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This Time is Different: A Panoramic View of Eight Centuries of Financial Crises^{*}

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Abstract

This paper offers a “panoramic” analysis of the history of financial crises dating from England’s fourteenth-century default to the current United States sub-prime financial crisis. Our study is based on a new dataset that spans all regions. It incorporates important credit episodes seldom covered in the literature, including for example, defaults in India and China. As the first paper employing this data, our aim is to illustrate broad insights that can be gleaned from a sweeping historical database. We find that serial default is a nearly universal phenomenon as countries struggle to transform themselves from emerging markets to advanced economies. Major default episodes are typically spaced some years (or decades) apart, creating an illusion that “this time is different” among policymakers and investors. We also confirm that crises frequently emanate from the financial centers with transmission through interest rate shocks and commodity price collapses. Thus, the recent US sub-prime financial crisis is hardly unique. Our data also documents other crises that often accompany default: inflation, exchange rate crashes, banking crises, and currency debasements.

JEL E6, F3, and N0

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I. Introduction

The economics profession has an unfortunate tendency to view recent experience in the narrow window provided by standard datasets. That is why Friedman and Schwartz's monumental monetary history of the United States still resonates almost one-half century after publication (Friedman and Schwartz, 1963). With a few notable exceptions, cross-country empirical studies on financial crises typically begin in 1980 and are limited in several other important respects.¹ Yet an event that is rare in a three decade span may not be all that rare when placed in a broader context.

This paper introduces a comprehensive new historical database for studying debt and banking crises, inflation, currency crashes and debasements. The data covers sixty-six countries in Africa, Asia, Europe, Latin America, North America, and Oceania. The range of variables encompasses external and domestic debt, trade, GNP, inflation, exchange rates, interest rates, and commodity prices. The coverage spans eight centuries, going back to the date of independence or well into the colonial period for some countries. As we detail in an annotated appendix, the construction of our dataset builds on the work of many scholars;² it also includes a considerable amount of new material from diverse primary and secondary sources. In addition to a systematic dating of external debt and exchange rate crises, this paper catalogues dates for domestic inflation and banking crises. For the dating of sovereign defaults on domestic debt, see Reinhart and Rogoff (2008b).

The paper is organized as follows. Section II provides highlights of the dataset, with special reference to the current conjuncture. We note that policymakers should not be overly cheered by the absence of major external defaults from 2003 to 2007, after the wave

¹ Among many important previous studies include work by Bordo, Eichengreen, Lindert, Morton and Taylor.

² See the longer working paper version of this paper, Reinhart and Rogoff (2008a) and its detailed data appendices for the full listing of sources.

of defaults in the preceding two decades. Serial default remains the norm, with international waves of defaults typically separated by many years, if not decades.

Serial default is a universal rite of passage through history for nearly all countries as they pass through the emerging market state of development. We also find that high inflation, currency crashes, and debasements often go hand-in-hand with default. Last, but not least, we find that historically, significant waves of increased capital mobility are often followed by a string of domestic banking crises.

Section III of the paper gives an overview of the sample and data. Section IV catalogues the history of default on external debts, from England's defaults in the Middle Ages, to Spain's thirteen defaults from the 1500s on, to twentieth-century defaults in emerging markets. Our data set marks the years that default episodes are resolved as well as when they began, allowing us to look at the duration of default in addition to the frequency.

Section V looks at the effect of global factors on sovereign default. We show how shocks that originate at the center can lead to financial crises worldwide. In this respect, the 2007–2008 US sub-prime financial crisis is hardly exceptional. Section VI shows that episodes of high inflation and currency debasement are just as much a universal rite of passage as default. In the concluding section, we take up the issue of how countries can graduate from the perennial problem of serial default.

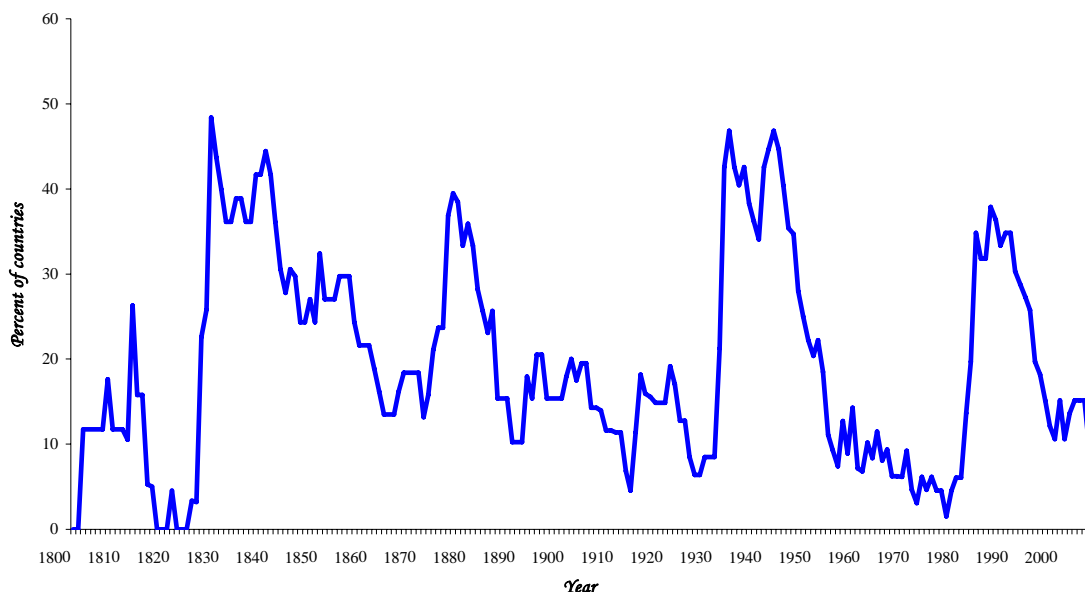
II. First Insights: The Big Picture

What are some basic insights one gains from this panoramic view of the history of financial crises? We begin by discussing sovereign default on external debt (that is, when a government defaults on its own external or private-sector debts that were publicly guaranteed.)

For the world as a whole (or at least the more than 90 percent of global GDP represented by our dataset), the current period can be seen as a typical lull that follows large global financial crises. Figure 1 plots for the years 1800 to 2006 (where our dataset is most complete) the percentage of all independent countries in a state of default or restructuring during any given year. Aside from the current lull, *one fact that jumps out from the figure are the long periods where a high percentage of all countries are in a state of default or restructuring. Indeed, there are five pronounced peaks or default cycles in the figure.* The first is during the Napoleonic War. The second runs from the 1820s through the late 1840s, when, at times, nearly half the countries in the world were in default (including all of Latin America). The third episode begins in the early 1870s and lasts for two decades.

Figure 1

Sovereign External Debt: 1800-2006
Percent of Countries in Default or Restructuring



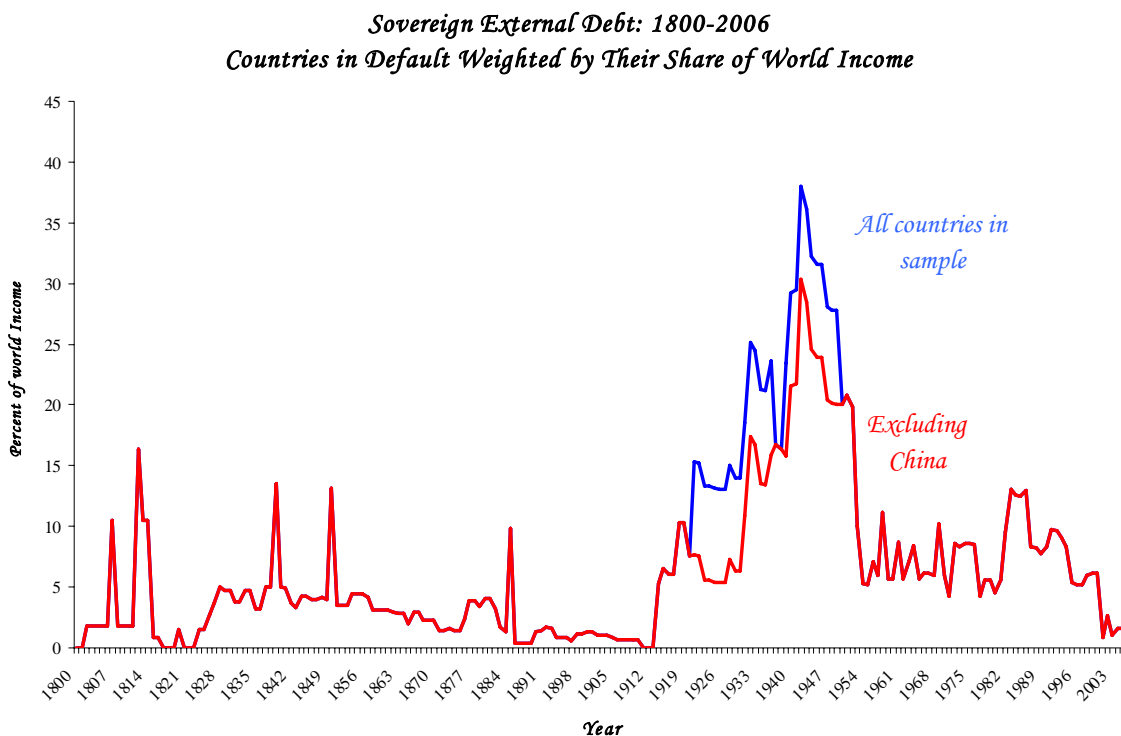
Sources: Lindert and Morton (1989), Macdonald (2003), Purcell and Kaufman (1993), Reinhart, Rogoff, and Savastano (2003), Suter (1992), and Standard and Poor's (various years).

Notes: Sample size includes all countries, out of a total of sixty six listed in Table 1, that were independent states in the given year.

The fourth episode begins in the Great Depression of the 1930s and extends through the early 1950s, when again nearly half of all countries stood in default.³ The most recent default cycle encompasses the emerging market debt crises of the 1980s and 1990s.

Weighing countries by their share of global GDP, the current lull stands out even more against the preceding century. As figure 2 illustrates, only the two decades before World War I—the halcyon days of the gold standard—exhibited tranquility anywhere close to that of the 2003-to-2007 period. Looking forward, one cannot fail to note that whereas one and two decade lulls in defaults are not at all uncommon, *each lull has invariably been followed by a new wave of default.*

Figure 2



Sources: Lindert and Morton (1989), Macdonald (2003), Maddison (2003), Purcell and Kaufman (1993), Reinhart, Rogoff, and Savastano (2003), Suter (1992), and Standard and Poor’s (various years).
Notes: Sample size includes all countries, out of a total of sixty six listed in Table 1, that were independent states in the given year. Three sets of GDP weights are used, 1913 weights for the period 1800–1913, 1990 for the period 1914–1990, and finally 2003 weights for the period 1991–2006.

³ Kindleberger (1988) is among the few scholars who emphasize that the 1950s can be viewed as a financial crisis era.

Figure 2 also shows that the years just after World War II mark the peak of the largest default era in modern world history, with countries representing almost 40 percent of global GDP in a state of default or rescheduling. This is partly a result of new defaults produced by the war, but also due to the fact that many countries never emerged from the defaults surrounding the Great Depression of the 1930s.⁴ Weighted by GDP, the Napoleonic War defaults become as important as any other period. Outside World War II, only the peak of the 1980s debt crisis nears the levels of the depression-war years.

As Section IV details, *serial default on external debt—that is, repeated sovereign default—is the norm throughout every region in the world, including Asia and Europe.*

Our extensive new dataset also confirms the prevailing view among economists that *global economic factors, including commodity prices and center country interest rates, play a major role in precipitating sovereign debt crises.*⁵

Another strong regularity found in the literature on modern financial crises (e.g., Kaminsky and Reinhart, 1999 and Reinhart and Rogoff, 2008c) is that countries experiencing sudden large capital inflows are at high risk of having a debt crisis. The evidence here suggests the same to be true over a much broader sweep of history, with surges in capital inflows often preceding external debt crises at the country, regional, and global level since 1800, if not before.

Also consonant with the modern theory of crises is the striking correlation between freer capital mobility and the incidence of banking crises, as illustrated in Figure 3.

Periods of high international capital mobility have repeatedly produced international banking crises, not only famously as they did in the 1990s, but historically. The figure plots a three-year moving average of the share of all countries experiencing banking crises

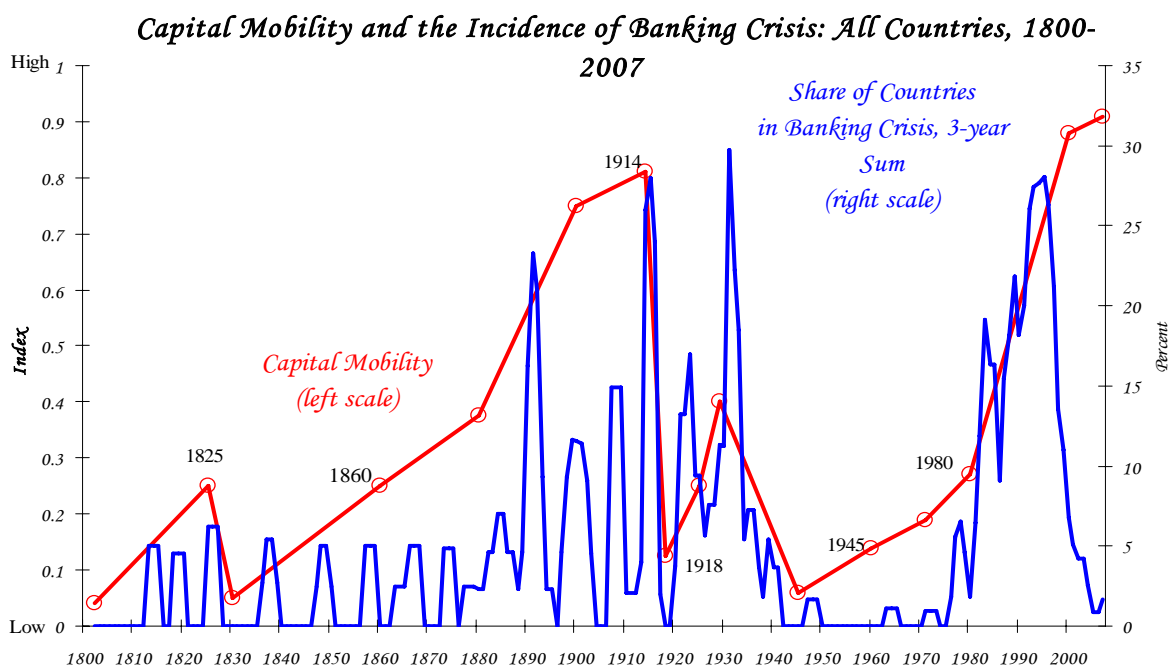
⁴ Kindleberger (1989) emphasizes the prevalence (but does not quantify) default after World War II; a classic on the great depression is Eichengreen (1992).

⁵ See Bulow and Rogoff (1990), and Mauro, Sussman and Yafeh (2006).

on the right scale. On the left scale, we employ our favored index of capital mobility, due to Obstfeld and Taylor (2003), updated and backcast using their same design principle, to cover our full sample period. While the Obstfeld–Taylor index may have its limitations, it nevertheless provides a summary of de facto capital mobility based on actual flows.

The dating of banking crises episodes is discussed in detail in the working paper version of this paper. What separates this study from previous efforts (that we are aware of) is that for so many countries, our dating of crises extends back to far before the much-studied modern post– World War II era; specifically we start in 1800. (Our work was greatly simplified back to 1880 by the careful study of Bordo, et al., 2001). The earliest advanced economy banking crisis in our sample is Denmark in 1813; the two earliest ones we clock in emerging markets are India, 1863, and Peru 10 years later.

Figure 3



Sources: Bordo et al. (2001), Caprio et al. (2005), Kaminsky and Reinhart (1999), Obstfeld and Taylor (2004), and these authors.

Notes: As with external debt crises, sample size includes all countries, out of a total of sixty six listed in Table 1 that were independent states in the given year. The smooth red line (right scale) shows the judgmental index of the extent of capital mobility given by Obstfeld and Taylor (2003), backcast from 1800 to 1859 using their same design principle.

As noted, our database includes long time series on domestic public debt.⁶

Because historical data on domestic debt is so difficult to come by, it has been ignored in the empirical studies on debt and inflation in developing countries. Indeed, many generally knowledgeable observers have argued that the recent shift by many emerging market governments from external to domestic bond issues is revolutionary and unprecedented.⁷ Nothing could be further from the truth, with implications for today's markets and for historical analyses of debt and inflation.

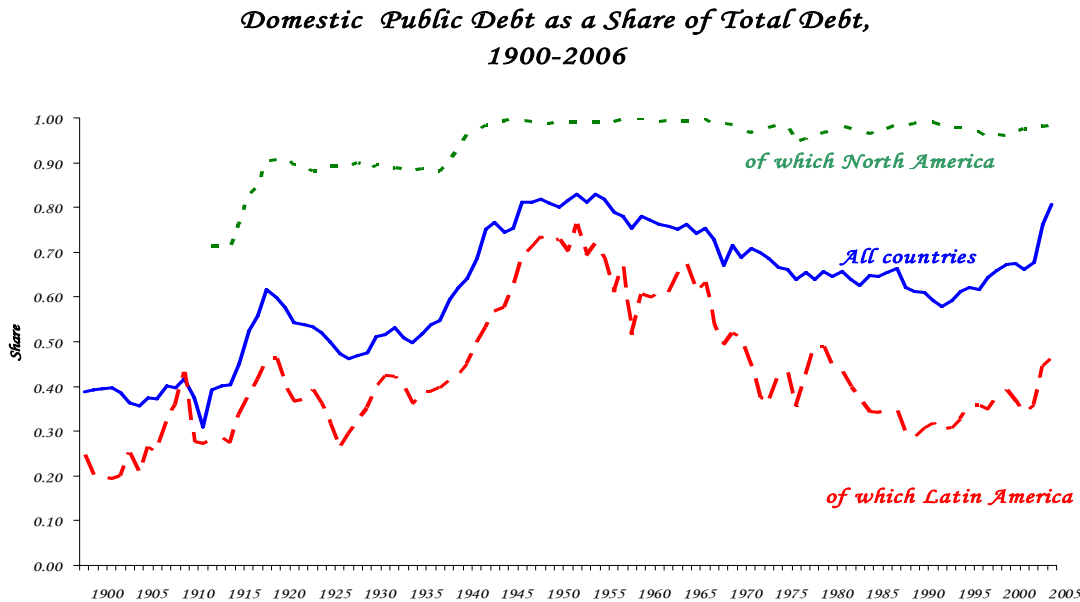
The topic of domestic debt is so important, and the implications for existing empirical studies on inflation and external default are so profound, that we have broken out our data analysis into an independent companion piece (Reinhart and Rogoff, 2008b). Here, we focus on a few major points. *The first is that contrary to much contemporary opinion, domestic debt constituted an important part of government debt in most countries, including emerging markets, over most of their existence.* Figure 4 plots domestic debt as a share of total public debt over 1900 to 2006. For our entire sample, domestically issued debt averages more than 50 percent of total debt for most of the period. (This figure is an average of the individual country ratios.) Even for Latin America, the domestic debt share is typically over 30 percent and has been at times over 50 percent.

Furthermore, contrary to the received wisdom, these data reveal that a very important share of domestic debt—even in emerging markets— was long-term maturity (see Reinhart and Rogoff 2008b).

⁶ For most countries, over most of the time period considered, domestically issued debt was in local currency and held principally by local residents. External debt, on the other hand, was typically in foreign currency, and held by foreign residents.

⁷ See the IMF Global Financial Stability Report, April 2007; many private investment-bank reports also trumpet the rise of domestic debt as a harbinger of stability.

Figure 4



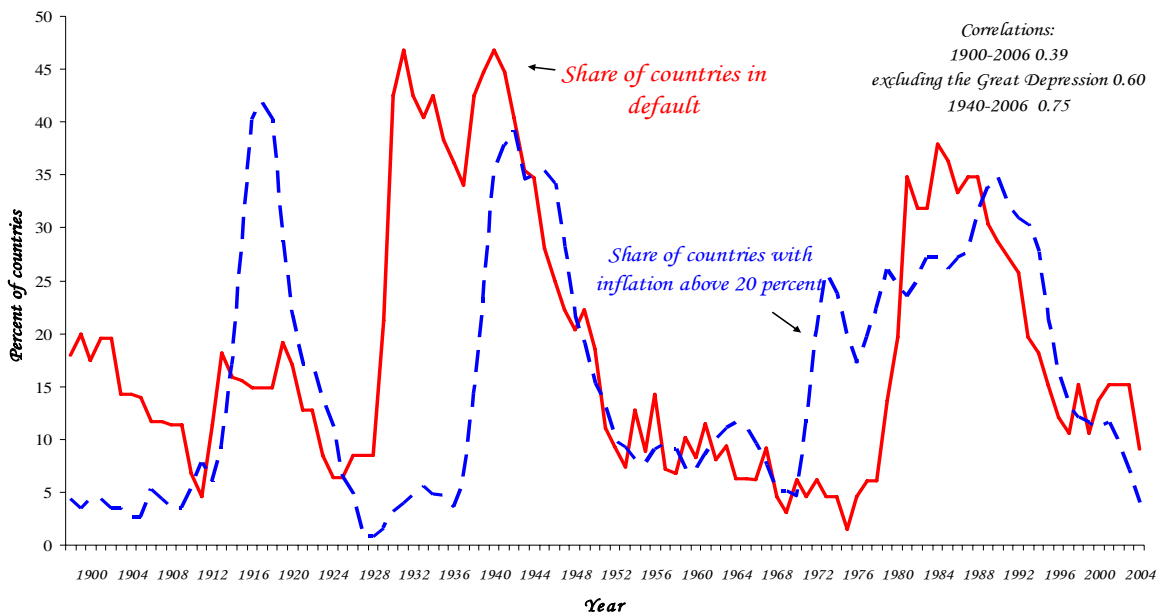
Sources: The League of Nations, the United Nations, and others sources listed in Appendix II of the working paper version.

Figure 5 on inflation and external default (1900 to 2006) illustrates the striking correlation between the share of countries in default on debt at one point and the number of countries experiencing high inflation (which we define to be inflation over 20 percent per annum). Thus, there is a tight correlation between the expropriation of residents and foreigners, an issue explored in greater detail in Reinhart and Rogoff (2008b).

As already noted, investment banks and official bodies, such as the International Monetary Fund, alike have argued that even though total public debt remains quite high today (early 2008) in many emerging markets, the risk of default on external debt has dropped dramatically because the share of external debt has fallen.

Figure 5

Inflation and External Default: 1900-2006



Sources: For share of countries in default, see Figure 1; for high inflation episodes, see Appendix I.
 Notes: Both the inflation and default probabilities are simple unweighted averages.

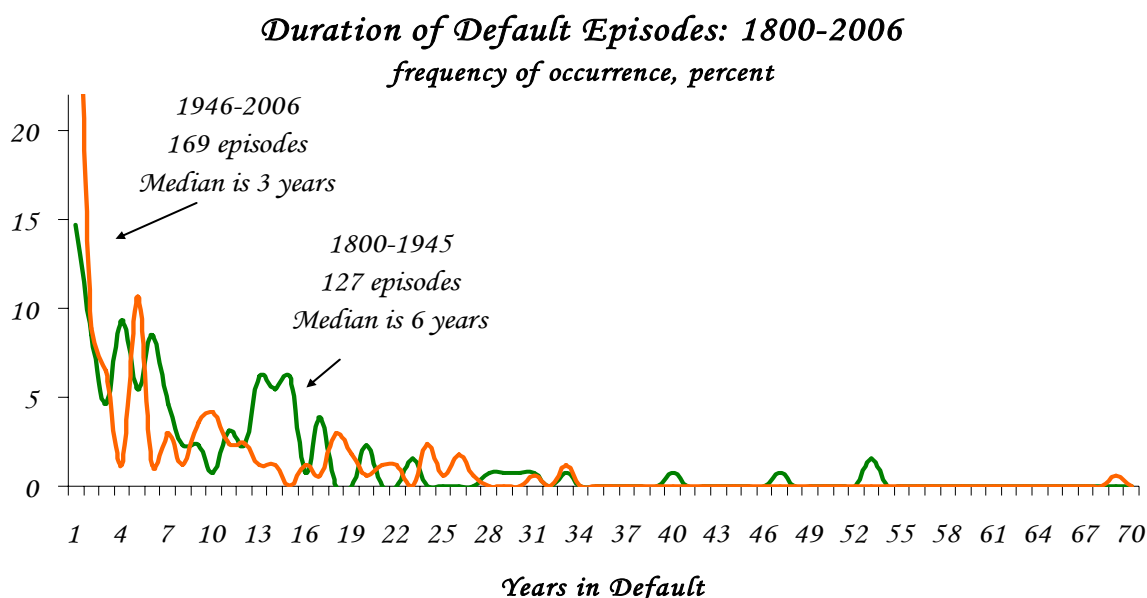
This conclusion seems to be built on the faulty premise that countries will treat domestic debt as junior, bullying domestics into accepting lower repayments or simply defaulting via inflation. The historical record, however, suggests that a high ratio of domestic to external debt in overall public debt is cold comfort to external debt holders. Default probabilities depend much more on the overall level of debt.

Another noteworthy insight from the “panoramic view” *is that the median duration of default spells in the post-World War II period is one-half the length of what it was during 1800–1945* (3 years versus 6 years, as shown in Figure 6).

The charitable interpretation of this fact is that crisis resolution mechanisms have improved since the bygone days of gun-boat diplomacy. After all, Newfoundland lost nothing less than her sovereignty when it defaulted on its external debts in 1936 and

ultimately became a Canadian province; Egypt, among others, eventually became a British “protectorate” following its 1876 default. A more cynical explanation points to the possibility that, when bail-outs are facilitated by the likes of the International Monetary Fund, creditors are willing to cut more slack to their serial-defaulting clients. The fact remains that, as Bordo and Eichengreen (2001) observe, the number of years separating default episodes in the more recent period is much lower. Once debt is restructured, countries are quick to releverage (see Reinhart, Rogoff, and Savastano, 2003, for empirical evidence on this pattern).

Figure 6



Sources: Lindert and Morton (1989), Macdonald (2003), Purcell and Kaufman (1993), Reinhart, Rogoff, and Savastano (2003), Suter (1992), Standard and Poor’s (various years) and authors’ calculations.
 Notes: The duration of a default spell is the number of years from the year of default to the year of resolution, be it through restructuring, repayment, or debt forgiveness. The Kolmogorov–Smirnov test for comparing the equality of two distributions rejects the null hypothesis of equal distributions at the one percent significance level.

III. A Global Database on Financial Crises with a Long-term View

In this section, we provide a sketch of the character of the sample and the building blocks of this database. Extensive detail is provided in the working paper appendices.

Country coverage

Table 1 lists the sixty-six countries in our sample. Importantly, we include a large number of Asian and African economies, whereas previous studies of the same era typically included at most a couple of each. Overall, our dataset includes thirteen African countries, twelve Asian countries, nineteen European countries, eighteen Latin American countries, plus those in North America and Oceania.

As the final column in Table 1 illustrates, our sample of sixty-six countries accounts for about 90 percent of world GDP. Of course, many of these countries, particularly those in Africa and Asia, have become independent nations only relatively recently (column 2). These recently independent countries have not been exposed to the risk of default for nearly as long as, say, the Latin American countries, and we will have to calibrate our inter-country comparisons accordingly.

Table 1 flags which countries in our sample may be considered default virgins, at least in the narrow sense that they have never failed to meet their external debt repayment or rescheduled. These countries are denoted by an asterisk (*). Specifically, here we mean external default. For instance, the United States, among others in this group of default virgins, qualify as such only because we are excluding events such as lowering the gold content of the currency in 1933, or the suspension of convertibility in the nineteenth-century Civil War. These were domestic debt default episodes, the debt was issued under domestic law.

Table 1. Countries, Regions, and World GDP

| Country (An asterisk denotes no sovereign default or rescheduling history) | Year of Independence | Share of World Real GDP 1990 International Geary–Khamis US dollars | |
|--|----------------------|---|------|
| | | 1913 | 1990 |
| Africa | | | |
| Algeria | 1962 | 0.23 | 0.27 |
| Angola | 1975 | 0.00 | 0.03 |
| Central Africa Republic | 1960 | 0.00 | 0.01 |
| Cote D'Ivoire | 1960 | 0.00 | 0.06 |
| Egypt | 1831 | 0.40 | 0.53 |
| Kenya | 1963 | 0.00 | 0.10 |
| Mauritius * | 1968 | 0.00 | 0.03 |
| Morocco | 1956 | 0.13 | 0.24 |
| Nigeria | 1960 | 0.00 | 0.40 |
| South Africa | 1910 | 0.36 | 0.54 |
| Tunisia | 1591/1957 | 0.06 | 0.10 |
| Zambia | 1964 | 0.00 | 0.02 |
| Zimbabwe | 1965 | 0.00 | 0.05 |
| Asia | | | |
| China | 1368 | 8.80 | 7.70 |
| Hong Kong * | | | |
| India | 1947 | 7.47 | 4.05 |
| Indonesia | 1949 | 1.65 | 1.66 |
| Japan | 1590 | 2.62 | 8.57 |
| Korea * | 1945 | 0.34 | 1.38 |
| Malaysia * | 1957 | 0.10 | 0.33 |
| Myanmar | 1948 | 0.31 | 0.11 |
| Philippines | 1947 | 0.34 | 0.53 |
| Singapore * | 1965 | 0.02 | 0.16 |
| Taiwan * | 1949 | 0.09 | 0.74 |
| Thailand * | 1769 | 0.27 | 0.94 |
| Europe | | | |
| Austria | 1282 | 0.86 | 0.48 |
| Belgium * | 1830 | 1.18 | 0.63 |
| Denmark * | 980 | 0.43 | 0.35 |
| Finland * | 1917 | 0.23 | 0.31 |
| France | 943 | 5.29 | 3.79 |
| Germany | 1618 | 8.68 | 4.67 |
| Greece | 1829 | 0.32 | 0.37 |
| Hungary | 1918 | 0.60 | 0.25 |
| Italy | 1569 | 3.49 | 3.42 |
| Netherlands * | 1581 | 0.91 | 0.95 |
| Norway * | 1905 | 0.22 | 0.29 |
| Poland | 1918 | 1.70 | 0.72 |
| Portugal | 1139 | 0.27 | 0.40 |
| Romania | 1878 | 0.80 | 0.30 |
| Russia | 1457 | 8.50 | 4.25 |
| Spain | 1476 | 1.52 | 1.75 |
| Sweden | 1523 | 0.64 | 0.56 |
| Turkey | 1453 | 0.67 | 1.13 |
| United Kingdom | 1066 | 8.22 | 3.49 |

Sources: *Correlates of War* (2007), Maddison (2004).

Notes: An asterisk denotes no sovereign external default or rescheduling history.

Table 1 (concluded) Countries, Regions, and World GDP

| | Year of Independence | Share of World Real GDP | |
|----------------------------------|----------------------|--|-------|
| | | 1990 International Geary–Khamis US dollars | 1990 |
| Latin America | | | |
| Argentina | 1816 | 1.06 | 0.78 |
| Bolivia | 1825 | 0.00 | 0.05 |
| Brazil | 1822 | 0.70 | 2.74 |
| Chile | 1818 | 0.38 | 0.31 |
| Colombia | 1819 | 0.23 | 0.59 |
| Costa Rica | 1821 | 0.00 | 0.05 |
| Dominican Republic | 1845 | 0.00 | 0.06 |
| Ecuador | 1830 | 0.00 | 0.15 |
| El Salvador | 1821 | 0.00 | 0.04 |
| Guatemala | 1821 | 0.00 | 0.11 |
| Honduras | 1821 | 0.00 | 0.03 |
| Mexico | 1821 | 0.95 | 1.91 |
| Nicaragua | 1821 | 0.00 | 0.02 |
| Panama | 1903 | 0.00 | 0.04 |
| Paraguay | 1811 | 0.00 | 0.05 |
| Peru | 1821 | 0.16 | 0.24 |
| Uruguay | 1811 | 0.14 | 0.07 |
| Venezuela | 1830 | 0.12 | 0.59 |
| North America | | | |
| Canada * | 1867 | 1.28 | 1.94 |
| United States * | 1783 | 18.93 | 21.41 |
| Oceania | | | |
| Australia * | 1901 | 0.91 | 1.07 |
| New Zealand * | 1907 | 0.21 | 0.17 |
| Total Sample-66 countries | | 93.04 | 89.24 |

Sources: *Correlates of War* (2007), Maddison (2003).

Dates and Frequency of Coverage

Appendix A describes the data in detail, while Appendices I and II in the longer working paper provide specifics on coverage and sources on a country-by-country and period-by-period basis. All the data is annual—this includes the crises dates. Below we provide a list of the variables used in this study.

Debt

Our debt data covers central government public debt—external and domestic. The latter is decomposed into short-term and long-term debt in many, but not all, cases. For a

large number of countries the time series go back to the 1800s, if not earlier. Starting in 1913, the coverage for our sample becomes much more comprehensive. Debt is perhaps the most novel feature of the dataset.

Prices and exchange rates

The data on prices is the most comprehensive in our set of variables, going back to the early Middle Ages for Europe (including Turkey) and Asia. For the New World (the United States and some of the larger Latin American countries), these data go back to the 1700s. Where possible, we use consumer prices (or cost-of-living) indices. On the basis of this data, we construct the inflation series that allow us to date inflation crises.

Exchange rates in this database come in two forms: For the pre-1600s period, exchange rate data are constructed from the silver content of the currency, for which we have data through the mid-1800s for 11 countries; beginning in the early 1600s, the Course of the Exchange in Amsterdam established actual market-based exchange rates, marking the beginning of modern exchange rates, for which we have a far more comprehensive coverage. As in Reinhart and Rogoff (2004), we use market-based exchange rates, where possible. These data underpin our dating of currency crashes.

Varieties of Crises: Banking, and external and domestic default

These time series are dichotomous variables that take on the value of one if it is a crisis year and zero otherwise and are standard in the literature on crisis. Particulars of the criteria used to define a banking crisis or an external or domestic default crisis are given in Appendix A.

Government Finances, trade, and GDP

Our dataset incorporates data on central government expenditures and revenues. On the whole, these provide some of the most reliable data on country size and economic

strength in the era prior to development of conventional national income. Furthermore, these data are available for many countries, including African countries (where data is relatively scarce), throughout most of their colonial history.

The trade data (exports and imports) are next in reliability to the fiscal data. Like their fiscal counterparts, these data offer longer history than modern vintage national accounts.

Although revenues and trade data are useful scaling variables, having reasonably accurate annual output data is still of enormous help in calibrating the severity of crises.⁸ Unfortunately, GDP data for most countries prior to the twentieth century are quite uneven. For many emerging markets, data are only available sporadically and at long intervals, which is especially limiting in trying to assess the impact of crises. Fortunately, we do have reliable estimates for a sufficient number of countries so as to be able to draw broad conclusions and, of course, we can use government revenue and trade data to supplement these estimates, as discussed in Appendix A.

Capital flows and financial center data

Pre–World War II gross capital flows are measured by data on debentures. Where possible, we also reconstruct net flows by taking gross new issuance minus repayment, taking into account partial defaults and negotiated interest rate reductions that often take place during rescheduling episodes. For the post-war, we rely on the actual balance-of-payments data, as reported by the multilateral institutions or the country sources.

In modern times, emerging market financial crises have often been triggered by events at the center, as Bulow and Rogoff (1990) and others have argued. To capture developments in financial centers post-1800, we include: measures of short- and long-term

⁸ See, for example, Bordo (2007).

interest rates, real GDP, and current account balances. During most of the nineteenth century, Britain was the global financial center. Since World War II, it has been the United States, but both countries were influential during the long transition period from British to U.S. financial hegemony.⁹

IV. Serial Default 1350–2006

When one looks carefully, virtually all countries have defaulted at least once, if not several times, on external debt during their emerging market economy phase, a period that typically takes at least one or two centuries.¹⁰

Early Default, 1500–1799

Table 2 lists the number of defaults, including default years, between 1300 and 1899 for a number of now rich European countries (Austria, France, Germany, Portugal, and Spain). As the table illustrates, today’s emerging market countries did not invent serial default. Rather, a number of today’s now-wealthy countries had similar problems when they were “emerging markets.”

Spain’s defaults establish a record that remains as yet unbroken. Spain managed to default seven times in the nineteenth century alone, after having defaulted six times in the preceding three centuries. With its later string of nineteenth-century defaults, Spain took the mantle for most defaults from France, which had abrogated its debt obligations on nine occasions between 1500 and 1800. Because the French monarchs had a habit of executing major domestic creditors during external debt default episodes (an early form of “debt

⁹ Commodity prices have long been thought to be another important global driver of the depression–prosperity cycles in modern times. Our historical dataset combines several different indices of commodity prices, with the oldest dating back to 1790 (see working paper for details).

¹⁰ For a careful, thought-provoking explanation of serial default and its links to economic volatility see Catao and Kapur (2006).

restructuring”), the population came to refer to these episodes as “bloodletting.”¹¹ The French Finance Minister Abbe Terray, who served from 1768–1774, even opined that governments should default at least once every 100 years in order to restore equilibrium (Winkler, p. 29).¹²

Remarkably, however, despite all the trauma the country experienced in the wake of the French Revolution and the Napoleonic Wars, France eventually managed to emerge from its status of serial defaulter. (There is, however, some debate as to whether France and others defaulted on a portion of their World War I debts to the United States.)¹³ Austria and Portugal defaulted only once in the period up to 1800, but then each defaulted a handful of times during the nineteenth century, and in the case of Austria into the twentieth century. England, however, is perhaps an even earlier graduate. Edward III, of Britain, defaulted on debt to Italian lenders in 1340 (see, for example, MacDonald, 2007), after a failed invasion of France that set off the Hundred Years’ War. A century later, Henry VIII, in addition to engaging in an epic debasement of the currency, seized all the Catholic Church’s vast lands. Such seizures certainly qualify as close cousins of financial defaults, just as modern-day nationalizations of foreign companies are a form of default on direct foreign investment (which we do not attempt to catalogue here).¹⁴

Sovereign Defaults, 1800–2006

Starting in the nineteenth century, the combination of the development of international capital markets together with the emergence of a number of new nation states, led to an explosion in international defaults. Table 2 also lists nineteenth-century default

¹¹ See Reinhart, Rogoff and Savastano (2003) who thank Harald James for this observation.

¹² One wonders if Thomas Jefferson read those words, in that he subsequently held that “the tree of liberty must be refreshed from time to time with the blood of patriots and tyrants.”

¹³ See Lloyd (1934).

¹⁴ We treat the British Crown’s unilateral rescheduling in 1672 as a primarily domestic default, and do not include it in the list of external defaults in Table 2.

and rescheduling episodes in Africa, Europe and Latin America. We include debt reschedulings, which the international finance theory literature rightly categorizes as negotiated partial defaults (Bulow and Rogoff, 1989). We briefly digress to explain this decision, which is fundamental to understanding many international debt crisis episodes.

| Table 2. The Early External Defaults: 1300-1899 | | | |
|---|--|---|---------------------------|
| <i>Country</i> | <i>Years of default 1300-1799</i> | <i>Years of default 1800-1799</i> | <i>Number of defaults</i> |
| Africa | | | |
| Egypt, 1831 | | 1876 | 1 |
| Tunisia | | 1867 | 1 |
| Europe | | | |
| Austria | 1796 | 1802, 1805, 1811, 1816, 1868 | 6 |
| England | 1340, 1594* | | 2 |
| France | 1558, 1624, 1648 1661, 1701, 1715 1770, 1788, 1797 | 1812 | 10 |
| Germany | | | 6 |
| <i>Hesse</i> | | 1814 | 1 |
| <i>Prussia</i> | 1683 | 1807, 1813 | 3 |
| <i>Schleswig- Holstein</i> | | 1850 | 1 |
| <i>Westphalia</i> | | 1812 | 1 |
| Greece, 1829 | | 1826, 1843, 1860, 1893 | 4 |
| Netherlands | | 1814 | 1 |
| Portugal | 1560 | 1828,1837,1841.1845 1852, 1890 | 7 |
| Russia | | 1839, 1885 | 2 |
| Spain | 1557, 1575, 1596, 1607, 1627, 1647 | 1809,1820,1831, 1834, 1851, 1867,1872,1882 | 14 |
| Sweden | | 1812 | 1 |
| Turkey | | 1876 | 1 |
| Latin America | | | |
| Argentina, 1816 | | 1827, 1890 | 2 |
| Bolivia, 1825 | | 1875 | 1 |
| Brazil, 1822 | | 1898 | 1 |
| Chile, 1818 | | 1826, 1880 | 2 |
| Colombia, 1819 | | 1826, 1850, 1873, 1880 | 4 |
| Costa Rica, 1825 | | 1828, 1874, 1895 | 3 |
| Dominican Republic, 1845 | | 1872, 1892 1897, 1899 | 4 |
| Ecuador, 1830 | | 1826, 1868, 1894 | 3 |
| El Salvador, 1821 | | 1828, 1898 | 2 |
| Guatemala, 1821 | | 1828, 1876, 1894, 1899 | 4 |
| Honduras, 1821 | | 1828, 1873 | 2 |
| Mexico, 1821 | | 1827, 1833, 1844, 1866, 1898 | 5 |
| Nicaragua, 1821 | | 1828, 1894 | 2 |
| Paraguay, 1811 | | 1874, 1892 | 2 |
| Peru, 1821 | | 1826, 1876 | 2 |
| Uruguay, 1811 | | 1876, 1891 | 2 |
| Venezuela, 1830 | | 1826, 1848, 1860, 1865, 1892, 1898 | 6 |
| Sources: MacDonald (2006), Reinhart, Rogoff and Savastano (2003) and sources cited therein. | | | |
| ¹ The dates are shown for those countries that became independent during the 19 th century. | | | |

Reschedulings constitute partial default for two reasons. The first reason, of course, is that debt reschedulings often involve reducing interest rates, if not principal. Second, and perhaps more importantly, international debt reschedulings typically saddle investors with illiquid assets that may not pay off for decades. This illiquidity is a huge cost to investors, forcing them to hold a risky asset, often with compensation far below market. It is true that in some cases, investors that held defaulted sovereign debt for a sufficient number of years have often received a return similar to investing in relatively riskless financial center bonds (U.K. or later U.S.) over the same period. Indeed, a number of papers have been written showing precisely such calculations (e.g., Mauro, Sussman and Yaffa, 2006).

While interesting, it is important to underscore the fact that the right benchmark is the return on high-risk illiquid assets, not highly liquid low-risk assets. It is no coincidence that in the wake of the US sub-prime mortgage debt crisis of 2007, sub-prime debt sold at steep discount relative to the expected value of future repayments. Investors rightly believed that if they could pull out their money, they could earn a much higher return elsewhere in the economy provided they are willing to take illiquid positions with substantial risk. Investing in risky illiquid assets is precisely how venture capital and private equity, not to mention university endowments, can succeed in earning enormous returns. By contrast debt reschedulings at negotiated below-market interest rates give the creditor risk with none of the upside of say, a venture capital investment. Thus the distinction between debt reschedulings—negotiated partial defaults—and outright defaults (which typically end in partial repayment) is not a sharp one.

Table 2 also lists each country's year of independence. Most of Africa and Asia was colonized during this period, allowing Latin America and Europe a substantial head

start. The only African countries to default during this period were Egypt (1876) and Tunisia (1867). Austria defaulted a remarkable 5 times, albeit not quite so prolific as Spain. Greece, which gained its independence only in 1829, made up for lost time by defaulting four times. Default was similarly rampant throughout the Latin American region, with Venezuela defaulting six times, and Costa Rica, Honduras, Colombia and the Dominican Republic each defaulting four times.

Looking down the columns of Table 2 also gives us a first glimpse at the clustering of defaults across regions and internationally. As noted in our discussion of Figures 1a and 1b, a number of countries in Europe defaulted during or just after the Napoleonic wars, while many countries in both Latin America (plus their mother country Spain) defaulted during the 1820s. Most of these defaults are associated with Latin America's wars of independence. Although none of the subsequent clusterings is quite so pronounced in terms of number of countries, there are notable global default episodes during the late 1860s up to the mid-1870s, and again starting in the mid-1880s through the early 1890s. We will later look at this clustering a bit more systematically.

Next we turn to the twentieth century. Table 3 shows defaults in Africa and Asia, including among the many newly colonized countries. Nigeria, despite its oil riches, has defaulted a stunning five times since achieving independence in 1960, more than any other country over the same period. Indonesia has also defaulted four times. Morocco, counting its first default in 1903 during an earlier era of independence, also defaulted four times in the twentieth century. India prides itself on escaping the 1990s Asian crisis (thanks to massive capital controls and financial repression). In point of fact, it was forced to reschedule its external debt three times since independence, albeit not since 1972. While China did not default during its communist era, it did default on external debt in both 1921 and 1939.

Thus, as Table 3 illustrates, the notion that countries outside Latin American and low-income Europe were the only ones to default during the twentieth century is an exaggeration, to say the least.

Table 2 also looks at Latin America and Europe, regions where, with only a few exceptions, countries were independent throughout the entire twentieth century. Again, we see that country defaults tend to come in clusters, including especially the period of the Great Depression, when much of the world went into default, the 1980s debt crisis, and also the 1990s debt crisis. The latter crisis saw somewhat fewer technical defaults thanks to massive intervention by the official community, particularly by the International Monetary Fund and the World Bank. In Table 3, notable are Turkey's five defaults, Ecuador and Peru's six defaults, and Brazil's seven.

So far we have focused on the number of defaults, but there is some arbitrariness to this measure. Default episodes can be connected, particularly if debt restructuring terms are harsh and make relapse into default almost inevitable. We have tried in Table 3 to exclude obviously connected episodes, so that when a follow-on default occurs within two years of an earlier one, we count it as one episode. However to gain further perspective into countries default histories, we look next at the number of years each country has spent in default since independence.

We begin by tabulating the results for Asia and Africa in Table 4. Table 4 gives, for each country, the year of independence, the total number of reschedulings (using our measure) and the share of years since 1800 (or since independence, if more recent) spent in a state of default or rescheduling. It is notable that, while there are many defaults in Asia, the typical default (or restructuring) was resolved relatively quickly.

Table 3. Selected Episodes of Default and Rescheduling: 20th Century as of 2006

| <i>Country/date of independence</i> ¹ | <i>Dates</i> | | | |
|--|------------------|------------------|------------------------------|------------------------------|
| | <i>1900-1824</i> | <i>1925-1949</i> | <i>1950-1974</i> | <i>1975-2006</i> |
| Africa | | | | |
| Algeria, 1962 | | | | 1991 |
| Cote D'Ivoire, 1960 | | | | 1983, 2000 |
| Egypt | | | | 1984 |
| Kenya, 1963 | | | | 1994, 2000 |
| Morocco, 1956 | 1903 | | | 1983, 1986 |
| Nigeria, 1960 | | | | 1982, 1986, 1992, 2001, 2004 |
| South Africa, 1910 | | | | 1985, 1989, 1993 |
| Zimbabwe, 1965 | | | 1965 | 2000 |
| Asia | | | | |
| China | 1921 | 1939 | | |
| Japan | | 1942 | | |
| India, 1947 | | | 1958, 1969, 1972 | |
| Indonesia, 1949 | | | 1966 | 1998, 2000, 2002 |
| Myanmar, 1948 | | | | 2002 |
| Philippines, 1947 | | | | 1983 |
| Europe | | | | |
| Austria | | 1938, 1940 | | |
| Germany | | 1932, 1939 | | |
| Greece | | 1932 | | |
| Poland, 1918 | | 1936, 1940 | | 1981 |
| Romania | | 1933 | | 1981, 1986 |
| Latin America | | | | |
| Argentina | | | 1951, 1956 | 1982, 1989, 2001 |
| Bolivia | | 1931 | | 1980, 1986, 1989 |
| Brazil | 1902, 1914 | 1931, 1937 | 1961, 1964 | 1983 |
| Chile | | 1931 | 1961, 1963, 1966, 1972, 1974 | 1983 |
| Ecuador | 1906, 1909, 1914 | 1929 | | 1982, 1999 |
| Peru | | 1931 | 1969 | 1976, 1978, 1980, 1984 |
| Uruguay | 1915 | 1933 | | 1983, 1987, 1990, 2003 |
| Venezuela | | | | 1983, 1990, 1995, 2004 |

¹ Dates are shown for countries that became independent during the 20th century. For the full list see the working paper version. Sources: Standard and Poor's, Purcell and Kaufman (1993), Reinhart, Rogoff and Savastano (2003) and sources cited therein.

Only Indonesia, India, China and the Philippines spent more than 10 percent of their independent lives in default (though of course on a population-weighted basis, that is most of the region). Africa's record is much worse, with several countries spending roughly half their time in default. If African defaults are less celebrated than, say, Latin American defaults, it is because African debts have typically been relatively small, and the systemic consequences less.

Table 4 gives the same set of statistics for Europe and Latin America. Greece, as noted, spent more than half the years since 1800 in default. A number of Latin American countries spent roughly 40 percent of their years in default, including Mexico, Peru, Venezuela, Nicaragua, Dominican Republic, and Cost Rica.

One way of summarizing the data in Table 4 is by looking at a time line giving the number of countries in default or restructuring at any given time. We have already done this in Figure 1 and 2 in section II. These figures, in which spikes represent a surge in new borrowers, illustrate the clustering of defaults in an even more pronounced fashion than our debt tables that mark first defaults.

The same is true across countries, although there is a great deal of variance, depending especially on how long countries tend to stay in default (compare serial-debtor Austria, which has tended to emerge from default relatively quickly, with Greece, which has lived in a perpetual state of default). Overall, one can see that default episodes, while recurrent, are far from continuous. This wide spacing no doubt reflects adjustments debtors and creditors make in the wake of each default cycle. For example, today, many emerging markets are following quite conservative macroeconomic policies. Over time, though, this caution usually gives way to optimism and profligacy, but only after a long lull.

Table 4. The Tally of Default and Rescheduling: Year of Independence–2006

| <i>Country</i> | <i>Year of Independence</i> | <i>Share of years in default or rescheduling since independence or 1800</i> ¹ | <i>Total number of defaults and/or reschedulings</i> |
|---------------------------------|-----------------------------|--|--|
| Africa: Algeria | 1962 | 13.3 | 1 |
| Angola | 1975 | 59.4 | 1 |
| Central African Republic | 1960 | 53.2 | 2 |
| Cote D'Ivoire | 1960 | 48.9 | 2 |
| Egypt | 1831 | 3.4 | 2 |
| Kenya | 1963 | 13.6 | 2 |
| Mauritius | 1968 | 0.0 | 0 |
| Morocco | 1956 | 15.7 | 4 |
| Nigeria | 1960 | 21.3 | 5 |
| South Africa | 1910 | 5.2 | 3 |
| Tunisia | 1591/1957 | 5.3 | 1 |
| Zambia | 1964 | 27.9 | 1 |
| Zimbabwe | 1965 | 40.5 | 2 |
| Asia: China | 1368 | 13.0 | 2 |
| India | 1947 | 11.7 | 3 |
| Indonesia | 1949 | 15.5 | 4 |
| Japan | 1590 | 5.3 | 1 |
| Myanmar | 1948 | 8.5 | 1 |
| Philippines | 1947 | 16.4 | 1 |
| Singapore | 1965 | 0.0 | 0 |
| Sri Lanka | 1948 | 6.8 | 2 |
| Europe: Austria | 1282 | 17.4 | 7 |
| Germany | 1618 | 13.0 | 8 |
| Greece | 1829 | 50.6 | 5 |
| Hungary | 1918 | 37.1 | 7 |
| Italy | 1569 | 3.4 | 1 |
| Netherlands | 1581 | 6.3 | 1 |
| Poland | 1918 | 32.6 | 3 |
| Portugal | 1139 | 10.6 | 6 |
| Romania | 1878 | 23.3 | 3 |
| Russia | 1457 | 39.1 | 5 |
| Spain | 1476 | 23.7 | 13 |
| Sweden | 1523 | 0.0 | 1 |
| Turkey | 1453 | 15.5 | 6 |
| Latin America: Argentina | 1816 | 32.5 | 7 |
| Bolivia | 1825 | 22.0 | 5 |
| Brazil | 1822 | 25.4 | 9 |
| Chile | 1818 | 27.5 | 9 |
| Colombia | 1819 | 36.2 | 7 |
| Costa Rica | 1821 | 38.2 | 9 |
| Dominican Republic | 1845 | 29.0 | 7 |
| Ecuador | 1830 | 58.2 | 9 |
| El Salvador | 1821 | 26.3 | 5 |
| Guatemala | 1821 | 34.4 | 7 |
| Honduras | 1821 | 64.0 | 3 |
| Mexico | 1821 | 44.6 | 8 |
| Nicaragua | 1821 | 45.2 | 6 |
| Panama | 1903 | 27.9 | 3 |
| Paraguay | 1811 | 23.0 | 6 |
| Peru | 1821 | 40.3 | 8 |
| Uruguay | 1811 | 12.8 | 8 |
| Venezuela | 1830 | 38.4 | 10 |

¹ For countries that became independent prior to 1800 the calculations are for 1800–2006.

Sources: Authors' calculations, Standard and Poor's, Purcell and Kaufman (1993), Reinhart, Rogoff and Savastano (2003) and sources cited therein.

V. Global Cycles and External Defaults

As Kaminsky, Reinhart and Vegh (2004) have demonstrated for the post-war period, and Aguirre and Gopinath (2007) have recently modeled, emerging market borrowing tends to be extremely pro-cyclical. Favorable trends in countries' terms of trade (meaning typically, high prices for primary commodities) typically lead to a ramp-up of borrowing that collapses into defaults when prices drop.¹⁵

As observed earlier, external defaults are also quite sensitive to the global capital flow cycle. When flows drop precipitously, more countries slip into default.¹⁶ Figure 7 documents this association by plotting the current account balance of the financial center (the United Kingdom and the United States) against the number of new defaults prior to the breakdown of Bretton Woods. There is a marked visual correlation between peaks in the capital flow cycle and new defaults on sovereign debt. The financial center current accounts capture "global savings glut" pressures, as they give a net measure of excess center-country savings, rather than the gross measure given by the capital flow series in our dataset.

The correlations captured by these figures are illustrative, and different default episodes involve different factors. The figures do bring into sharp relief the vulnerabilities of emerging markets to global business cycles. The problem is that crisis-prone countries, particularly serial defaulters, tend to over-borrow in good times, leaving them vulnerable during the inevitable downturns. The pervasive view that "this time is different" is precisely why it usually isn't different, and catastrophe eventually strikes again.

¹⁵ In the working paper version we illustrate the commodity price cycle, which we split into two periods, the pre- and post-World War II periods. Our results suggests for the period 1800 through 1940, (and as econometric testing corroborates), spikes in commodity prices are almost invariably followed by waves of new sovereign defaults. However, we note that while the association does show through in the pre-World War II period, it is less compelling subsequently.

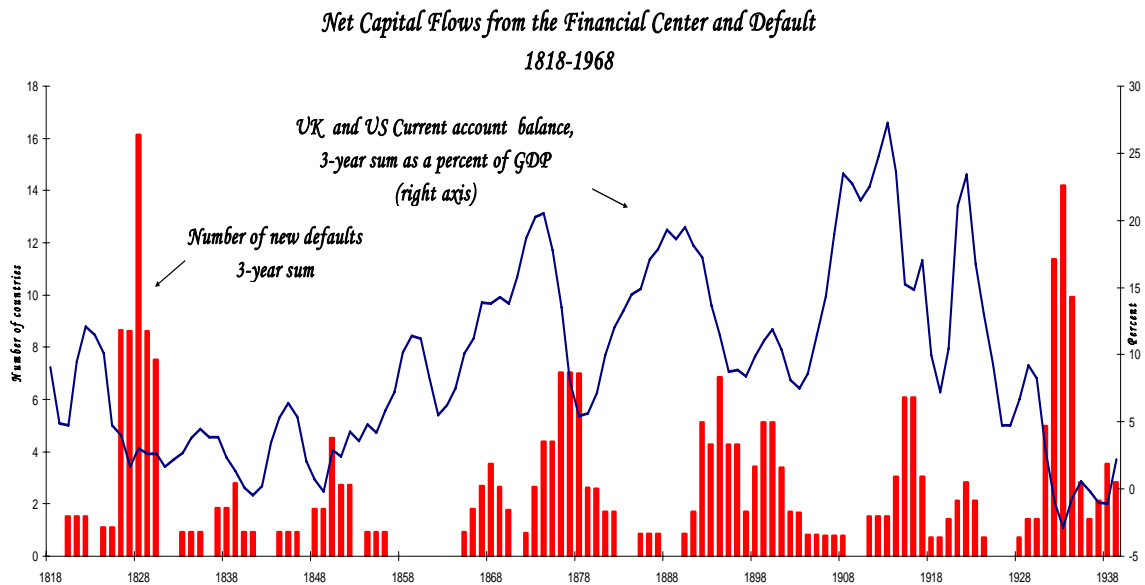
¹⁶ See also the various essays in Eichengreen and Lindert (1989).

The capital flow cycle (Figure 7) comes out even more strikingly in many individual country graphs, but space constraints limit showing them.

Crises emanating from the center

We have already seen that major global spikes in defaults began in the 1820s, the 1870s, the 1930s and the 1980s. The 1930s spike was caused by the worldwide depression that, by most accounts, began in the United States. So, too, did the 1980s spike, which was caused by U.S. disinflation. What of earlier eras?

Figure 7



Sources: Historical Statistics of the United States (2007), Imlah (1958), Mitchell (1993), Bank of England.
Notes: The current account for the UK and the US is defined according to the relative importance (albeit in a simplistic arbitrary way) of these countries as the financial centers and primary suppliers of capital to the rest of the world: 1800–1913 UK receives a weight of 1 (US, 0); 1914–1939 both countries’ current accounts are equally weighted; post-1940, US receives a weight equal to 1.

Table 5 give a thumbnail summary of events, showing how the 1825 crisis began with a financial crisis in London that spread to Europe, causing global trade and capital flows to plummet. This summary of events, of course, is silent as to the magnitude of the international transmission channel, but the tables are nevertheless illustrative of some of the common shocks that might have sparked the commodity and capital flow cycles seen in the

figures in the preceding sections. Other examples where crises in the center lead to global financial crises include the German and Austrian stock market collapse of 1873 (which has been studied by Eichengreen in several contributions) and, of course, the Wall Street stock market crash of 1929. It is also notable that crises in the center do not always lead to full-blown global financial crises, as illustrated by the Barings crisis of 1890 (where the repercussions were mainly felt by Argentina and Uruguay).¹⁷

Table 5. Crises at the Financial Center and Their International Repercussions: 1800's

| Origin of the shock: country and date | Nature of common external shock | Contagion mechanisms | Countries affected |
|--|--|---|--|
| London, 1825–1826 | Major commercial and financial crises in London during 1825–26, which spread to continental Europe. Trade and capital flows with Latin America plummet. | Upon Peru's 1826 default, London bond holders immediately become concerned about other Latin American countries' ability to service their debts; bond prices collapse. | Chile and Gran Colombia (which comprised today's Colombia, Ecuador, and Venezuela) default later in the year. By 1828, all of Latin America, with the exception of Brazil, had defaulted. |
| German and Austrian stock markets collapse, May 1873 | French war indemnity paid to Prussia in 1871 leads to speculation in Germany and Austria. As far as the periphery is concerned, the world recession (1873–1879) results in a dramatic fall in trade and capital flows originating in the core. | Capital flows to the U.S. fall in the wake of German crisis (Kindleberger 2000). Ensuing world recession (1873–1879) leads to debt servicing problems in the periphery through reduced exports and tax revenues. Initial defaults in small Central American nations in January 1873 leads to a fall in bond prices. | Crisis spreads quickly to Italy, Holland, and Belgium, leaps the Atlantic in September and crosses back again to involve England, France, and Russia (Kindleberger, 2000). By 1876, the Ottoman Empire, Egypt, Greece, and 8 Latin American countries had defaulted. |

Domestic Debt

So far, we have focused on external debt crises, but not yet looked at domestic debt buildups. Some have argued that external defaults are less likely in the present period

¹⁷ See de la Paolera and Taylor (2001) for an excellent study of this episode.

because governments are now relying more on domestic debt. For example, in 2001 to 2005, domestic government debt in Mexico and Colombia accounted for more than 50 percent of total debt, as opposed to less than 20 percent in the early 1980s. But this is not new. In 1837, in the midst of one of Mexico's longer default spells, domestic debt amounted to 64 percent of total public debt. The earliest year where our dataset has domestic debt statistics for Colombia is 1923, when domestic debt accounted for 54 percent of total debt. During the same year, domestic debt accounted for 52 percent of Brazil's debt and 63 percent of Peru's debt. The 1920s, of course, was a period prior to the massive wave of external defaults in the 1930s, a fact that ought to be looked at more closely by those who believe that the recent shift by emerging markets towards domestic debt, and away from external debt, somehow provides strong protection to creditors.

Reinhart and Rogoff (2008b) make this point more systematically by examining the behavior of domestic and external debt in the run-up to external default. They present evidence that both components of debt rise rapidly, at about the same rates, just before default. But domestic debt buildups often happen in the aftermath of external default, precisely because countries have difficulty borrowing abroad.

Domestic debt is not equivalent to foreign debt, nor should it be treated as such. But the evidence in Reinhart and Rogoff (2008b) still suggests that domestic debt has long been fully as significant as external debt in meeting emerging market financing needs.

VI. Default through Inflation

If serial default is the norm for a country passing through the emerging market state of development, then the tendency to lapse into periods of high and extremely high inflation is an even more striking common denominator. No emerging market country in history, including the United States has managed to escape bouts of high inflation.

Of course, the problems of external default, domestic default and inflation are all integrally related. A government that chooses to default on its debts can hardly be relied on to preserve the value of its country's currency. Money creation and interest costs on debt all enter the government's budget constraint and, in a funding crisis, a sovereign will typically grab from any and all sources.

In this section, we give an overview of results from our annual cross-country database on inflation going back to 13th-century Europe. We only sketch salient points of our cross-country inflation dataset which, to our knowledge, spans considerably more episodes of high inflation and across a broader range of countries than any existing study.

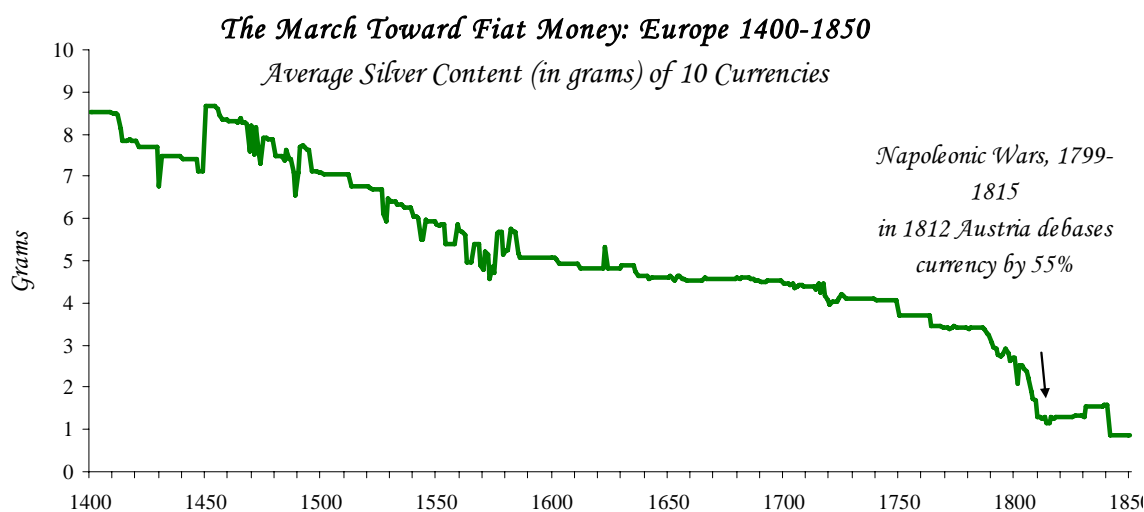
Some writers seem to believe that inflation only really became a problem with the advent of paper currency in the 1800s. Students of the history of metal currency, however, will know that governments found ways to engineer inflation long before that. The main device was through debasing the content of the coinage, either by mixing in cheaper metals, or by shaving down coins and reissuing smaller coins in the same denomination. Modern currency presses are just a more technologically advanced and more efficient approach to achieving the same end.

Table 5 gives data on currency debasement across a broad range of European countries during the pre-paper currency era, 1228–1899. The table illustrates how successful monarchs were at implementing inflationary monetary policy. Sweden achieved a debasement of 41 percent in a single year (1572), while the UK achieved a 50 percent debasement in 1551. Turkey managed to achieve 44 percent debasement in 1586. The second column of the table looks at cumulative currency debasement over long periods, often adding up to 50 percent or more. The same statistics for European countries during the nineteenth century, where outliers include Austria's 55 percent debasement in 1812,

and Russia's 57 percent in 1810, both in the aftermath of the Napoleonic War. Turkey, in 1829, managed to reduce the silver content of its coins by 50 percent.

The pattern of sustained debasement emerges strikingly in Figure 8, which plots the silver content of an equally weighted average of the European currencies in our early sample (plus Russia and Turkey). "The March Toward Fiat Money" shows that modern inflation is not as different as some might believe.

Figure 8



Sources: Primarily Allen and Unger and other sources listed in Table AI.4.

Notes: In the cases where there is more than one currency circulating in a particular country (in Spain, for example, we have the New Castille maravedi and the Valencia dinar) we calculate the simple average.

Inflation

However spectacular some of the coinage debasements reported in Table 5, there is no question that the advent of the printing press cranked inflation up to a whole new level.

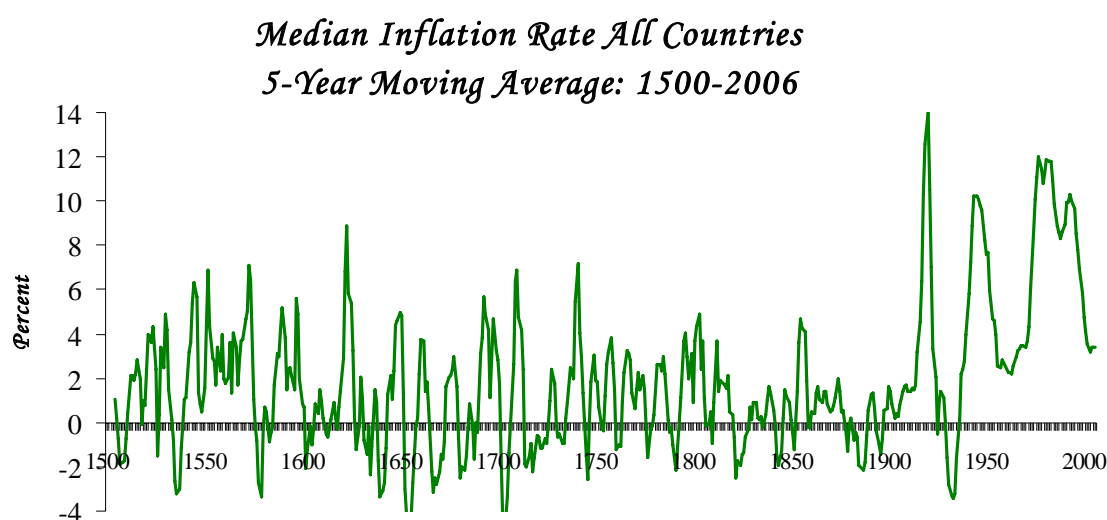
Table 5. Expropriation through Currency Debasement: Europe, 1258–1899

| <i>Country and currency</i> | <i>Period covered</i> | <i>Cumulative decline in silver content of currency (percent)</i> | <i>Largest debasement (percent) and year</i> | <i>Share of years in which there was a debasement of the currency (i.e. a reduction in the silver content)</i> | |
|---------------------------------|-----------------------|--|--|--|----------------------------------|
| | | | | <i>All</i> | <i>15 percent or greater</i> |
| Austria Vienna | 1371–1499 | –69.7 | –11.1 1463 | 25.8 | 0.0 |
| kreuzer | 1500–1799 | –59.7 | –12.5 1694 | 11.7 | 0.0 |
| | 1800–1860 | –58.3 | –55.0 1812 | 37.7 | 11.5 |
| Belgium | 1349–1499 | –83.8 | –34.7 1498 | 7.3 | 3.3 |
| hoet | 1500–1799 | –56.3 | –15.0 1561 | 4.3 | 0.0 |
| France livre | 1258–1499 | –74.1 | –56.8 1303 | 6.2 | 0.4 |
| tournois | 1500–1789 | –78.4 | –36.2 1718 | 14.8 | 1.4 |
| Germany | 1800–1830 | –2.2 | –2.2 1816 | 3.2 | 0.0 |
| Bavaria– | 1417–1499 | –32.2 | –21.5 1424 | 3.7 | 1.2 |
| Augsburg | 1500–1799 | –70.9 | –26.0 1685 | 3.7 | 1.0 |
| pfenning | | | | | |
| Frankfurt | 1350–1499 | –14.4 | –10.5 1404 | 2.0 | 0.0 |
| pfenning | 1500–1798 | –12.8 | –16.4 1500 | 2.0 | 0.3 |
| Italy | 1800–1859 | 0.0 | 0.0 | 0.0 | 0.0 |
| lira fiorentina | 1280–1499 | –72.4 | –21.0 1320 | 5.0 | 0.0 |
| | 1500–1799 | –35.6 | –10.0 1550 | 2.7 | 0.0 |
| Netherlands | | | | | |
| Flemish grote | 1366–1499 | –44.4 | –26.0 1488 | 13.4 | 5.2 |
| | 1500–1575 | –12.3 | –7.7 1526 | 5.3 | 0.0 |
| Guilder | 1450–1499 | –42.0 | –34.7 1496 | 14.3 | 6.1 |
| | 1500–1799 | –48.9 | –15.0 1560 | 4.0 | 0.0 |
| Portugal | 1800–1855 | –12.8 | –18.4 1800 | 57.1 | 1.8 |
| reis | 1750–1799 | –25.6 | –3.7 1766 | 34.7 | 0.0 |
| Russia | 1800–1899 | –56.6 | –41.3 1810 | 50.0 | 7.0 |
| ruble | 1761–1799 | –42.3 | –14.3 1798 | 44.7 | 0.0 |
| Spain | | | | | |
| New Castille | 1501–1799 | –62.5 | –25.3 1642 | 19.8 | 1.3 |
| maravedis | | | | | |
| Valencia dinar | 1351–1499 | –7.7 | –2.9 1408 | 2.0 | 0.0 |
| | 1500–1650 | –20.4 | –17.0 1501 | 13.2 | 0.7 |
| Sweden mar | 1523–1573 | –91.0 | –41.4 1572 | 20.0 | 12.0 |
| ortug | | | | | |
| Turkey | 1800–1899 | –83.1 | –51.2 1829 | 7.0 | 7.0 |
| Akche | 1527–1799 | –59.3 | –43.9 1586 | 10.5 | 3.1 |
| United | 1800–1899 | –6.1 | –6.1 1816 | 1.0 | 0.0 |
| Kingdom | 1260–1499 | –46.8 | –20.0 1464 | 0.8 | 0.8 |
| pence | 1500–1799 | –35.5 | –50.0 1551 | 2.3 | 1.3 |

Sources: Primarily Allen and Unger and other sources listed in Table AI.4. See Appendix.

Figure 9 illustrates the median inflation rate for all the countries in our sample, from 1500 to 2006 (taking a five-year moving average to smooth out cycle and measurement error). The figure shows a clear inflationary bias throughout history (although of course there are always periods of deflation due to business cycles, poor crops, etc.). Starting in the twentieth century, however, inflation spikes radically.

Figure 9



Sources: There are innumerable sources given the length of the period covered and the large number of countries included. These are listed in Table AI.

We look at country inflation data across the centuries in the next three tables. Table 6 gives data for the sixteenth through nineteenth century over a broad range of currencies. What is stunning is that every country in both Asia and Europe experienced a significant number of years with inflation over 20 percent during this era, and most experienced a significant number of years with inflation over 40 percent. Take Korea, for example, where our dataset begins in 1743. Korea experienced inflation of over 20 percent almost half the time until 1800, and inflation over 40 percent almost one-third of the time. Poland, where the data go back to 1704, has extremely similar ratios. Even the United

States experienced an episode of very high inflation, as inflation peaked around the revolutionary war, reaching nearly 200 percent in 1779. The New World colonies of Latin America experienced frequent bouts of very high inflation long before the wars of independence from Spain.

Table 6. “Default” through Inflation: Asia, Europe, and the “New World” 1500–1799

| Country | Period covered | Share of years in which inflation exceeded | | Number of hyperinflations ¹ | Maximum annual inflation | Year of peak inflation |
|------------------------|----------------|--|------------|--|--------------------------|------------------------|
| | | 20 percent | 40 percent | | | |
| Asia: China | 1639 | 14.3 | 6.2 | 0 | 116.7 | 1651 |
| Japan | 1601 | 34.0 | 14.0 | 0 | 98.9 | 1602 |
| Korea | 1743 | 43.9 | 29.8 | 0 | 143.9 | 1787 |
| Europe Austria | 1501 | 8.4 | 6.0 | 0 | 99.1 | 1623 |
| Belgium | 1501 | 25.1 | 11.0 | 0 | 185.1 | 1708 |
| Denmark | 1749 | 18.8 | 10.4 | 0 | 77.4 | 1772 |
| France | 1501 | 12.4 | 2.0 | 0 | 121.3 | 1622 |
| Germany | 1501 | 10.4 | 3.4 | 0 | 140.6 | 1622 |
| Italy | 1501 | 19.1 | 7.0 | 0 | 173.1 | 1527 |
| Netherlands | 1501 | 4.0 | 0.3 | 0 | 40 | 1709 |
| Norway | 1666 | 6.0 | 0.8 | 0 | 44.2 | 1709 |
| Poland | 1704 | 43.8 | 31.9 | 0 | 92.1 | 1762 |
| Portugal | 1729 | 19.7 | 2.8 | 0 | 83.1 | 1757 |
| Spain | 1501 | 4.7 | 0.7 | 0 | 40.5 | 1521 |
| Sweden | 1540 | 15.5 | 4.1 | 0 | 65.8 | 1572 |
| Turkey | 1586 | 19.2 | 11.2 | 0 | 53.4 | 1621 |
| United Kingdom | 1501 | 5.0 | 1.7 | 0 | 39.5 | 1587 |
| The “New World” | | | | | | |
| Argentina | 1777 | 4.2 | 0.0 | 0 | 30.8 | 1780 |
| Brazil | 1764 | 25.0 | 4.0 | 0 | 33.0 | 1792 |
| Chile | 1751 | 4.1 | 0.0 | 0 | 36.6 | 1763 |
| Mexico | 1742 | 22.4 | 7.0 | 0 | 80.0 | 1770 |
| Peru | 1751 | 10.2 | 0.0 | 0 | 31.6 | 1765 |
| United States | 1721 | 7.6 | 4.0 | 0 | 192.5 | 1779 |

¹ Hyperinflation is defined here as an annual inflation rate of 500 percent or higher (this is not the traditional Cagan definition).

Table 7 looks at the same years 1800–2006 as Table 6, but for Africa and Asia.

South Africa, Hong Kong and Malaysia have notably the best track records at resisting high inflation, albeit South Africa’s record extends back to 1896, whereas Malaysia’s and Hong Kong’s only go back to 1949 and 1948 respectively.¹⁸ Most of the countries in Asia and Africa however, have experienced waves of high and very high inflation. The notion that

¹⁸ The dates in table 13 extend back prior to independence for many countries..

Asian countries have been immune from Latin American–style high inflation is as naïve as the notion that Asian countries were immune from default crises up until the late 1990s Asian financial crisis. China experienced over 1500 percent inflation in 1947 and Indonesia over 900 percent in 1966. Even the Asian tigers Singapore and Taiwan experienced inflation over 20 percent in the early 1970s.¹⁹

Africa has a still worse record. Angola had inflation of over 4,000 percent in 1996, and Zimbabwe of over 1,000 percent in 2006. Had we extended the table through 2007, we would have picked up Zimbabwe’s 66,000 percent inflation for 2007, putting that country on track to surpass the Republic of the Congo (not in our sample), which has experienced three hyperinflations since 1970 (Reinhart and Rogoff, 2004).

Finally, Table 8 lists inflation for 1800 through 2006 for Europe, Latin America, North America and Oceania. The European experiences include the great post-war hyperinflations studied by Cagan (1956). But even setting aside the hyperinflations, we see that countries such as Poland, Russia and Turkey experienced high inflation an extraordinarily large percent of the time. Norway had 152 percent inflation in 1812, Denmark 48 percent inflation in 1800, and Sweden 36 percent inflation in 1918. Latin America’s post–World War II inflation history is famously spectacular, as the table illustrates, with many episodes of peacetime hyperinflations in the 1980s and 1990s.

In all of Table 8, only New Zealand and Panama have no periods of inflation over 20 percent since 1800, although New Zealand’s inflation rate reached 17 percent as recently as 1980, and Panama had 16 percent inflation in 1974. As with debt defaults, the last few years have been a relatively quiescent period in terms of very high inflation,

¹⁹ China, which invented the printing press well ahead of Europe, famously experienced paper-currency-created high inflation episodes in the twelfth and thirteen centuries. (See for example, Fischer, Sahay and Vegh, 2003) These episodes are in our database as well.

although many countries (including Argentina, Venezuela and of course Zimbabwe) still have very high inflation.²⁰ As with defaults, quiet periods do not extend indefinitely.

Table 7. “Default” through Inflation: Asia and Africa 1800–2006

| Country | Beginning of period covered | Share of years in which inflation exceeded | | Number of hyperinflation years ¹ | Maximum annual inflation | Year of peak inflation |
|--------------------------|-----------------------------|--|------------|---|--------------------------|------------------------|
| | | 20 percent | 40 percent | | | |
| Algeria | 1879 | 24.1 | 12.0 | 0 | 69.2 | 1947 |
| Angola | 1915 | 53.3 | 44.6 | 4 | 4,416.0 | 1996 |
| Central African Republic | 1957 | 4.0 | 0.0 | 0 | 27.7 | 1971 |
| Cote D’Ivoire | 1952 | 7.3 | 0.0 | 0 | 26.0 | 1994 |
| Egypt | 1860 | 7.5 | 0.7 | 0 | 40.8 | 1941 |
| Kenya | 1949 | 8.3 | 3.3 | 0 | 46.0 | 1993 |
| Mauritius | 1947 | 10 | 0.0 | 0 | 33.0 | 1980 |
| Morocco | 1940 | 14.9 | 4.5 | 0 | 57.5 | 1947 |
| Nigeria | 1940 | 22.6 | 9.4 | 0 | 72.9 | 1995 |
| South Africa | 1896 | 0.9 | 0.0 | 0 | 35.2 | 1919 |
| Tunisia | 1940 | 11.9 | 6.0 | 0 | 72.1 | 1943 |
| Zambia | 1943 | 29.7 | 15.6 | 0 | 183.3 | 1993 |
| Zimbabwe | 1920 | 23.3 | 14.0 | | 1,216.0 | 2006 |
| Asia | | | | | | |
| China | 1800 | 19.3 | 14.0 | 3 | 1,579.3 | 1947 |
| Hong Kong | 1948 | 1.7 | 0.0 | 0 | 21.7 | 1949 |
| India | 1801 | 7.3 | 1.5 | 0 | 53.8 | 1943 |
| Indonesia | 1819 | 18.6 | 9.6 | 1 | 939.8 | 1966 |
| Japan | 1819 | 12.2 | 4.8 | 1 | 568.0 | 1945 |
| Korea | 1800 | 35.3 | 24.6 | 0 | 210.4 | 1951 |
| Malaysia | 1949 | 1.7 | 0.0 | 0 | 22.0 | 1950 |
| Myanmar | 1872 | 22.2 | 6.7 | 0 | 58.1 | 2002 |
| Philippines | 1938 | 11.6 | 7.2 | 0 | 141.7 | 1943 |
| Singapore | 1949 | 3.4 | 0.0 | 0 | 23.5 | 1973 |
| Taiwan | 1898 | 14.7 | 11.0 | 0 | 29.6 | 1973 |

¹ Hyperinflation is defined here as an annual inflation rate of 500 percent or higher (this is not the traditional Cagan definition).

Exchange rate crashes

Having discussed currency debasement and inflation crises, a long expose on exchange rate crashes seems somewhat redundant. The database on exchange rates is almost as rich as that on prices, especially if one takes into account silver-based exchange rates, and is described in detail in the Appendices.

²⁰ At the time of this writing the “official” inflation rate in Argentina is 8 percent—informed estimates place it at 26 percent.

Table 8. “Default” through Inflation: Europe, Latin America, North America and Oceania, 1800–2006

| Country | Beginning of period covered | Share of years in which inflation exceeded | | Number of hyperinflation years ¹ | Maximum annual inflation | Year of peak inflation |
|----------------------|-----------------------------|--|------------|---|--------------------------|------------------------|
| | | 20 percent | 40 percent | | | |
| Europe | | | | | | |
| Austria | 1800 | 20.8 | 12.1 | 2 | 1,733.0 | 1922 |
| Belgium | 1800 | 10.1 | 6.8 | 0 | 50.6 | 1812 |
| Denmark | 1800 | 2.1 | 0.5 | 0 | 48.3 | 1800 |
| Finland | 1861 | 5.5 | 2.7 | 0 | 242.0 | 1918 |
| France | 1800 | 5.8 | 1.9 | 0 | 74.0 | 1946 |
| Germany | 1800 | 9.7 | 4.3 | 2 | 2.22E+10 | 1923 |
| Greece | 1834 | 13.3 | 5.2 | 4 | 3.02E+10 | 1944 |
| Hungary | 1924 | 15.7 | 3.6 | 2 | 9.63+E26 | 1946 |
| Italy | 1800 | 11.1 | 5.8 | 0 | 491.4 | 1944 |
| Netherlands | 1800 | 1.0 | 0.0 | 0 | 21.0 | 1918 |
| Norway | 1800 | 5.3 | 1.9 | 0 | 152.0 | 1812 |
| Poland | 1800 | 28.0 | 17.4 | 2 | 51,699.4 | 1923 |
| Portugal | 1800 | 9.7 | 4.3 | 0 | 84.2 | 1808 |
| Russia | 1854 | 35.7 | 26.4 | 8 | 13,534.7 | 1923 |
| Spain | 1800 | 3.9 | 1.0 | 0 | 102.1 | 1808 |
| Sweden | 1800 | 1.9 | 0.0 | 0 | 35.8 | 1918 |
| Turkey | 1800 | 20.5 | 11.7 | 0 | 115.9 | 1942 |
| United Kingdom | 1800 | 2.4 | 0.0 | 0 | 34.4 | 1800 |
| Latin America | | | | | | |
| Argentina | 1800 | 24.6 | 15.5 | 4 | 3,079.5 | 1989 |
| Bolivia | 1937 | 38.6 | 20.0 | 2 | 11,749.6 | 1985 |
| Brazil | 1800 | 28.0 | 17.9 | 6 | 2,947.7 | 1990 |
| Chile | 1800 | 19.8 | 5.8 | 0 | 469.9 | 1973 |
| Colombia | 1864 | 23.8 | 1.4 | 0 | 53.6 | 1882 |
| Costa Rica | 1937 | 12.9 | 1.4 | 0 | 90.1 | 1982 |
| Dominican Republic | 1943 | 17.2 | 9.4 | 0 | 51.5 | 2004 |
| Ecuador | 1939 | 36.8 | 14.7 | 0 | 96.1 | 2000 |
| El Salvador | 1938 | 8.7 | 0.0 | 0 | 31.9 | 1986 |
| Guatemala | 1938 | 8.7 | 1.4 | 0 | 41.0 | 1990 |
| Honduras | 1937 | 8.6 | 0.0 | 0 | 34.0 | 1991 |
| Mexico | 1800 | 42.5 | 35.7 | 0 | 131.8 | 1987 |
| Nicaragua | 1938 | 30.4 | 17.4 | 6 | 13,109.5 | 1987 |
| Panama | 1949 | 0.0 | 0.0 | 0 | 16.3 | 1974 |
| Paraguay | 1949 | 32.8 | 4.5 | 0 | 139.1 | 1952 |
| Peru | 1800 | 15.5 | 10.7 | 3 | 7,481.7 | 1990 |
| Uruguay | 1871 | 26.5 | 19.1 | 0 | 112.5 | 1990 |
| Venezuela | 1832 | 10.3 | 3.4 | 0 | 99.9 | 1996 |
| North America | | | | | | |
| Canada | 1868 | 0.7 | 0.0 | 0 | 23.8 | 1917 |
| United States | 1800 | 1.0 | 0.0 | 0 | 24.0 | 1864 |
| Oceania | | | | | | |
| Australia | 1819 | 4.8 | 1.1 | 0 | 57.4 | 1854 |
| New Zealand | 1858 | 0.0 | 0.0 | 0 | 17.2 | 1980 |

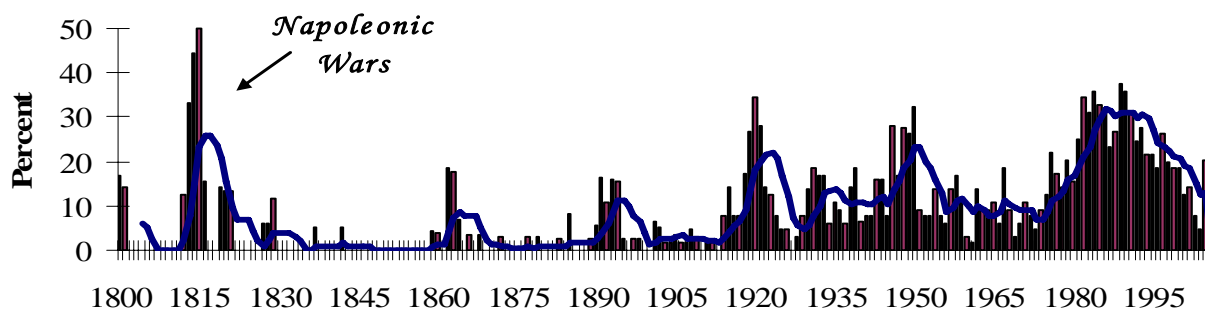
¹ Hyperinflation is defined here as an annual inflation rate of 500 percent or higher (this is not the traditional Cagan definition).

In this lengthy sample inflation crises and exchange rate crises travel hand- in- hand in the overwhelming majority of episodes across time and countries (with a markedly tighter link in chronic- inflation countries).

Instead, as regards exchange rate behavior, probably the most surprising evidence comes from the Napoleonic Wars, during which exchange rate instability escalated to a level that had not been seen before and was not to be seen again for nearly one hundred years. This is starkly illustrated in Figures 10, which depicts the incidence of a currency crash. The significantly higher incidence of crashes and larger median changes in the more modern period are hardly a surprise.

Figure10

Currency Crashes: Share of Countries with an Annual Depreciation Greater than 15 Percent: 1800-2006



Sources: The primary sources are Global Financial Data, and Reinhart and Rogoff (2003), but there are numerous others that are listed in Appendix I to the working paper.

VII. Conclusions

This paper offers a detailed quantitative overview of the history of financial crises dating from the mid-fourteenth century default of Edward III of England to the present sub-prime crisis in the United States. Our study is based on a comprehensive new dataset

compiled by the authors that covers every region and spans several centuries. Inevitably, a database of this scope, involving so many primary and secondary historical sources (that do not always agree), will contain some errors and omissions, despite our best efforts. We welcome suggestions for corrections, additions, and improvements of this database, which we will attempt to incorporate into the online version, with appropriate attribution and cross-referencing.

Our principal aim has been to illustrate some core features of this sweeping database and bring out a few fundamental regularities. We are fully aware that, in such a broad synthesis, we are inevitably obscuring important nuances surrounding historically diverse episodes.

With these caveats in mind, this “panoramic” quantitative overview has revealed a number of important facts. First and foremost, we illustrate the near universality of episodes of serial default and high inflation, extending to Asia, Africa, and until not so long ago, Europe. We show that global debt crises have often radiated from the center through commodity prices, capital flows, interest rates, and shocks to investor confidence. We also show that the popular notion that today’s emerging markets are breaking new ground in their extensive reliance on domestic debt markets, is hardly new.

This brings us to our central theme—the “this time is different syndrome.” There is a view today that both countries and creditors have learned from their mistakes. Thanks to better-informed macroeconomic policies and more discriminating lending practices, it is argued, the world is not likely to again see a major wave of defaults. Indeed, an often-cited reason these days why “this time it’s different” for the emerging markets is that governments are managing the public finances better, albeit often thanks to a benign global economic environment and extremely favorable terms of trade shocks.

Such celebration may be premature. Capital flow/default cycles have been around since at least 1800—if not before. Technology has changed, the height of humans has changed, and fashions have changed. Yet the ability of governments and investors to delude themselves, giving rise to periodic bouts of euphoria that usually end in tears, seems to have remained a constant.²¹ As Kindelberger wisely titled the first chapter of his classic book “Financial Crisis: A Hardy Perennial.”

On a more positive note, our paper at least raises the question of how a country might “graduate” from a history of serial default. Although the case of seventeenth-century England has been much studied, it appears to be exceptional. It is not clear how well the institutional innovations noted by North and Weingast (1996) would have fared had Britain been less fortunate in the many wars it fought in subsequent years. For example, had Napoleon not invaded Russia and France prevailed in the Napoleonic War, would Britain really have honored its debts?

Interesting more recent cases include Greece and Spain, countries that appear to have escaped a severe history of serial default not only by reforming institutions, but by benefiting from the anchor of the European Union. Austria, too, managed to emerge from an extraordinarily checkered bankruptcy history by closer integration with post-war Germany, a process that began even before European integration began to accelerate in the 1980s and 1990s.

In Latin America, Chile has seemingly emerged from serial default despite extraordinary debt pressures through the simple expedient of running large and sustained current account surpluses. These surpluses allowed the country to significantly pay down its external debt. True graduation, of course, would mean that Chile could start raising its

²¹ Of course, as Neal (1993) shows in his study of Europe’s financial development, financial crises can sometimes stimulate the evolution of capital markets.

debt levels if needed (say, to benefit from countercyclical fiscal policy) without slipping back into problems. Mexico is an interesting case where, despite profound failure to engage in deep institutional reform, the country stands on the verge of graduation thanks to a combination of better monetary and fiscal policy, as well as the North American Free Trade Agreement. Will deeper economic integration with the United States offer the same pull to Latin American countries as the European Union did in its early days? Of course, if history tells us anything, it is that we cannot jump to “this time is different” conclusions. In particular, assuming that countries like Hungary and Greece will never default again because “this time is different due to the European Union” may prove a short-lived truism.

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Appendix: A Global Database with a Long-term View: Sources and Methodology

This appendix presents a broad-brush description of the comprehensive database used in this study and evaluates its main sources, strengths, and limitations. Since the theme of this work is that the devil lurks in the details, further documentation on the coverage and numerous sources for individual time series by country and by period is provided in Data Appendices I and II in the working paper version of this paper.

The remainder of this appendix is organized as follows: The first section describes the compilation of the family of time series that are brought together from different major and usually well-known sources. These series include prices, modern exchange rates (and earlier metal-based ones), real GDP, and exports. For the recent period, the data are primarily found in standard large-scale databases. For earlier history, we relied on

individual scholars or groups of scholars. Next, we describe the data that is more heterogeneous in both its sources and methodologies. These are series on government finances, and individual efforts to construct national accounts—notably nominal and real GDP, particularly pre-1900. The remaining two sections are devoted to describing the particulars of building a cross-country, multi-century database on public debt and its characteristics and the various manifestations and measurements of economic crises. Those include domestic and external debt defaults, inflation and banking crises, and currency crashes and debasements. The construction of the public domestic and external debt database can be best described as more akin to archeology than economics. The compilation of crises episodes encompasses both mechanical rules of thumb to date a crisis as well as arbitrary judgment calls on the interpretation of historical events as described by the financial press and scholars over the centuries.

I. Prices, Exchange Rates, Currency Debasement, and Real GDP

Our preferred measures are consumer price indices or their close relative, cost-of-living indices (as those constructed by Williamson et al. in several “regional” papers).²² Our data sources for the modern period are standard databases of the International Monetary Fund—*International Financial Statistics* (IFS) and *World Economic Outlook* (WEO). For pre–World War II coverage (from the late 1800s), *Global Financial Data* (GFD), Williamson et al., and the Oxford Latin American History Database (OXLAD) are key sources.

Since our analysis spans several earlier centuries, we rely on the meticulous work of a number of economic historians who have constructed such price indices item by item, most often by city rather than by country, from primary sources. In this regard, the scholars participating in the Global Price and Income History Group project at the University of

²² These papers provided time series for numerous developing countries for the mid-1800s to pre–WWII.

California, Davis and their counterparts at the Dutch International Institute of Social History have been an invaluable source for prices in Europe and Asia.²³ The complete references by author to this body of scholarly work are given in the references to the working paper. For colonial America, the Historical Statistics of the United States (HSUS), while Richard Gardner (*Economic History of Latin America, the United States and the New World, 1500–1900*) covers key cities.

When more than one index is available for a country, we work with the simple average. This is most useful when there are price series for more than one city for the same country, such as in the pre-1800s data. When no such consumer price indices are available, we turn to wholesale or producer prices indices (as, for example, China in the 1800s and the U.S. in the 1720s). Absent any composite index, we fill in the holes in coverage with individual commodity prices. This almost always takes the form of wheat prices for Europe and rice prices for Asia. Finally, from 1980 to the present the WEO data dominates all other sources, as it enforces uniformity.

For post–World War II data, our primary sources for exchange rates are IFS for official rates and market-based rates, as quantified and documented in Reinhart and Rogoff (2004). For modern pre-war rates GFD, OXLAD, HSUS, and the League of Nations Annual Reports are the primary sources. These are sometimes supplemented with scholarly sources for individual countries. The exchange rates for the late 1600s–early 1800s encompass a handful of European currencies, and are taken from John Castaing's *Course of Exchange*, which appeared twice a week from 1698 throughout the following century or so.

²³ While our analysis of inflation crises begins in 1500, many of the price series begin much earlier.

The earlier “silver-based” exchange rates were calculated by these authors (trivially) from the time series provided primarily by Robert Allen or other sources see (see working paper), who constructed continuous annual series on the silver content of several European currencies. The earliest series begin in the mid-13th century for Italy and England. As noted, these series are the foundation for dating the “debasement crises”—the precursors of modern devaluations.

To maintain homogeneity, inasmuch as possible for our large sample of countries over the course of approximately 200 years, we employ as a primary source Angus Maddison’s data, spanning 1820–2003 (depending on the country), and its updated version through 2006 by the Total Economy Database (TED). GDP is calculated on the basis of PPP 1990 International Geary–Khamis dollars. TED contains, among other things, series on levels of real GDP, population, and GDP per capita, for up to 125 countries from 1950 to the present. These countries represent about 96 percent of the world population. As the smaller and poorer countries are not in the database, the sample represents an even larger share of world GDP (99 percent). In general, we do not attempt to include in our study aggregate measures of real economic activity prior to 1800.

To calculate a country’s share of world GDP continuously over the years, we sometimes found it necessary to interpolate the Maddison data. For most countries, GDP is reported only for selected benchmark years (1820, 1850, 1870, etc.). Interpolation took three forms, ranging from the best or preferred practice to the most rudimentary. When we had actual data for real GDP (from either official sources or other scholars) for periods for which the Maddison data is missing and periods for which both series are available, we ran auxiliary regressions of the Maddison GDP series on the available GDP series for that particular country. This allowed us to fill in the gaps for the Maddison data, thus

maintaining cross-country comparability and enabling us to aggregate GDP by region or worldwide. When no other measures of GDP were available to fill in the gaps, the auxiliary regressions linked the Maddison measure of GDP to other indicators of economic activity, such as an output index or, most often, central government revenues—for which we have long continuous time series.²⁴ As a last resort, if no potential regressors were available, interpolation simply connected the dots of the missing Maddison data assuming a constant annual growth rate in between the reported benchmark years. While this method of interpolation is, of course, useless from the vantage point of discerning any cyclical pattern, it provides a reasonable measure of a country's share of world GDP, as this share usually does not change drastically from year to year.

Though subject to chronic misinvoicing problems,²⁵ the external accounts are most often available for longer periods. Misinvoicing notwithstanding, those accounts can be considered more reliable than many other series of economic activity. The series used in this study are taken from the IMF, while the earlier data come primarily from GFD and OXLAD. Official historical statistics and assorted academic studies complement the main databases. Trade balances provide a rough measure of the country-specific capital flow cycle—particularly for the earlier periods when data on capital account balances are nonexistent. Exports are also used to scale debt—particularly external debt.

II. Government Finances and National Accounts

Government finances are primarily taken from Mitchell for the pre-1963 period and from Kaminsky, Reinhart, and Végh (2004). The web pages of the central banks and finance ministries of the many countries in our sample provide the most up-to-date data. For many of the countries in our sample, particularly in Asia and Africa, the time series on

²⁴ It is well known that revenues are intimately linked to the economic cycle.

²⁵ See, for example, Reinhart and Rogoff (2004).

central government revenues and expenditures date back to the colonial period. Details on individual country coverage are presented in Reinhart and Rogoff (2008a). In nearly all cases, the Mitchell data goes back to the 1800s, enabling us to calculate debt-to-revenue ratios for many of the earlier crises. Richard Bonney's European State Finance Data Base (ESFDB), which brings together the data provided by many authors, is an excellent source for the larger European countries for the pre-1800 era.

Besides the standard sources, such as the IMF, United Nations, and World Bank, which provide data on national accounts for the post-World War II period (with different starting points depending on the country), we consult other multicountry databases such as OXLAD for earlier periods. As with other time series used in this study, the constructed national account series (usually for pre-World War I) from many scholars around the world, such as, Baptista (2006) for Venezuela, Brahmananda (2001) for India, Diaz et. al. (2005) for Chile, and Yousef (2002) for Egypt.

III. Public Debt and its Composition

Data for domestic debt are detailed in Reinhart and Rogoff (2008b), who draw heavily on largely forgotten data kept by the now-defunct League of Nations and its successor, the United Nations. For data prior to 1914 (including several countries that were then colonies), we consulted numerous sources, both country-specific statistical and government agencies and individual scholars.²⁶ The working paper version provides details on the sources by country and time period. When no public debt data is available prior to 1914, we proceed to approximate the foreign debt stock by reconstructing debt from individual international debt issues. This debenture data also provide a proximate measure of gross international capital inflows. Much of the data come from scholars

²⁶ For Australia, Ghana, India, Korea, South Africa, among others, we have put together debt data for much of the colonial period.

including Lindert and Morton, Marichal, Miller, and Wynne, among others. From these data, we construct a foreign debt series (but, not total debt).²⁷ This exercise allows us to examine standard debt ratios for default episodes for several newly-independent nations in Latin America as well as Greece and important defaults such as that of China in 1921, and Egypt and Turkey in the 1860s–1870s. These data are most useful for filling holes in the external debt time series, when countries first tap international capital markets. Their usefulness (as measures of debt) is acutely affected by repeated defaults, write-offs, and debt restructurings that introduce disconnects between the amounts of debt issued and the subsequent debt stock.²⁸

To update the data for post-1983, we mostly rely on GFD for external debt. Two very valuable recent studies facilitate the update: Jeanne and Guscina (2006) compile detailed data on the composition of domestic and external debt for 19 important emerging markets for 1980–2005; Cowan, Levy-Yeyati, Panizza, Sturzenegger (2006) perform a similar exercise for all the developing countries of the Western hemisphere for 1980–2004. Last, but certainly not least, are the official government sources themselves, which are increasingly forthcoming in providing public debt data, often under the IMF’s 1996 initiative, *Special Data Dissemination Standard*.

IV. Global variables

Global variables have two components: those indicators that are, indeed, global in scope—namely, world commodity prices, and country-specific key economic and financial indicators for the world’s financial centers during 1800–2007. For commodity prices, we have time series since the late 1700s from four different sources (see Data Appendix I).

The key economic indicators include the current account deficit, real and nominal GDP,

²⁷ Flandreau and Zumer (2004) are an important data source for Europe, 1880–1913.

²⁸ Even under these circumstances, they continue to be a useful measure of gross capital inflows, as there was relatively little private external borrowing nor bank lending in the earlier sample.

and short- and long-term interest rates for the relevant financial center of the time (i.e., the U.K. prior to World War I and the U.S. subsequently).

V. Varieties of Economic Crises and their Dates

To identify crisis episodes, we used two approaches, one is quantitative in nature and is discussed first, while the other is based on a chronology of events.

Since we want to study the incidence of expropriation in its various forms, we are not only interested in dating the beginning of an inflation or currency crisis episode but its duration as well. Many of the high-inflation spells can be best described as chronic—lasting many years. In Reinhart and Rogoff (2004), which classified exchange rate arrangements for the post–World War II period, we used a 12-month inflation threshold of 40 or higher percent to define a “freely falling” episode. In this study, which spans a much longer period before the widespread creation of fiat currency, inflation rates well below 40 percent per annum were considered as inflation crises. Thus, we adopt an inflation threshold of 20 percent per annum. Median inflation rates before World War I were well below those of the more recent period: 0.5 for 1500–1799; 0.71 for 1800–1913; and 5.0 for 1914–2006. Furthermore, as the last column of Table A1 shows, most hyperinflations are of modern vintage, with Hungary 1946 holding the sample record.

To date currency crashes, we follow a variant of Frankel and Rose (1996), who focus exclusively on the exchange rate depreciation. This definition is the most parsimonious, as it does not rely on other variables such as reserve losses and interest rate hikes. Mirroring our treatment of inflation episodes, we are not only concerned here with the dating of the initial crash but with the full period in which annual depreciations exceed the threshold. Hardly surprising, the largest crashes shown in Table A1 are similar in

timing and orders of magnitudes as the inflation profile. The “honor” of the record currency crash goes to Greece in 1944.

The predecessor of modern inflation and foreign exchange rate crises was currency debasement during the long era when the principal means of exchange were metallic coins. Debasements were particularly frequent and large during wars. Indeed, drastic reductions in the silver content of the currency provided many sovereigns with their most important source of financing.

Finally, we also date currency “reforms” or conversions and their magnitudes. Such conversions form a part of every hyperinflation episode, in effect, it is not unusual to have several conversions in quick succession. For example, in its struggle with hyperinflation, Brazil had no less than four conversions from 1986 to 1994. However, when it comes to the magnitude of a single conversion, the record holder is China in 1948, with a conversion rate of three-million to one. Conversions also follow spells of high inflation and these cases are also included in our list of modern debasements.

| Crisis type | Threshold | Period | Maximum |
|------------------------------|--|---|----------|
| Inflation | An annual inflation rate 20 percent or higher. We also examine separately the incidence of more extreme cases where inflation exceeds 40 percent per annum. | 1500–1790 | 173.1 |
| | | 1800–1913 | 159.6 |
| | | 1914–2006 | 9.63E+26 |
| Currency crashes | An annual depreciation versus the US dollar (or the relevant anchor currency—historically the UK pound, the French franc, or the German DM and presently the euro) of 15 percent or more. | 1800–1913 | 275.7 |
| | | 1914–2006 | 3.37E+09 |
| Currency debasement: Type I | A reduction in the metallic content of coins in circulation of 5 percent or more. | 1258–1799 | –56.8 |
| | | 1800–1913 | –55.0 |
| Currency debasement: Type II | A currency reform where a new currency replaces a much-depreciated earlier currency in circulation. | The most extreme episode in our sample is the 1948 Chinese conversion at a rate of 3 million to 1 | |

Next, we describe the criteria used in this study to date banking crises, external debt crises, and their little known or understood domestic debt crises counterparts. With regard

to banking crises, our analysis stresses events. The reason for following this approach has to do with the lack of time series data that allows 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, this is problematic, particularly for the earlier part of our sample as well as for developing countries (where many banks are not publicly traded).

If the beginning of a banking crisis is marked by bank runs and withdrawals, then changes in bank deposits could be used to date the crises. This indicator would have certainly done well in dating the numerous banking panics of the 1800s. Often, however, the banking problems do not arise from the liability side, but from a protracted deterioration in asset quality, be it from a collapse in real estate prices or increased bankruptcies in the nonfinancial sector. In this case, a large increase in bankruptcies or nonperforming loans could be used to mark the onset of the crisis. Indicators of business failures and nonperforming loans are also usually available sporadically; the latter are also made less informative by banks' desire to hide their problems for as long as possible.

Given these data limitations, we mark a banking crisis by two types of events described in Table A2.

Many country-specific studies (such as Camprubi, 1957, for Peru; Cheng, 2003, for China; and Noel, 2002, for Mexico) pick up banking crisis episodes not covered by the multicountry literature and contribute importantly to this chronology, but the main sources for cross-country dating of crises are as follows: For post-1970, the comprehensive and well-known study by Caprio and Klingebiel—which the authors updated through 2003—is authoritative, especially when it comes to classifying banking crises into systemic or more benign categories. For pre-World War II, Kindleberger (1989), Bordo et al. (2001), and

Willis (1926) provide multicountry coverage on banking. For many of the early episodes it is difficult to ascertain how long the crisis lasted.

External debt crises involve outright default on payment of external debt obligations (Argentina 2001 holds the record), repudiation (as when in 1867 Mexico's Juarez repudiated all debt issued by Maximilian), or the restructuring of debt into terms less favorable to the lender than those in the original contract (India's little-known external restructurings in 1985-1972).

These events have received considerable attention in the academic literature from leading modern-day economic historians, such as Michael Bordo, Barry Eichengreen, Marc Flandreau, Lindert and Morton, and Alan Taylor.²⁹ 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 in Tables 2–5. For post-1824, the dates come from several Standard and Poors studies. However, these are incomplete, missing numerous post-war restructurings and early defaults so this source has been supplemented with additional information from Lindert and Morton (1989), MacDonald (2003), Purcell and Kaufman (1993), Suter (1992), Tomz (2006). Of course, required reading in this field includes Winkler (1933) and Wynne (1951).

While the time of default is accurately classified as a crisis year there are a large number of cases where the final resolution with the creditors (if it ever did take place) seems interminable. Russia's default following the revolution holds the record, lasting 69 years. Greece's default in 1826 shut it out from international capital markets for 53 consecutive years, while Honduras's 1873 default had a comparable duration. Looking at

²⁹ This is not meant to be an exhaustive list of the scholars that have worked on historical sovereign defaults.

the full default episode is, of course, useful for characterizing the borrowing/default cycles, calculating hazard rates, etc. But it is hardly credible that a spell of 53 years could be considered a crisis. Thus, in addition to constructing the country-specific dummy variables to cover the entire episode, we also employ two other qualitative variables. The first of these only enters as a crisis the year of default; 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 allows us to analyze the behavior of various economic and financial indicators surrounding the crisis.

Information on domestic debt crises is scarce but it is not because these crises do not take place. Indeed, as Reinhart and Rogoff (2008b) show, domestic debt crises typically take place against much worse economic conditions than the average external default. Usually domestic debt crises do not involve external creditors, perhaps this may help explain why so many episodes go unnoticed. Another feature that characterizes domestic defaults is that references to arrears or suspension of payments on domestic debt are often relegated to footnotes. Lastly, 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 (Bolivia, Peru, and Argentina are in this list). The approach toward 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 known.

Table A2. Defining Crises by Events: A Summary

| Type of Crisis | Definition and/or Criteria | Comments |
|---|--|---|
| <p>Banking crisis</p> <p>Type I: systemic/severe Type II: financial distress/ milder</p> | <p>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.</p> | <p>This approach to dating the beginning of a banking crisis is not without drawbacks. It could date a crisis too late, because the financial problems usually begin well before a bank is finally closed or merged; it could also date a crisis too early, because the worst part of a crisis may come later. Unlike the external debt crises (see below), which have well-defined closure dates, it is often difficult or impossible to accurately pinpoint the year in which a crisis ended.</p> |
| <p>Debt crises: External</p> | <p>A sovereign default is defined as the failure to meet a principal or interest payment on the due date (or within the specified grace period). The episodes also include instances where rescheduled debt is ultimately extinguished in terms less favorable than the original obligation.</p> | <p>While the time of default is accurately classified as a crisis year there are a large number of cases where the final resolution with the creditors (if it ever did take place) seems interminable. For this reason we also work with a crisis dummy that only picks up the first year.</p> |
| <p>Debt crisis: Domestic</p> | <p>The definition given above for external debt 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.</p> | <p>There is at best some partial documentation of recent defaults on domestic debt provided by Standard and Poors. Historically, it is very difficult to date these episodes and in many cases (like banking crises) it is impossible to ascertain the date of the final resolution.</p> |