debt at the time of default: Frequency distribution, 1970–2008

Range of ratios of external debt to to GNP at the end of the first year of default or restructuring (percent)	Percentage of total defaults or restructurings in middle-income countries
< 40	19.4
41–60	32.3
61–80	16.1
81–100	16.1
>100	16.1

Sources: Table 2.1 and authors' calculations.
Notes: Income groups are defined according to World Bank (various years), *Global Development Finance*. These shares are based on the cases for which we have data on the ratios of debt to GNP. All cases marked "n.a." in Table 2.1 are excluded from the calculations.

change rate that typically accompanies such events as locals and foreign investors flee the currency.

We next compare profiles of the external indebtedness of emerging market countries with and without a history of defaults. Figure 2.1 shows the frequency distribution of external debt to GNP for the two groups of countries over 1970–2008. The two distributions are very distinct and show that defaulters borrow more than nondefaulters (even though their ratings tend to be worse at equal levels of debt). The gap between external debt ratios in emerging market countries with and without a history of default widens further when ratios of external debt to exports are considered. It appears that those that risk default the most when they borrow (i.e., those that have the highest debt intolerance levels) borrow the most, especially when measured in terms of exports, their largest source of foreign exchange. It should be no surprise, then, that so many capital flow cycles end in an ugly credit event. Of course, it takes two to tango, and creditors must be complicit in the this-time-is-different syndrome.

We can use these frequency distributions to ask whether there is a threshold of external debt to GNP for emerging economies beyond which the risk of experiencing extreme symptoms of debt intolerance rises sharply. (But this will be only a first step because, as we

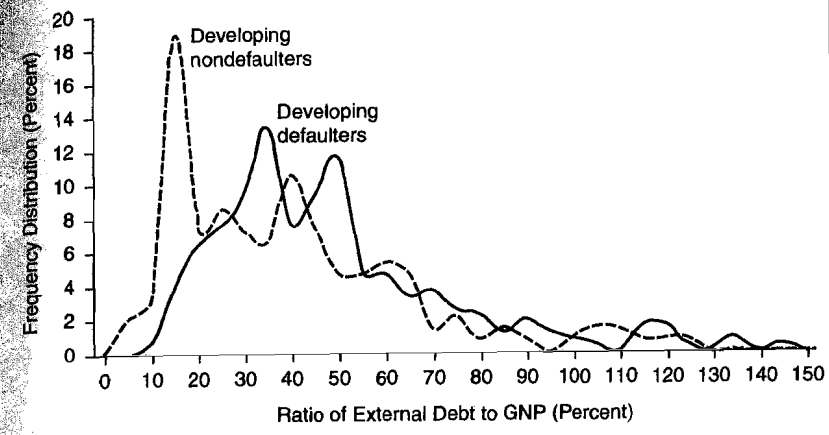

Figure 2.1. Ratios of external debt to GNP: Defaulters and nondefaulters, 1970–2008.
Sources: Reinhart, Rogoff, and Savastano (2003a), updated based on International Monetary Fund, *World Economic Outlook*, and World Bank (various years), *Global Development Finance*.

shall see, differing levels of debt intolerance imply very different thresholds for various individual countries.) In particular, we highlight that countries' repayment and inflation histories matter significantly; the worse the history, the less the capacity to tolerate debt. Over half of the observations for countries with a sound credit history are at levels of external debt to GNP below 35 percent (47 percent of the observations are below 30 percent). By contrast, for those countries with a relatively tarnished credit history, levels of external debt to GNP above 40 percent are required to capture the majority of observations. Already from tables 2.1 and 2.2, and without taking into account country-specific debt intolerance factors, we can see that when the external debt levels of emerging markets are above 30–35 percent of GNP, risks of a credit event start to increase significantly.[6]

Measuring Vulnerability

To operationalize the concept of debt intolerance—to find a way to quantitatively measure a country's fragility as a foreign borrower—

we focus on two indicators: the sovereign ratings reported by *Institutional Investor* and the ratio of external debt to GNP (or of external debt to exports).

The *Institutional Investor* ratings (IIR), which are compiled twice a year, are based on survey information provided by economists and sovereign risk analysts at leading global banks and securities firms. The ratings grade each country on a scale from zero to 100, with a rating of 100 given to countries perceived as having the lowest likelihood of defaulting on their government debt obligations.[7] Hence, one may construct the variable 100 minus IIR as a proxy for default risk. Unfortunately, market-based measures of default risk (say, based on prices at which a country's debt trades on secondary markets) are available only for a much smaller range of countries and over a much shorter sample period.[8]

The second major component of our measure of a country's vulnerability to lapse or relapse into external debt default consists of total external debt, scaled alternatively by GNP and exports. Our emphasis on total external debt (public plus private) in this effort to identify a sustainable debt is due to the fact that historically much of the government debt in emerging markets was external, and the small part of external debt that was private before a crisis often became public after the fact.[9] (Later, in chapter 8, we will extend our analysis to incorporate domestic debt, which has become particularly important in the latest crisis given the large stock of domestic public debt issued by the governments of many emerging markets in the early 2000s prior to the crisis.) Data on domestic private debt remain elusive.

Table 2.3, which shows the panel pairwise correlations between the two debt ratios and the *Institutional Investor* measures of risk for a large sample of developing economies, also highlights the fact that the different measures of risk present a very similar picture of different countries' relative rankings and of the correlation between risk and debt. As expected, the correlations are uniformly positive in all regional groupings of countries, and in most instances they are statistically significant.

TABLE 2.3
Risk and debt: Panel pairwise correlations, 1979–2007

	100 – *Institutional Investor* ratings (IIR)
Correlations with ratio of external debt to GDP	
Full sample of developing countries	0.45*
Africa	0.33*
Emerging Asia	0.54*
Middle East	0.14
Western Hemisphere	0.45*
Correlations with ratio of external debt to exports	
Full sample of developing countries	0.63*
Africa	0.56*
Emerging Asia	0.70*
Middle East	0.48*
Western Hemisphere	0.47*

Sources: Reinhart, Rogoff, and Savastano (2003a), updated based on World Bank (various years), *Global Development Finance*, and *Institutional Investor*.
Note: An asterisk (*) denotes that the correlation is statistically significant at the 95 percent confidence level.

Clubs and Regions

We next use the components of debt intolerance (IIR and external debt ratios) in a two-step algorithm mapped in figure 2.2 to define creditors' "clubs" and regions of vulnerability. We begin by calculating the mean (47.6) and standard deviation (25.9) of the ratings for 90 countries for which *Institutional Investor* published data over 1979–2007, then use these metrics to loosely group countries into three clubs. Those countries that over the period 1979–2007 had an average IIR at or above 73.5 (the mean plus one standard deviation) form club A, a club that comprises countries that enjoy virtually continuous access to capital markets—that is, all advanced economies. As their repayment history shows (see chapter 8), these countries are the least debt intolerant. The club at the opposite extreme, club C, is comprised of those countries whose average IIR is below 21.7 (the mean minus one standard deviation).[10] This "cut-off" club includes