THIS TIME IS DIFFERENT:
A PANORAMIC VIEW OF EIGHT CENTURIES OF FINANCIAL CRISES

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<u>**ABSTRACT**</u>

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 a number of 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 some of the broad insights that can be gleaned from such 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. A recent example of the "this time is different" syndrome is the false belief that domestic debt is a novel feature of the modern financial landscape. 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: including inflation, exchange rate crashes, banking crises, and currency debasements.

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I. Introduction

The early years of the 21st century, following a mild global recession in 2001, have proved to be a period of remarkable macroeconomic stability, with strong growth and a notable dearth of sovereign defaults. [1] Even with the onset of a major global banking crisis sparked by the United States' "sub-prime" mortgage default crisis, no major emerging-market government has even come close to defaulting on its external debt since 2002. Many pundits are arguing that thanks to more prudent fiscal and monetary policy, "this time is different," and the world is unlikely to witness a rash of sovereign defaults for the foreseeable future.

Such confidence, in fact, reflects the general tendency to view recent experience in the narrow window provided by standard datasets on debt and default, which typically begin in 1980 and are limited in several other important respects. [2] An event that is rare in that twenty-year span may not be all that rare when placed in a broader context. What is the appropriate context? This paper introduces a comprehensive new database for studying international 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, among many other dimensions, external and domestic debt, trade, GNP, inflation, exchange rates, interest rates, and commodity prices. The coverage spans eight centuries, generally going back to the date of independence for most countries, and well into the colonial period for some. As we detail in an annotated appendix, the construction of our dataset has built heavily on the work of earlier scholars. However, it also includes a considerable amount of new material from diverse primary and

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[1] A default is a failure to meet a principal or interest payment on the due date contained in the original terms of the contract. Standard and Poor's also includes as defaults restructurings which contain terms less favorable to the creditors than the original transactions.

[2] For a longer perspective on crises, see also the work of Bordo, Eichengreen, Lindert and Morton, and Taylor.

secondary sources. In addition to a systematic dating of external debt and exchange rate crises, the appendix to this paper also catalogues dates for domestic inflation and banking crises. For the dating of sovereign defaults on domestic (mostly local currency) debt, see Reinhart and Rogoff (2008).

The paper is organized as follows. Section II summarizes highlights from a first view of the extended dataset, with special reference to the current conjuncture. Among other things, we note that policymakers should not be overly cheered by the absence of major external defaults from 2003 to 2007, after the wave 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.

Many foreign investors and policymakers today seem lulled by the fact that many emerging market governments have become less reliant on foreign currency external borrowing than in the recent past. Countries have instead been relying more on domestic currency debt issued in local markets. Yet, as we show in a companion paper, reliance on domestic debt is hardly new, and the view that domestic debt can be largely ignored in looking at external debt sustainability is hard to reconcile with the extensive historical experience.[3]

Our dataset reveals that the phenomenon of serial default is a universal rite of passage through history for nearly all countries as they pass through the emerging market state of development. This includes not only Latin America, but Asia, the Middle East and Europe. 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.

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[3] These issues are analyzed in detail in Reinhart and Rogoff (2008).

Section III of the paper gives a brief overview of the sample and data. Section IV catalogues the history of serial 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 Asia, Africa, and Latin America. Our database 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 of the paper looks at the effect of global factors on sovereign default, including commodity prices and capital flows emanating from the center countries. We show how shocks emanating from the center countries 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 right of passage as serial default. Section VII introduces a composite index that aggregates the "varieties of crises." In the concluding section, we take up the issue of how countries can graduate from the perennial problem of serial default. Will the early 21st century prove different?

Appendix A gives a brief synopsis of how the database was constructed, while Appendices I (macroeconomic series) and II (debt) list all the variables in the database and provide their sources on a period-by-period and country-by-country basis.

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 (i.e., a government default on its own external debt or private sector debts that were publicly guaranteed.)

The first observation is that 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 1800–2006 (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
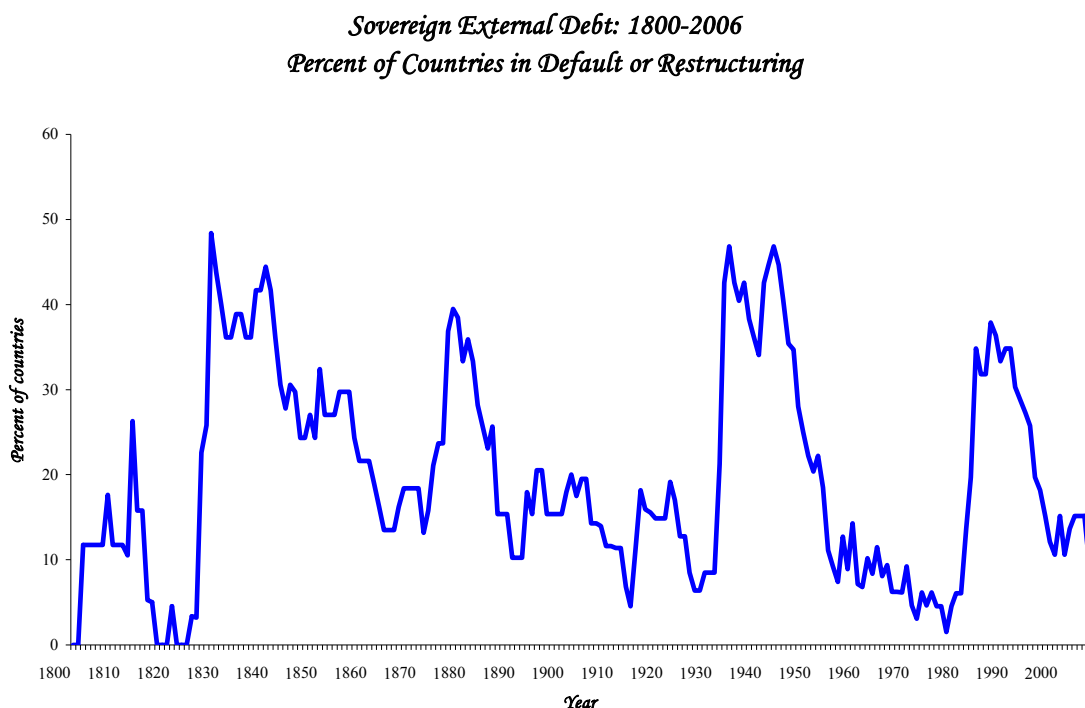
Sovereign External Debt: 1800-2006
Percent of Countries in Default or Restructuring

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.[4] The most recent default cycle encompasses the emerging market debt crises of the 1980s and 1990s.

Indeed, when one weights countries by their share of global GDP, as in Figure 2 below, the current lull stands out even more against the preceding century. 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.[5] Looking forward, once 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 is interesting also because it shows the years just after World War II as marking the peak of by far 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.[6] By the same token, 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 early 1800's.

As we shall see when we tabulate individual country experiences in Section IV*, serial default on external debt—that is, repeated sovereign default—is the norm throughout every region in the world, even including Asia and Europe.*

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

[5] This comparison weights defaulting countries by share of world income. On an unweighted basis (so, for example, the poorest countries in Africa and South Asia receive the same weight as Brazil or the United States), the late 1960s until 1982 had an even lower percentage of independent countries in default.

[6] Kindleberger (1989) emphasizes the prevalence of default after World War II, though he does not provide quantification.

Figure 2

Sovereign External Debt: 1800-2006
Countries in Default Weighted by Their Share of World Income
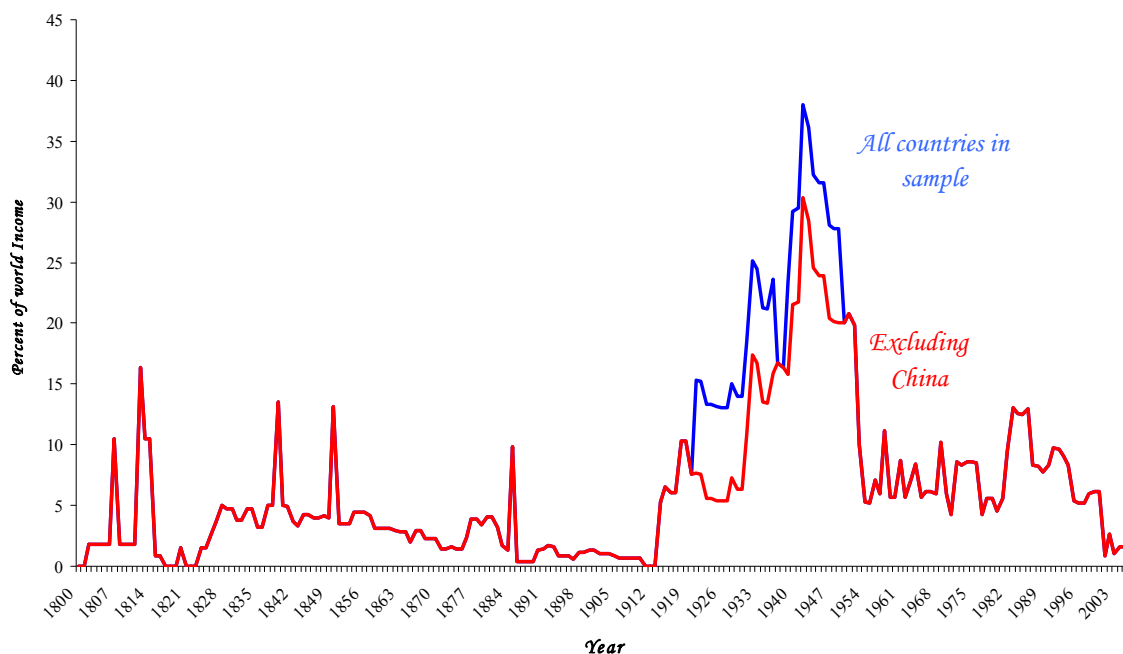
Sources: Lindert and Morton (1989), Macdonald (2003), Maddison (2003), Purcell and Kaufman (1993), Reinhart, Rogoff, and Savastano (2003), Suter (1992), and Standard and Poor's (various years).
Notes: Sample size includes all countries, out of a total of sixty six listed in Table 1, that were independent 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.

We have already seen from Figure 2 that global conflagration can be a huge factor in generating waves of defaults. 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.*[7] We take up this issue in Section V. Making use of a range of real global commodity price indices, we show that over the period 1800–2006, peaks and troughs in commodity price cycles appear to be leading indicators of peaks and troughs in the capital flow cycle, with troughs typically resulting in multiple defaults.

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[7] See Bulow and Rogoff (1990), and Mauro, Sussman and Yafeh (2006).

An even stronger regularity found in the literature on modern financial crises (e.g., Kaminsky and Reinhart, 1999) is that countries experiencing sudden large capital inflows are at high risk of having a debt crisis. The preliminary 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 on the right scale. On the left scale, we updated 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, we feel it nevertheless provides a concise summary of complicated forces by emphasizing de facto capital mobility based on actual flows.

The dating of banking crises episodes is discussed in detail in the Appendix. 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. (See the lengthy Table A.3 for details.) Our work was greatly simplified back to 1880 by the careful study of Bordo, et al. (2001)—but for the earlier period we had to resort to archeological work. 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

Capital Mobility and the Incidence of Banking Crisis: All Countries, 1800-2007
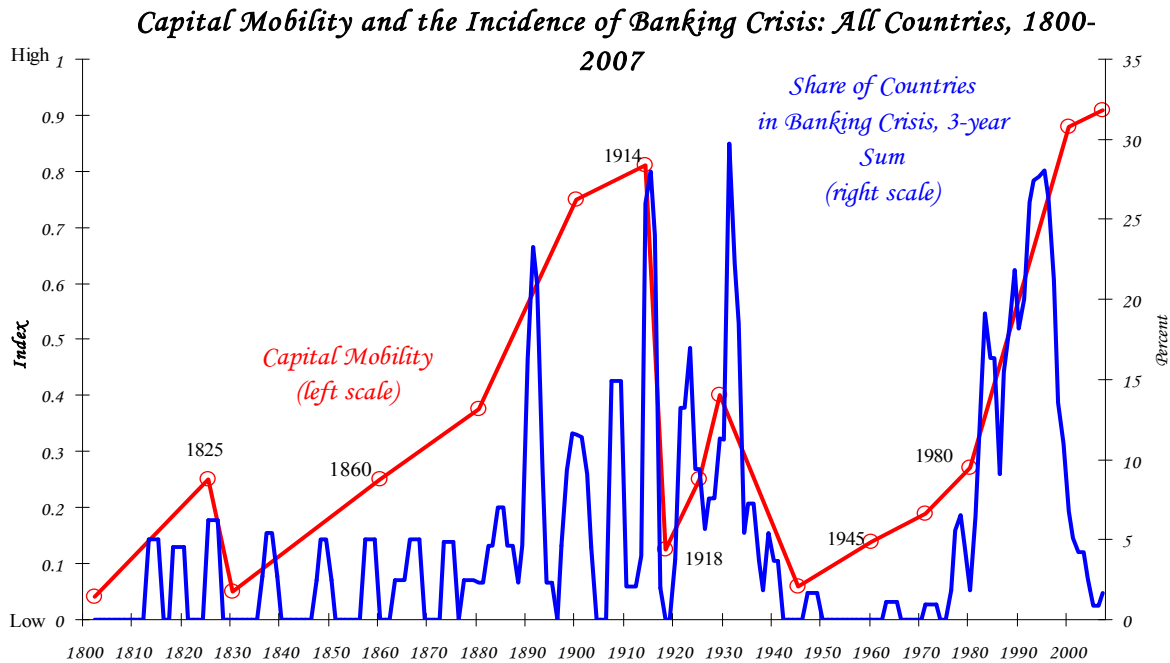
Sources: Bordo et al. (2001), Caprio et al. (2005), Kaminsky and Reinhart (1999), Obstfeld and Taylor (2004), and these authors.

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. On the right scale, we updated our favorite index of capital mobility, admittedly arbitrary, but a concise summary of complicated forces. The smooth red line 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.

(The aforementioned Peruvian case comes from a little-known 1957 book published in Lima by Carlos Camprubi Alcazar entitled *Historia de los Bancos en el Peru, 1860–1879.* There are many more such case studies in our references that were a vital source of information on banking crises.)

As noted, our database includes long time series on domestic public debt.[8] 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

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[8] For most emerging market economies, 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.

governments from external to domestic bond issues is revolutionary and unprecedented.[9]
As we shall argue, nothing could be further from the truth, with implications for today's
markets and for historical analyses of debt and inflation.

Until very recently, domestic debt was not on the radar screen of the multilateral
institutions. Neither the International Monetary Fund nor the World Bank systematically
collected such data. In fact, cross-country historical time series on domestically issued debt
are also absent from private data collections. Reinhart, Rogoff and Savastano (2003), with
extensive help from IMF staff and country sources, put together an annual series going
back to 1990 for a limited number of emerging market countries.[10]

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, 2008). 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 1900–2006.

For our entire sample of sixty-six countries, domestically issued debt averages more
than 50 percent of total debt for most of the period. (This figure is an unweighted 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, this data reveal that a very
important share of domestic debt—even in emerging markets— was long-term maturity***

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[9] 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.
[10] Since then, Jeanne and Guscina (2008) have extended them both back to 1980 and up to 2005.

Figure 4

Domestic Public Debt as a Share of Total Debt,
1900-2006
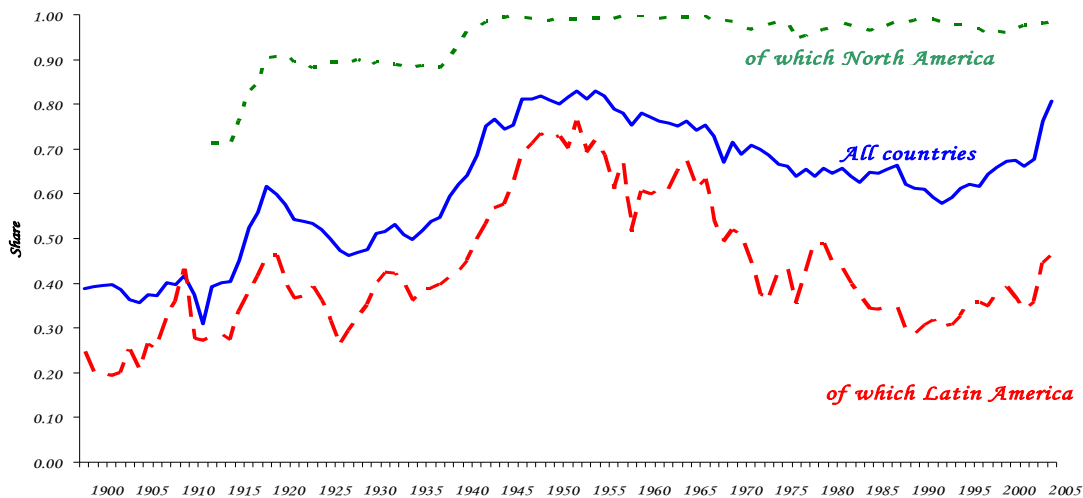
Sources: The League of Nations, the United Nations, and others sources listed in Appendix II.

(Reinhart and Rogoff 2008). In that paper, we also present a variety of evidence to support
the view that, at the very least, domestic debt does not appear to be junior to external debt,
even factoring in a government's ability to default via inflation.

As payments on domestic debt must come from the same revenue stream as
payments on foreign debt, the implication is that the extent of domestic debt can be quite
important in assessing the sustainability of a country's external debt payments. Yet,
because it has not been possible to obtain extensive historical time series on domestic debt
until now, most empirical researchers have ignored the issue entirely. Reinhart and Rogoff
find that the same issue arises in the analysis of high inflation; most of the empirical
literature since Cagan's classic (1956) paper has focused on the "seignorage" gains from
inflation, which are entirely levered off the real money base*. **Yet, the government's gain
to unexpected inflation often derives at least as much from capital losses that are
inflicted on holders of long-term government bonds.*** Figure 5 on inflation and default

(1900–2006) 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).

Figure 5

Inflation and External Default: 1900-2006
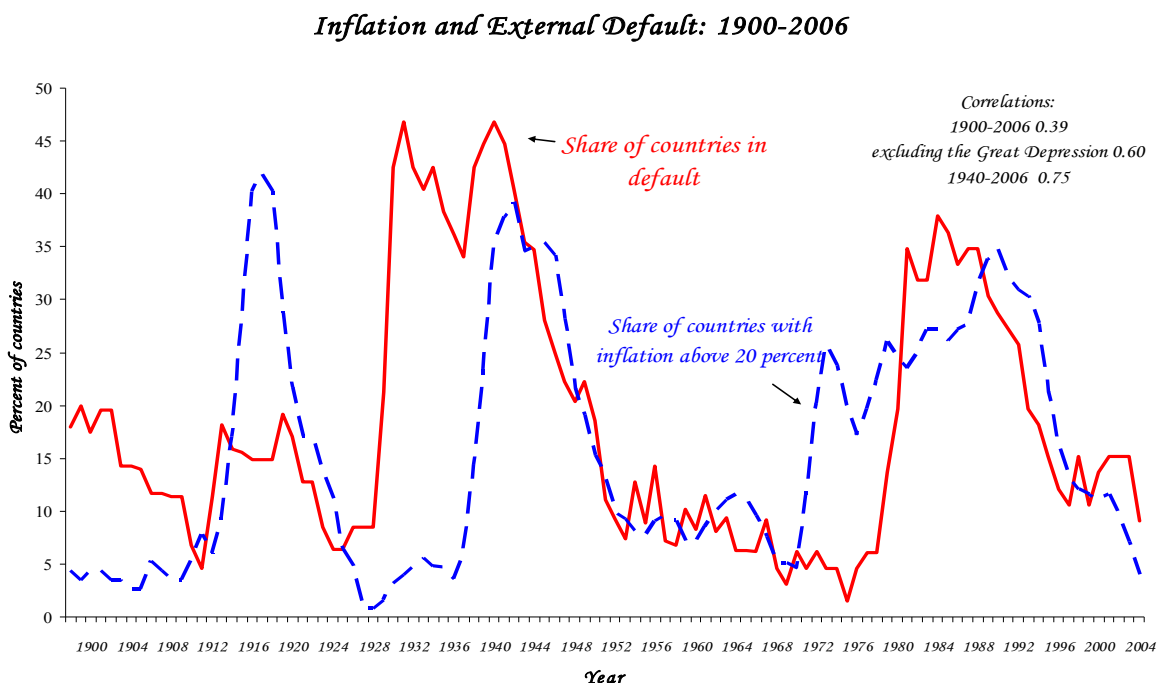
Sources: For share of countries in default, see Figure 1; for high inflation episodes, see Appendix I.
Notes: Both the inflation and default probabilities are simple unweighted averages.

The forgotten history of domestic debt has important lessons for the present. As we have already noted, most investment banks, not to mention official bodies such as the International Monetary Fund and the World Bank, 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, especially as the share of external debt has fallen. 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

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domestic to external debt in overall public debt is cold comfort to external debt holders.
Default probabilities probably depend much more on the overall level of debt. Reinhart
and Rogoff (2008) discuss the interesting example of India, who in 1966 chose to force a
rescheduling of foreign debt when it stood at only ½ percent of GDP. The sums were so
minor that the event did not draw great attention in the Western press. The explanation, as
it turns out, is that India was conducting a massive default on its domestic debt, and foreign
debt was not treated as senior. To summarize, many investors appear to be justifying still
relatively low external debt credit spreads because "This time is different" and emerging
market governments are now relying more on domestic public debt. If so, they are deeply
mistaken.

Another noteworthy insight from the "panoramic view*" is than 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, became British
"protectorates" following their defaults. 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 Eichengreen observes, 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
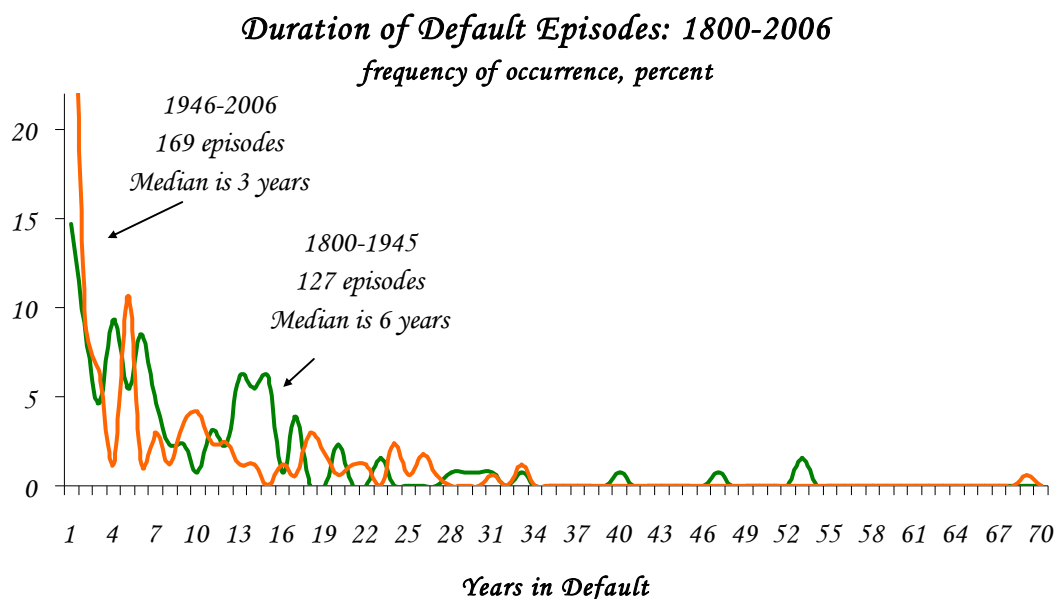
Duration of Default Episodes: 1800-2006
frequency of occurrence, percent

1946-2006
169 episodes
Median is 3 years

1800-1945
127 episodes
Median is 6 years

Years in Default

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–Smirnoff test for comparing the equality of two distributions rejects the null hypothesis of equal distributions at the 1% significance level.

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

In this section, we provide a slim outline of the character of the sample and the building blocks of this database. Extensive detail is provided in three appendices.

Country coverage

Table 1 lists the sixty-six countries in our sample. Importantly, we include a large number or 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 North America and Oceana.

As the final column in Table 1 illustrates, our sample of sixty-six countries indeed 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.[11]

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 debt repayment or rescheduled. One conspicuous grouping of countries includes the high-income Anglophone nations, the United States, Canada, Australia, and New Zealand. (The mother country, England, defaulted in earlier eras as we shall see.) Also included are all of the Scandinavian countries, Norway, Sweden, Finland and Denmark. Also in Europe, there is Belgium. In Asia, there is Hong Kong, Malaysia, Singapore, Taiwan, Thailand and Korea. Admittedly, the latter two countries, especially, managed to avoid default only through massive International Monetary Fund loan packages during the last 1990s debt crisis and otherwise suffered much of the same trauma as a typical defaulting country.

Also, of default-free countries, only Thailand existed as an independent state before the end of World War II. For others, the potential opportunity for default has been relatively short. Lastly, several of the sovereign default virgins, notably the United States, 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. Finally, there is one country from Africa, Mauritius, which has never defaulted or

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[11] Our sample excludes many of the world's poorest countries, who by and large cannot borrow meaningful amounts from private sector lenders, and who have virtually all effectively defaulted even on heavily subsidized government-to-government loans. This is an interesting subject for another study, but here we are mainly interested in financial flows that, at least in the first instance, had a substantial market element.

restructured. It is notable that the non-defaulters, by and large, are all hugely successful growth stories. This begs the question: Do high growth rates help avert default, or does averting default beget high growth rates?

Table 1 also flags which countries in our sample have not defaulted on their external debts, at least in the narrow sense that they have not outright failed to meet their debt repayment on schedule in an important way on even one occasion. This is an issue we will return to in Section IV.

Dates and Frequency of Coverage

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

Crises-related variables

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. However, starting in 1913, the coverage for our sample becomes much more comprehensive. Debt is, by far, the most novel feature of the dataset.

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.

		Year of Independence	Share of World Real GDP 1990 International Geary–Khamis US dollars
		1913	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).

Prices

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

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 the national accounts that are of a relatively more modern vintage.

Having reasonably accurate output data is thus of enormous help in calibrating the severity of crises. 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.

The primary use of the revenue, exports, and GDP series in our analysis is to scale debt, that is to construct the standard debt-to-revenues, etc., ratios.

Capital Flows

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.

Financial center data and global commodity prices

In modern times, emerging market financial crises have often been triggered by events at the center, as Calvo, Leiderman and Reinhart (1993), Bulow and Rogoff (1990), and others have argued. To capture developments in financial centers post-1800, we include: measures of short- and long-term 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.

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.

IV. Serial Default 1350–2006

When one looks carefully, virtually all countries have defaulted at least once and many several times on external debt during their emerging market economy phase, a period that typically takes at least one or two centuries.

Early Default, 1500 –1799

Today's emerging markets can hardly claim credit for inventing serial default. Table 2 lists the number of defaults, including default years, between 1300 and 1799 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."

Table 2. The Early External Defaults: Europe, 1300–1799		
Country	*Years of default*	*Number of defaults*
Austria	1796	1
England	1340, 1472, 1594*	2*
France	1558, 1624, 1648	
	1661, 1701, 1715	8
	1770, 1788	
Germany (Prussia)	1683	1
Portugal	1560	1
Spain	1557, 1575, 1596,	6
	1607, 1627, 1647	

Sources: MacDonald (2006), Reinhart, Rogoff and Savastano (2003) and sources cited therein. The "*" for England denotes our uncertainty at this time about whether its default was on domestic or external debt.

Spain's defaults establish a record that remains as yet unbroken. Indeed, 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 eight 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 restructuring"), the population came to refer to these episodes as "bloodletting."[12] 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).[13]

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 default. France did not default in the nineteenth or twentieth century nor (so far, anyway) in the twenty-first century. As such, France may be considered among the first countries to "graduate" from serial default. Austria and Portugal defaulted only once in the period up to 1800, but then each defaulted a handful of times during the nineteenth century, as we shall see.

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. While not strictly a bond default, such seizures, often accompanied by executions, qualify as reneging on financial obligations.

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[12] See Reinhart, Rogoff and Savastano (2003) who thank Harald James for this observation.
[13] 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."

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 3 lists nineteenth-century default 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.

Reschedulings constitute partial default for two reasons. The first reason, of course, is that debt reschedulings often involve reducing interest rates, if not principle. 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—sometimes decades—have often yielded 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 sells at steep discount relative to the expected value of future repayments. Investors rightly believe 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. And

of course they are right. Investing in risky illiquid assets is precisely how venture capital and private equity, not to mention university endowments, have succeeded (until now) 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 3 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 Algeria (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 defaulting four times.

Looking down the columns of Table 3 also gives us a first glimpse at the clustering of defaults across regions and internationally. Note that 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.

Country/date of independence [1]	*Dates*			
	1800–1824	*1825–1849*	*1850–1874*	*1875–1899*
Africa				
Egypt, *1831*				1876
Tunisia			1867	
Europe				
Austria–Hungary	1802, 1805, 1811, 1816		1868	
France	1812			
Germany				
Hesse	1814			
Prussia	1807, 1813			
Schleswig–Holstein			1850	
Westphalia	1812			
Greece, *1829*		1826, 1843	1860	1893
Netherlands	1814			
Portugal		1828, 1837, 1841, 1845	1852	1890
Russia		1839		1885
Spain	1809, 1820	1831, 1834	1851, 1867, 1872	1882
Sweden	1812			
Turkey				1876
Latin America				
Argentina, *1816*		1827		1890
Bolivia, *1825*				1875
Brazil, *1822*				1898
Chile, *1818*		1826		1880
Colombia, *1819*		1826	1850, 1873	1880
Costa Rica, *1825*		1828	1874	1895
Dominican Republic, *1845*			1872	1892, 1897, 1899
Ecuador, *1830*		1826	1868	1894
El Salvador, *1821*		1828		1898
Guatemala, *1821*		1828		1876, 1894, 1899
Honduras, *1821*		1828	1873	
Mexico, *1821*		1827, 1833, 1844	1866	1898
Nicaragua, *1821*		1828		1894
Paraguay, *1811*			1874	1892
Peru, *1821*		1826		1876
Uruguay, *1811*				1876, 1891
Venezuela, *1830*		1826, 1848	1860, 1865	1892, 1898

Table 3. External Default and Rescheduling: Africa, Europe, and Latin America, Nineteenth Century

[1] The dates are shown for those countries that became independent during the nineteenth century.
Sources: Standard and Poor's, Purcell and Kaufman (1993), Reinhart, Rogoff and Savastano (2003) and sources cited therein.

Next we turn to the twentieth century. Table 4 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 4 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 5 looks at Latin America and Europe, regions where, with only a few exceptions, countries were independent throughout the entire twentieth century. Again, as in the earlier tables, 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 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. Whether these massive interventions were well advised is an entirely different issue that we will set aside here. In Table 5, notable are Turkey's five defaults, Ecuador and Peru's six defaults, and Brazil's seven.

So far we have focused on number of defaults, but there is some arbitrariness to this measure. Default episodes can be connected, particularly if debt restructuring terms are

Country/date of independence [1]	Dates			
	1900–1824	1925–1949	1950–1974	1975–2006
Africa				
Algeria, *1962*				1991
Angola, *1975*				1985
Central African Republic, *1960*				1981, 1983
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
Zambia, *1964*				1983
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
Sri Lanka, *1948*				1980, 1982

Table 4. Default and Rescheduling: Africa and Asia, Twentieth Century–2006

[1] The dates are shown for those countries that became independent during the twentieth century.
Sources: Standard and Poor's, Purcell and Kaufman (1993), Reinhart, Rogoff and Savastano (2003) and sources cited therein.

harsh and make relapse into default almost inevitable. We have tried in Table 4 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.

Table 5. Default and Rescheduling: Europe, and Latin America, Twentieth Century–2006

Country/date of independence [1]	Dates			
	1900–1824	*1925–1949*	*1950–1974*	*1975–2006*
Europe				
Austria		1938, 1940		
Germany		1932, 1939		
Greece		1932		
Hungary, *1918*		1932, 1941		
Poland, *1918*		1936, 1940		1981
Romania		1933		1981, 1986
Russia	1918			1991, 1998
Turkey	1915	1931, 1940		1978, 1982
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
Colombia	1900	1932, 1935		
Costa Rica	1901	1932	1962	1981, 1983, 1984
Dominican Republic		1931		1982, 2005
Ecuador	1906, 1909, 1914	1929		1982, 1999
El Salvador	1921	1932, 1938		
Guatemala		1933		1986, 1989
Honduras				1981
Mexico	1914	1928		1982
Nicaragua	1911, 1915	1932		1979
Panama, *1903*		1932		1983, 1987
Paraguay	1920	1932		1986, 2003
Peru		1931	1969	1976, 1978, 1980, 1984
Uruguay	1915	1933		1983, 1987, 1990, 2003
Venezuela				1983, 1990, 1995, 2004

[1] The dates are shown for those countries that became independent during the twentieth century.
Sources: Standard and Poor's, Purcell and Kaufman (1993), Reinhart, Rogoff and Savastano (2003) and sources cited therein.

We begin by tabulating the results for Asia and Africa in Table 6. Table 6 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,

Country	Year of Independence	Share of years in default or rescheduling since independence or 1800 [1]	Total number of defaults and/or reschedulings
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
Hong Kong		0.0	0
India	1947	11.7	3
Indonesia	1949	15.5	4
Japan	1590	5.3	1
Korea	1945	0.0	0
Malaysia	1957	0.0	0
Myanmar	1948	8.5	1
Philippines	1947	16.4	1
Singapore	1965	0.0	0
Sri Lanka	1948	6.8	2
Taiwan	1949	0.0	0
Thailand	1769	0.0	0

Table 6. The Cumulative Tally of Default and Rescheduling: Africa and Asia, Year of Independence–2006

[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.

the typical default was resolved relatively quickly. 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. Certainly, one

main reason why African defaults are less celebrated than, say, Latin American defaults, is

because the debts of African countries have typically been relatively small, and the

systemic consequences less.

Table 7 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 Tables 6 and 7 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 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 form 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.

Country	Year of Independence	Share of years in default or rescheduling since independence or 1800 [1]	Total number of defaults and/or reschedulings
Europe			
Austria	1282	17.4	7
Belgium	1830	0.0	0
Denmark	980	0.0	0
Finland	1917	0.0	0
France	943	0.0	8
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
Norway	1905	0.0	0
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	0
Turkey	1453	15.5	6
United Kingdom	1066	0.0	0
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
North America			
Canada	1867	0.0	0
United States	1783	0.0	0
Oceania			
Australia	1901	0.0	0
New Zealand	1903	0.0	0

Table 7. The Cumulative Tally of Default and Rescheduling: Europe, Latin America, North America, and Oceania, Year of Independence–2006

[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 (2005) 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. The upper panel of Figure 7 is an illustration of the commodity price cycle, which we split into two periods, the pre– and post–World War II periods. As the figure broadly 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. The lower panel of Figure 7 calibrates the same phenomenon for the 1990s and 2000s. We note that while the association does show through in the pre–World War II period, it is less compelling subsequently.

As observed earlier, defaults are also quite sensitive to the global capital flow cycle. When flows drop precipitously, more countries slip into default. Figure 8 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.

Figure 7. Commodity Prices and New External Defaults
1800–1939
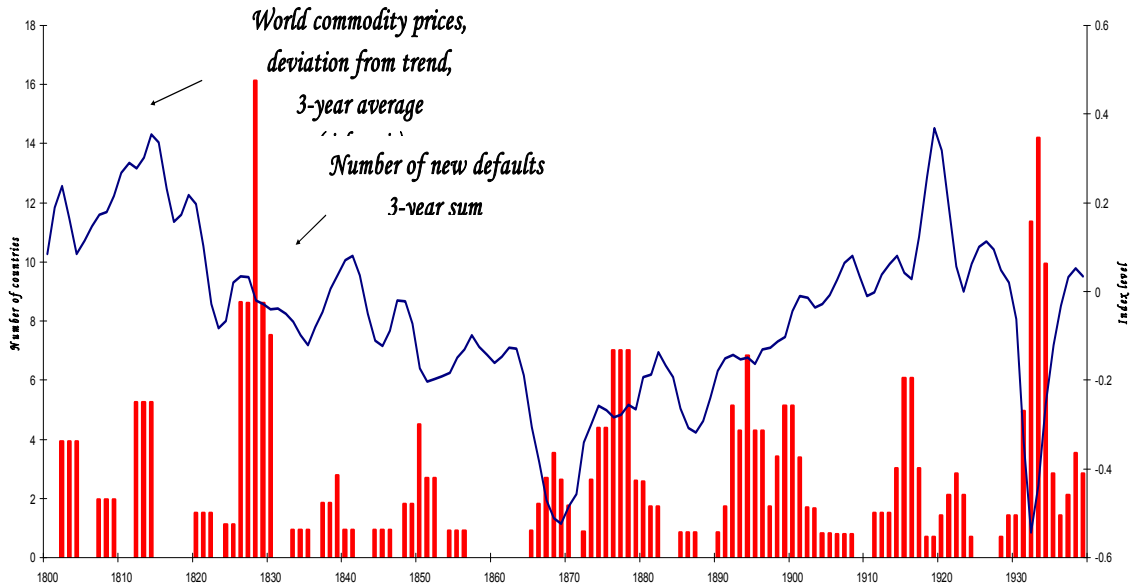
1940–2006
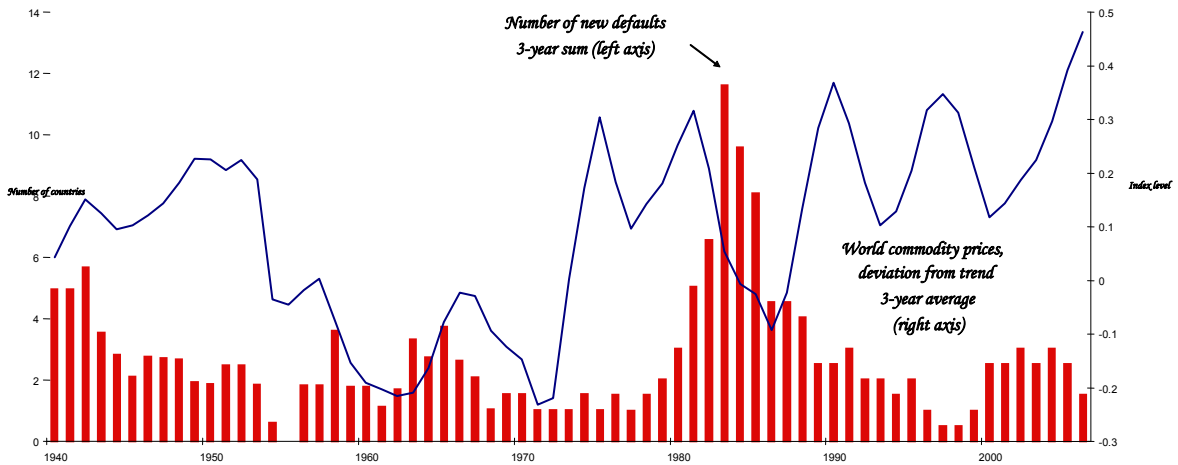
Sources: Boughton (1991), *The Economist,* Gayer, Rostow, and Schwartz (1953), *World Economic Outlook,* IMF and the authors' calculations based on the sources listed in Table AI.9. For external default, see Appendix I.

Notes: New external defaults refer to the first year of default. Because of the marked negative downward drift in commodity prices during the sample period, prices are regressed against a linear trend, so as to isolate the cycle.

Figure 8

Net Capital Flows from the Financial Center and Default
1818-1968
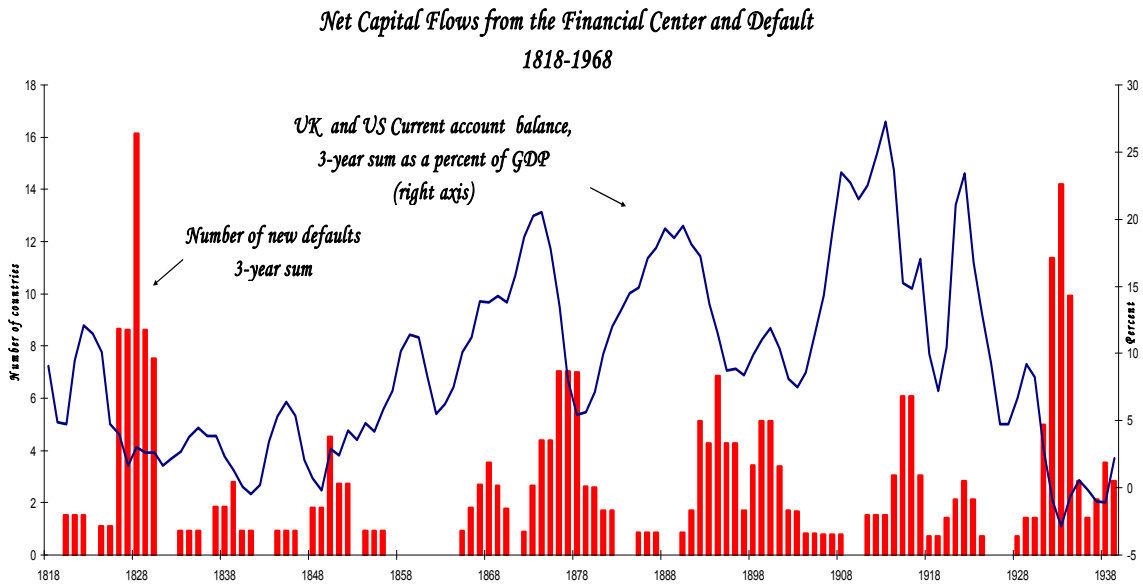
Sources: Historical Statistics of the United States (2007), Imlah (1958), Mitchell (1993), Bank of England. Notes: The current account for the UK and the US is defined according to the relative importance (albeit in a simplistic arbitrary way) of these countries as the financial centers and primary suppliers 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.

We recognize that the correlations captured by these figures are merely illustrative, and different default episodes involve many different factors. But aside from illustrating the kind of insights one can get from such a long and broad dataset, 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.

The capital flow cycle illustrated in Figure 8 comes out even more strikingly in many individual country graphs, but we do not have space here to include these. An early

example, though, is illustrated in Figure 9, based on seventeenth-century Spain. The figure

illustrates how defaults often follow in the wake of large spikes in capital inflows.

Figure 9

Spain: Defaults and Loans to the Crown, 1601-1679 (3-year moving sum)
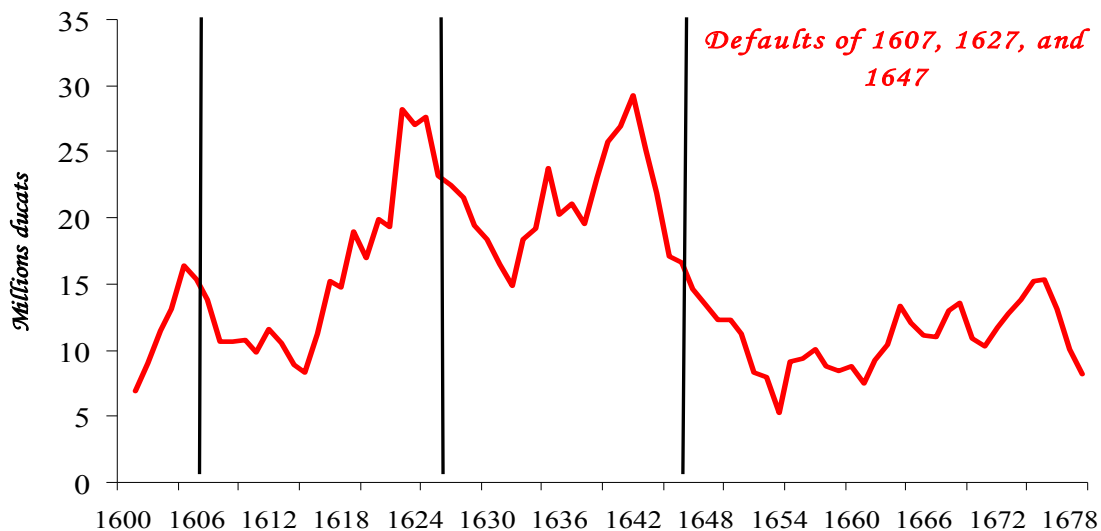
Sources: Gelabert (1999a and b), European State Finance Database.

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? Tables 8 and 9 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

Table 8. 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.
Baring Crisis, 1890	Argentina stops dividend payments in April 1890, leading to a domestic bank run. The House of Baring, a major lender to Argentina, declares itself insolvent in November 1890.	Strong economic links between Britain and Argentina through trade and financial integration.	Crisis mostly confined to Argentina and Uruguay (which defaulted in 1891).

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), as well as by the US stock market crash and bank runs of 1907, which transmitted mainly to Germany, France and Italy.

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 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.

Figure 10 makes this point more systematically by examining the behavior of domestic and external sovereign debt in the run-up to default. The bars give the average experience of both types of debt, normalized by their levels four years prior to the credit event. As can be seen, both components 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. Figure 11 illustrates the case of China, which had a massive run-up in domestic debt following its default of 1921.

Figure 10

**The Runup in Domestic and External Debt
on the Eve of Default, Average Default Episode: 1800-2006**
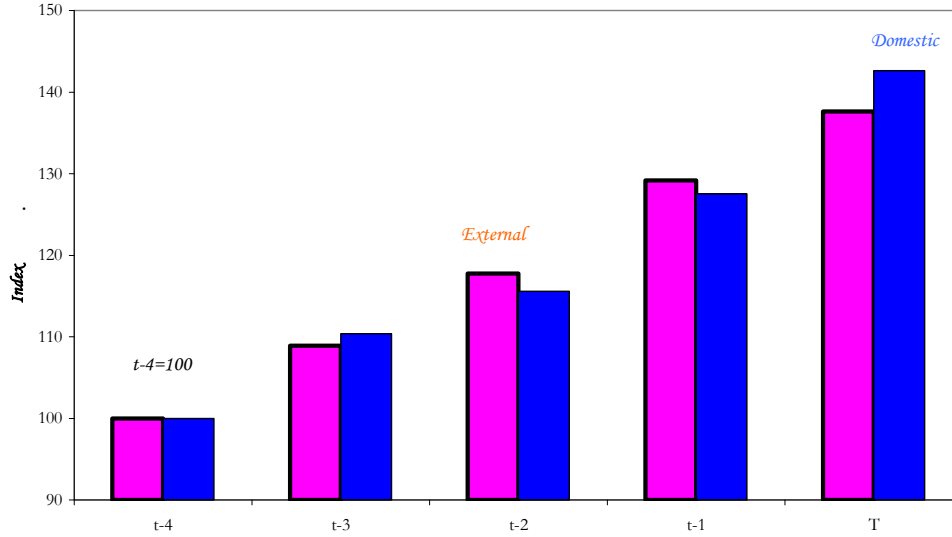
Sources: See Appendix I and Reinhart and Rogoff (2008).
Notes: *T* refers to the year of the external debt crisis.

Figure 11

China: Domestic Public Debt Outstanding, 1895-1946
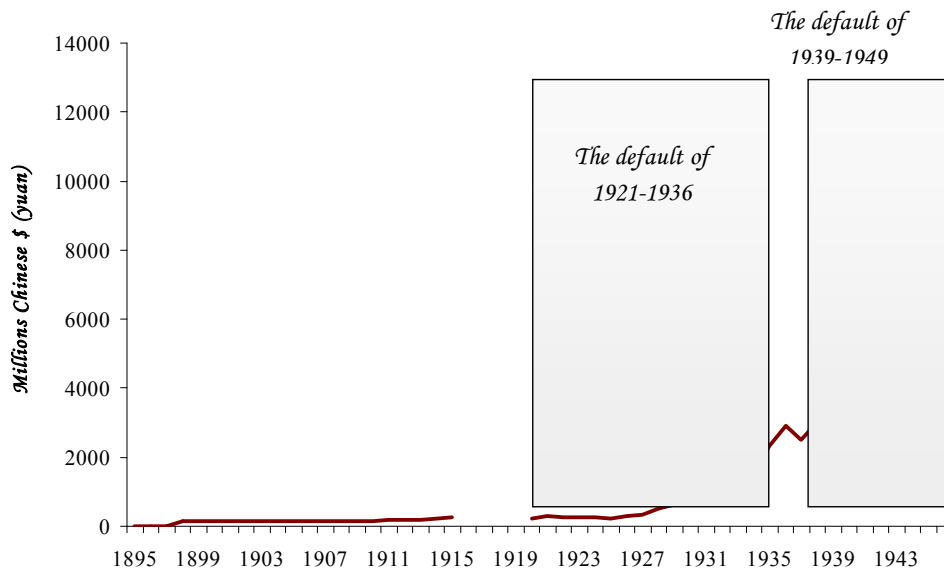
Sources: Cheng (2003), Huang (1919), UN and authors' calculations.
Notes: For 1895–1915 the debt stock is calculated from domestic debentures data. According to Huang, China did not have domestic debt prior to its 1895 domestic issue.

We have already acknowledged that domestic debt is not equivalent to foreign debt, nor should it be treated as such. But we have also established that domestic debt has long been fully as significant as external debt in meeting emerging market financing needs. There is nothing "original" about it. And as we show in Reinhart and Rogoff (2008), defaults on domestic debt appear to be associated with similar magnitudes of output loss as defaults on external debt.

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 (whose inflation rate exceeded 20 percent during the country's 1860s civil war) 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 are only able here to give a helicopter tour (so to speak) of our entire 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.

Although 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

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.[14]

Tables 9 and 10 give data on currency debasement across a broad range of European countries during the pre–paper currency era, 1228–1799. The table illustrates how strikingly 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's inflation was 44 percent in 1586. Russia managed to achieve 14 percent inflation in 1798. The second column of the table looks at cumulative currency debasement over long periods, often adding up to 50 percent or more. Table 10 looks at 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 12, 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.

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[14] See, for example, Sargent and Velde (2003), *The Big Problem with Small Change*.

Figure 12.

The March Toward Fiat Money: Europe 1400-1850

Average Silver Content (in grams) of 10 Currencies

Napoleonic Wars, 1799-1815
in 1812 Austria debases currency by 55%
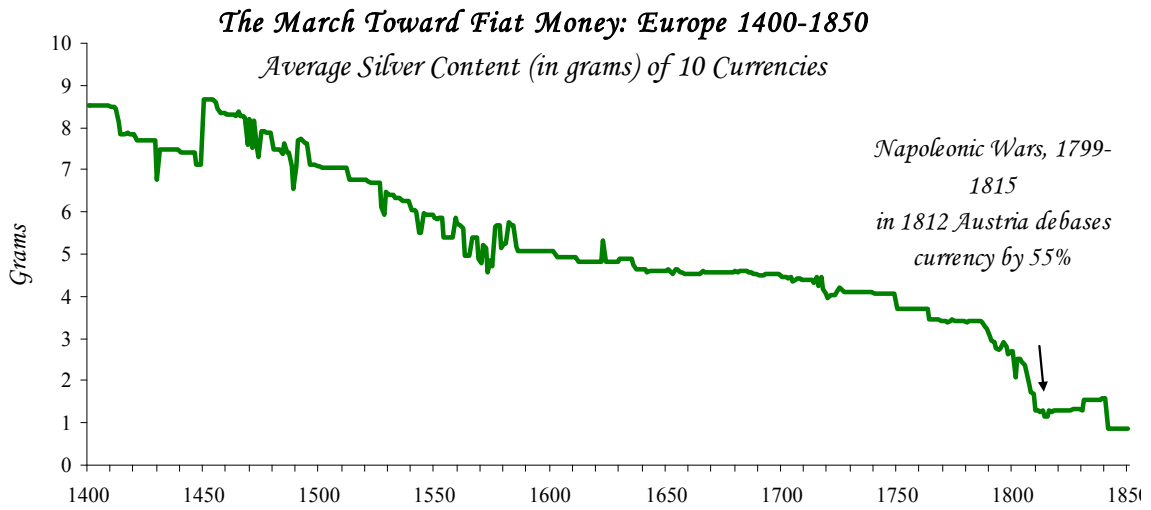
Sources: Primarily Allen and Unger and other sources listed in Table AI.4.
Notes: In the cases where there is more than one currency circulating in a particular country (in Spain, for example, we have the New Castille maravedi and the Valencia dinar) we calculate the simple average.

		Cumulative decline in silver content of currency (percent)	Largest debasement (percent) and year		Share of years in which there was a debasement of the currency (i.e. a reduction in the silver content)	
Country and currency	Period covered				All	15 percent or greater
Austria Vienna kreuzer	1371–1499	−69.7	−11.1	*1463*	25.8	0.0
	1500–1799	−59.7	−12.5	*1694*	11.7	0.0
Belgium hoet	1349–1499	−83.8	−34.7	*1498*	7.3	3.3
	1500–1799	−56.3	−15.0	*1561*	4.3	0.0
France livre tournois	1258–1499	−74.1	−56.8	*1303*	6.2	0.4
	1500–1789	−78.4	−36.2	*1718*	14.8	1.4
Germany Bavaria– Augsburg pfenning	1417–1499	−32.2	−21.5	*1424*	3.7	1.2
	1500–1799	−70.9	−26.0	*1685*	3.7	1.0
Frankfurt pfenning	1350–1499	−14.4	−10.5	*1404*	2.0	0.0
	1500–1798	−12.8	−16.4	*1500*	2.0	0.3
Italy 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 reis	1750–1799	-25.6	−3.7	*1766*	34.7	0.0
Russia ruble	1761–1799	−42.3	−14.3	*1798*	44.7	0.0
Spain New Castille maravedis	1501–1799	−62.5	−25.3	*1642*	19.8	1.3
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 ortug	1523–1573	−91.0	−41.4	*1572*	20.0	12.0
Turkey Akche	1527–1799	−59.3	−43.9	*1586*	10.5	3.1
United Kingdom pence	1260–1499	−46.8	−20.0	*1464*	0.8	0.8
	1500–1799	−35.5	−50.0	*1551*	2.3	1.3

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

Table 10. Expropriation through Currency Debasement: Europe, the Nineteenth Century

Country	Period covered	Cumulative decline in silver content of currency (percent)	Largest debasement (percent) and year		Share of years in which there was a debasement of the currency (i.e. a reduction in the silver content)	
					All	15 percent or greater
Austria	1800–1860	−58.3	−55.0	*1812*	37.7	11.5
Germany	1800–1830	−2.2	−2.2	*1816*	3.2	0.0
Italy	1800–1859	0.0	0.0		0.0	0.0
Portugal	1800–1855	−12.8	−18.4	*1800*	57.1	1.8
Russia	1800–1899	−56.6	−41.3	*1810*	50.0	7.0
Turkey	1800–1899	−83.1	−51.2	*1829*	7.0	7.0
United Kingdom	1800–1899	−6.1	−6.1	*1816*	1.0	0.0

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

Inflation

However spectacular some of the coinage debasements reported in Tables 9 and 10, there is no question that the advent of the printing press brought inflation up to a whole new level. Figure 12 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 table 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 13

Median Inflation Rate All Countries
5-Year Moving Average: 1500-2006
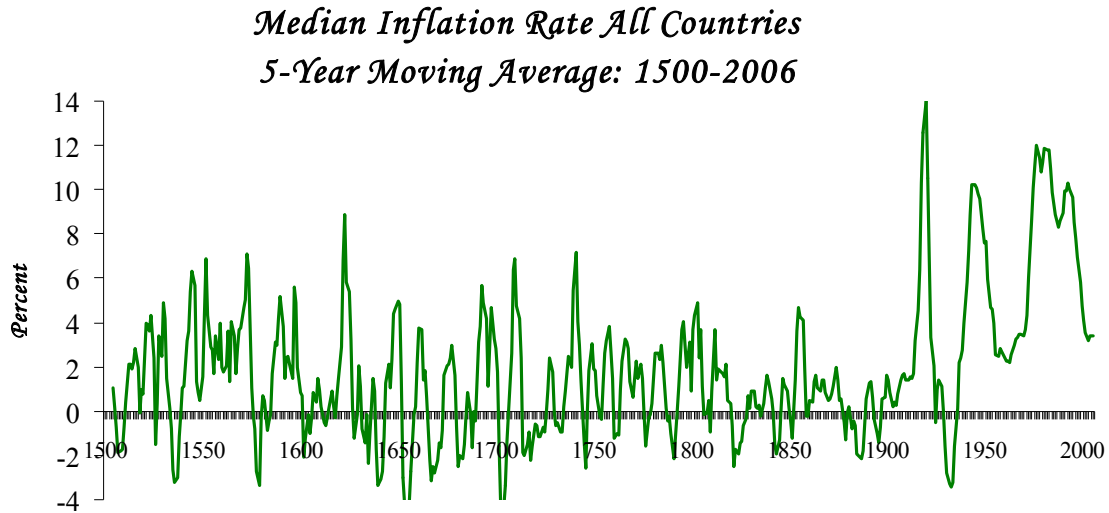
Sources: There are innumerable sources given the length of the period covered and the large number of countries included. These are listed in Table AI.

We look at country inflation data across the centuries in the next three tables. Table 11 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 Kingdom has inflation over 20 percent five percent of the time going back to 1500. The New World colonies of Latin America experienced frequent bouts of very high inflation long before the wars of independence from Spain.

Table 11. "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	1639-1799	14.3	6.2	0	116.7	1651
Japan	1601-1650	34.0	14.0	0	98.9	1602
Korea	1743-1799	43.9	29.8	0	143.9	1787
Europe						
Austria	1501-1799	8.4	6.0	0	99.1	1623
Belgium	1501-1799	25.1	11.0	0	185.1	1708
Denmark	1749-1799	18.8	10.4	0	77.4	1772
France	1501-1799	12.4	2.0	0	121.3	1622
Germany	1501-1799	10.4	3.4	0	140.6	1622
Italy	1501-1799	19.1	7.0	0	173.1	1527
Netherlands	1501-1799	4.0	0.3	0	40	1709
Norway	1666-1799	6.0	0.8	0	44.2	1709
Poland	1704-1799	43.8	31.9	0	92.1	1762
Portugal	1729-1799	19.7	2.8	0	83.1	1757
Spain	1501-1799	4.7	0.7	0	40.5	1521
Sweden	1540-1799	15.5	4.1	0	65.8	1572
Turkey	1586-1799	19.2	11.2	0	53.4	1621
United Kingdom	1501-1799	5.0	1.7	0	39.5	1587
The "New World"						
Argentina	1777-1799	4.2	0.0	0	30.8	1780
Brazil	1764-1799	25.0	4.0	0	33.0	1792
Chile	1751-1799	4.1	0.0	0	36.6	1763
Mexico	1742-1799	22.4	7.0	0	80.0	1770
Peru	1751-1799	10.2	0.0	0	31.6	1765
United States	1721-1799	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 12 looks at the same years 1800–2006 as Table 11, but for thirteen African countries and twelve Asian countries. 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.[15]

Table 12. "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			
Africa						
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
Thailand	1821	14.0	7.5	0	78.5	

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[15] The dates in table 13 extend back prior to independence for many countries, including for example Malaysia.

Most of the countries in Asia and Africa however, have experienced waves of high and very high inflation. The notion that Asian countries have been immune from Latin American–style high inflation is just 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[16], Indonesia over 900 percent in 1966. Even the Asian tigers Singapore and Taiwan experienced inflation well over 20 percent in the early 1970s.

Africa, perhaps not surprisingly, 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 included in our sample), which has experienced three hyperinflations since 1970 (Reinhart and Rogoff, 2002).

Finally, Table 13 lists inflation for 1800 through 2006 for Europe, Latin America, North America and Oceana. 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.

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[16] 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.

Table13. "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+26	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

Even Canada and the United States, however, have experienced an episode of inflation over 20 percent. As already noted, the US inflation peaked during its civil war, reaching 24 percent in 1864. Canada's inflation rate reached the same level during 1917. In all of Table 13, only New Zealand and Panama(!) have no periods of inflation over 20 percent, 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, although many countries (including Argentina, Venezuela and of course Zimbabwe) still have very high inflation.[17] Many observers, following the same logic as in commenting on external default, have concluded that "this time is different." Perhaps, but, as with debt defaults, experience suggests that quiet periods do not extend indefinitely.

Exchange rate crashes

Having discussed currency debasement and inflation crises, including at this late stage 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. *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

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[17] At the time of this writing the "official" inflation rate in Argentina is 8 percent—informed estimates place it at 26 percent.

years. This is starkly illustrated in Figures 14 and 15, with the former depicting the

incidence of high inflation and the latter showing median inflation. The significantly higher

incidence of crashes and larger median changes in the more modern period are hardly a

surprise.

Figure 14

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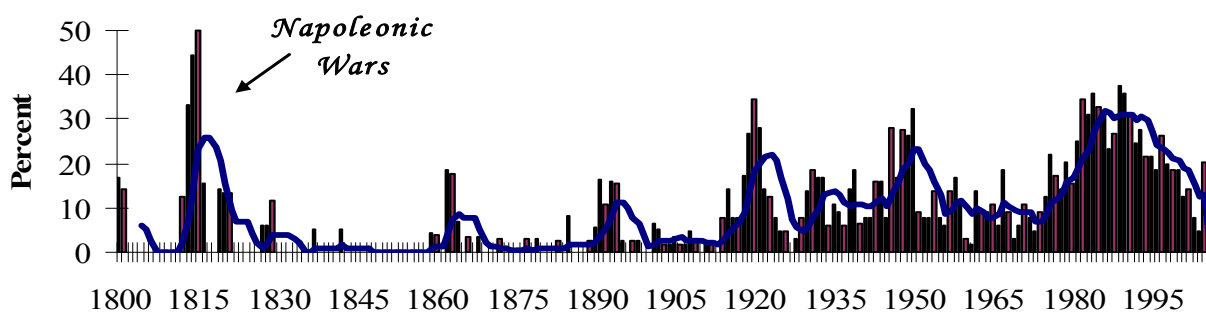
Figure 15

Median Annual Depreciation All Countries 5-Year Moving Average: 1800-2006
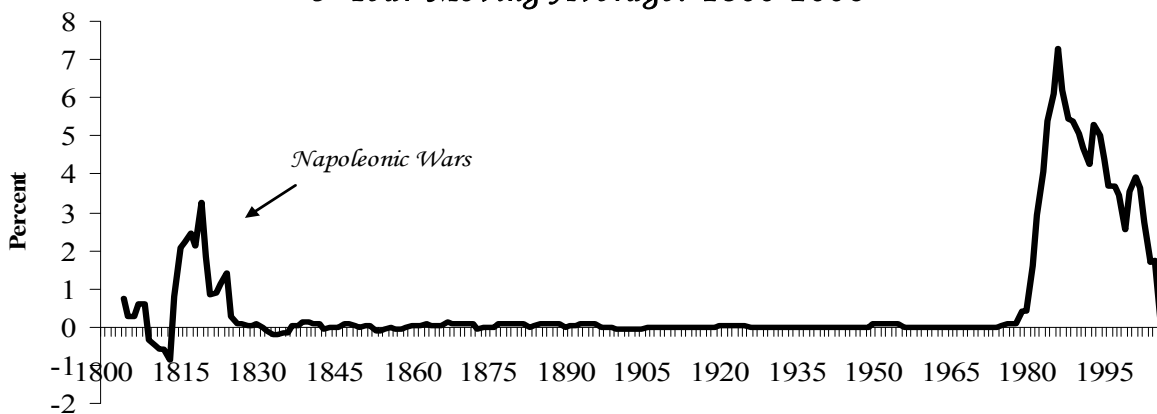
Sources: The primary sources are Global Financial Data, and Reinhart and Rogoff (2003), but there are numerous others that are listed in Appendix I.

VII. Varieties of Crises

We deal with five "varieties" of economic crises: external default, domestic default, banking crises, currency crashes, and inflation outbursts.[18] All these variables take on the value of one when there is a crisis and zero otherwise. Thus, in a tranquil year the tally across crises for that particular country would total zero, while in the worst-case scenario (Argentina 2002, for instance) it would sum to five. Hence, each country has an entry each year in the 0 to 5 range. We next take simple averages across all countries, or across countries in a particular region, and thus construct a composite index of financial instability that is multidimensional.

These are the time series shown for the full sample in Figure 16 for the whole sample and for Asia. We have comparable figures for all the other regions. We selected Asia to highlight a point we have made earlier on more than one occasion. Namely, that the 1997–1998 crisis was not the first and that the region had several protracted bouts of economic instability by international standards of the day.

VIII. 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 statistical dataset compiled by the authors that covers every region of the world and spans several centuries.

Inevitably, a database of this scale and 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,

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[18] The total would come to 6 if we include currency debasement—but for this there is far less data across countries, as discussed.

and improvements of this database, which we will attempt to incorporate into the online

version, with appropriate attribution and cross-referencing.

Figure 16

Variety of Crises, Asia: 1800-2006
Average Number of Crises per Country, 5-year Average
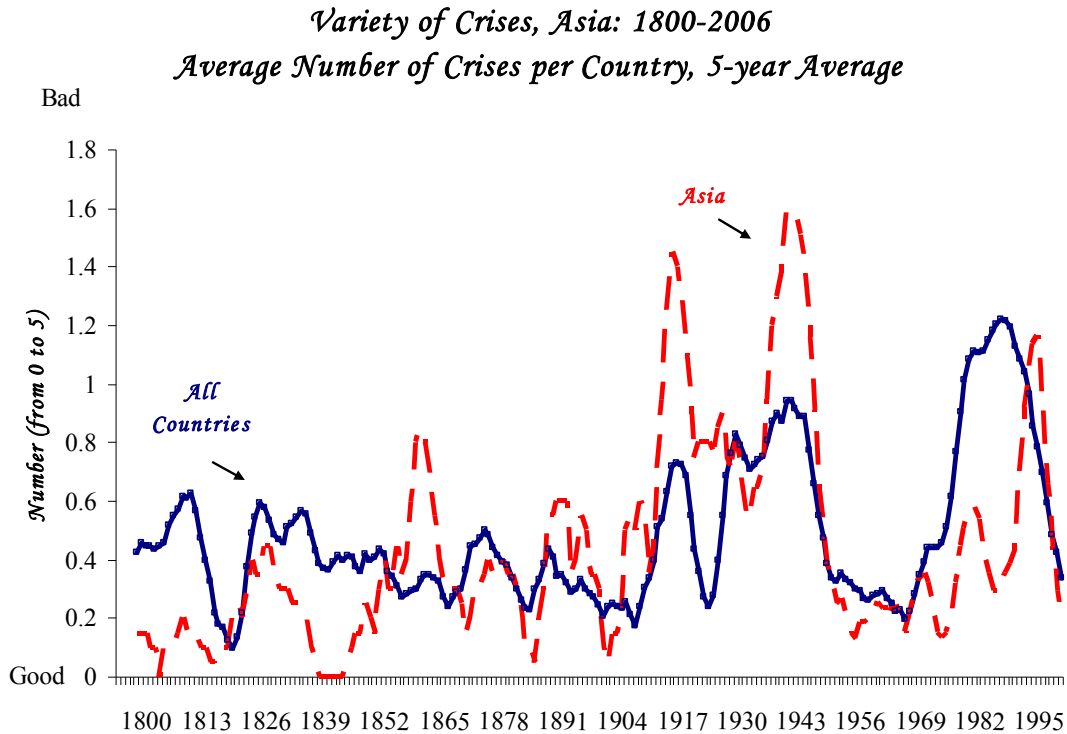
Sources: The authors' calculations on the basis of the data reported in Appendices I and II and the crises definitions described earlier.
Notes: We deal with five "varieties" of economic crises (external default, domestic default, banking crises, currency crashes, and inflation outbursts), and all these variables take on the value of one when there is a crisis and zero otherwise. Thus, in a tranquil year the tally across crises for that particular country would total zero, while in the worst-case scenario (Argentina 2002, for instance) it would sum to five. Hence, each country has an entry each year in the 0–5 range. We next take simple averages across all countries or across countries in a particular region and these are the time series shown above.

Our principle aim here has been to illustrate some core features of this sweeping

database, trying to 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 in emerging markets, 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 there are relying more on domestic debt financing.

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. 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 would have fared had Britain been a bit 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? The case of France is interesting because that country, after

defaulting more than any other country (8 times) through the late eighteenth century, did not default thereafter. Certainly part of France's success lies in its ability to enjoy its own industrial revolution and therefore achieve extremely rapid income growth.

Interesting 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 pay down its external debt to an extremely low level. True graduation, of course, would mean that Chile could start raising its debt levels if needed (say, to benefit from countercyclical fiscal policy) without quickly 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. It is an interesting question whether, through deeper economic integration, the United States can offer the same pull to Latin countries as the European Union has done 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, concluding that countries like Hungary and Greece will never default again because "this time is different due to the European Union" may prove a very 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. Those are devoted to the macroeconomic time series used and the public debt data (which is the centerpiece of our analysis), respectively.

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—more details to follow. 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

1. Prices

Since an overarching theme of our analysis is to document the incidence and magnitude of various forms of expropriation or default through the ages, no such study would be complete without taking stock of expropriation through inflation. Following the rise of fiat currency, inflation became the modern-day version of currency debasement. To that end, 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).[19] Our data sources for the modern period are primarily the standard databases of the International Monetary Fund—*International Financial Statistics* (IFS) and *World Economic Outlook* (WEO). For pre–World War II coverage (usually from the early 1900s or late 1800s), *Global Financial Data* (GFD) and Williamson et al., and the Oxford Latin American History Database (OXLAD, http://oxlad.qeh.ox.ac.uk/) 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 California, Davis (http://gpih.ucdavis.edu/) and their counterparts at the Dutch International Institute of Social History (http://www.iisg.nl/hpw/) have been an invaluable source for prices is Europe and Asia.[20] The complete references by author to this body of scholarly work are given in Appendix I and in the references. For colonial America, the Historical Statistics of the United States (HSUS , http://hsus.cambridge.org) recently updated the U.S. data, while Richard Gardner (Economic History Data Desk: Economic History of Latin America, the United States and the New World, 1500–1900, at http://home.comcast.net/~richardgarner04/) covers key cities in Latin America.

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[19] These regional papers provided time series for numerous developing countries for the mid-1800s to pre–WWII.

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

On methodology

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. We realize that a single commodity (even if it is the most important one) is a relative price, rather than the aggregate we seek, so if on any given year we have at least one consumer (or cost-of-living) price series and the price of wheat (or rice)—we do not average the two but give full weight to the composite price index. Finally, from 1980 to the present the WEO data dominates all other sources, as it enforces uniformity—although for the recent period discrepancies across these price indices is, at most, trivial.

2. Exchange rates, modern and early, and currency debasement

The handmaiden to inflation is, of course, currency depreciation. For post–World War II data, our primary sources for exchange rates are IFS for official rates and Pick's *Currency Yearbooks* for market-based rates, as quantified and documented in detail 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, as described in Appendix I. Less modern are the exchange rates for the late1600s–early1800s for a handful of European currencies, which are taken from John Castaing's Course of Exchange, which appeared twice a week (on Tuesdays and Fridays) from 1698 throughout the following century or so (see European State Finance Data Base, ESFDB, http://www.le.ac.uk/hi/bon/ESFDB/frameset.html.)

The earlier "silver-based" exchange rates were calculated by these authors (trivially) from the time series provided primarily by Robert Allen (for other sources see Appendix I, Table AI.4,

which lists individual authors), who constructed continuous annual series on the silver content of several European currencies).[21] The earliest series begin in the mid-13th century for Italy and England. As we describe in this appendix, these series are the foundation for dating and quantifying the "debasement crises"—the precursors of modern devaluations.

3. Real GDP

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 http://www.ggdc.net/). 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). We do not attempt to include in our study aggregate measures of real economic activity prior to 1800.[22]

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,

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[21] Sevket Pamuk constructs comparable series for Turkey through World War I.

[22] There are exceptions. For instance, Rodney Edvinsson's careful estimates for Sweden 1720–2000 or HSUS for the US beginning in 1790 offer a basis on which to examine earlier economic cycles and their relation to crises.

such as an output index or, most often, central government revenues—for which we have long

continuous time series. [23] 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 still provides a reasonable measure of a

particular country's share of world GDP, as this share usually does not change drastically from year

to year.

4. Exports

Though subject to chronic misinvoicing problems,[24] the external accounts are most often

available for longer periods. Misinvoicing not withstanding, 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 listed in Data Appendix I 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

1. Public finances

Government finances are primarily taken from Mitchell for the pre-1963 period and from

Kaminsky, Reinhart, and Végh (2004) and sources cited therein for the more recent period. 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 central government revenues and expenditures date back to the colonial period.

Details on individual country coverage are presented in Appendix Table AI.7. In nearly all cases,

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[23] It is well known that revenues are intimately linked to the economic cycle.
[24] See, for example, calculations in the background material to Reinhart and Rogoff (2004), http://www.publicpolicy.umd.edu/faculty/reinhart/PartII_Dual.pdf.

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, as it offers considerable detail on government revenues and expenditures, not to mention extensive bibliographical references.

2. National Accounts

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 Brahmananda for India, Baptista for Venezuela, and Yousef for Egypt, are incorporated into our collection.

III. Public Debt and its Composition

One would think that with at least 250 sovereign external default episodes during 1800–2007 and at least 70 cases of default on domestic public debt (not to mention the significant economic disruption associated with these events), it would be relatively straightforward to find a comprehensive long time series on public sector debt.[25] Yet, this is not the case—far from it. Government debt is among the most elusive of economic time series.

For the advanced economies, the most comprehensive data comes from the OECD, which provides time series on general government debt since 1980. However, this data has several important limitations: it only includes a handful of emerging markets; for many advanced economies (France, Finland, Greece, and the U.K., to name a few), the data actually begins much later in the 1990s, which cannot be considered as much of a time series; and only total debt is

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[25] These numbers are a lower bound, since they do not include the many sovereign defaults prior to 1800 and, as regards domestic defaults, we have only begun to skim the surface, see Reinhart and Rogoff (2008).

reported, with no particulars provided of the composition of debt (domestic versus foreign) or its maturity (long-term versus short-term). To state that the IMF's well-known *World Economic Outlook* (WEO) database extends to public debt requires a stretch of the imagination.[26] Data is only provided for the G-7 from 1980 onward (out of 180 countries covered in the WEO).

The most comprehensive data on public debt comes from the World Bank's *Global Development Finance* (GFD, known previously as the World Debt Tables). It is an improvement on the other databases in that it begins (for most countries) in 1970 and it provides extensive detail on the particulars of *external* debt. Yet, GFD also has serious limitations. There are no advanced economies included in the database (nor newly-industrialized countries (such as Israel, Korea, or Singapore, for that matter) to facilitate comparisons. Unlike data from the IMF and the World Bank for exchange rates, prices, government finances, etc., there is no data prior to 1970. Last, but certainly not least, these data only cover external debt. In a few countries, such as Panama or Côte D'Ivoire, external debt is a sufficient statistic on government liabilities, since domestic public debt levels are relatively trivial. As Reinhart and Rogoff (2008) illustrate, however, for most countries domestic debt accounts for an important share of total government debt. The all-country average oscillates between 40 to 80 percent during 1900–2006.[27]

In search of the elusive data on total public debt, we examined the archives of the global institutions' predecessor, the League of Nations, and found that this institution collected information on, among other things, public domestic and external debt in its *Statistical Yearbook* (1926–1944). While, neither the IMF nor the World Bank continued this practice after the war, the newly-formed United Nations (UN) inherited the data collected by the League of Nations and in 1948 its Department of Economic Affairs, published a special volume on public debt, spanning 1914–1946. From that time onwards the UN continued to collect and publish the domestic and external debt data in the same format as their pre-war predecessor on an annual basis in their

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[26] This description comes from the IMF's web site: "Download time series data for GDP growth, inflation, unemployment, payments balances, exports, imports, external debt, capital flows, commodity prices, more."
[27] For some countries, such as the Netherlands, Singapore, and the United States, practically all public debt is domestic.

Statistical Yearbooks. As former colonies became independent nations, the database expanded accordingly. This practice continued until 1983, at which time the domestic and external public debt series were discontinued altogether. In total, these sources yield time series that span 1914–1983 for the most complete cases. It covers advanced and developing economies. For the most part, it also disaggregated domestic debt into its long-term and short-term components. To the best of our knowledge, this data is not available electronically in any database, hence it required going to the original publications. This data provides the starting point for our public debt series, which have been (where possible) extended to the period prior to 1914 and post-1983.

For data prior to 1914 (including several countries that were then colonies)[28], we consulted numerous sources, both country-specific statistical and government agencies and individual scholars. Data Appendix II provides details or 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 including Lindert and Morton, Marichal, Miller, and Wynne, among others. From these data, we construct a foreign debt series (but, not total debt).[29] 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.[30]

For some countries (or colonies in the earlier period) where we have only relatively recent data for total public debt, but have reliable data going much further back on central government

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

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

[30] 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.

revenues and expenditures, we calculate and cumulate fiscal deficits to provide a rough

approximation to the debt stock.[31]

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 date 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

domestic debt data, often under the IMF's 1996 initiative, *Special Data Dissemination Standard.*

IV. Global variables

Global variables (for lack of a better name, since this term is of fairly recent vintage) 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, 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 while the

other is based on a chronology of events. This approach is similar to that followed in Kaminsky

and Reinhart (1999), who used quantitative thresholds to date currency crises and events to date

banking crises. Details follow.

1. Crises defined by quantitative thresholds: currency crashes, debasement, and inflation

Inflation crises

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[31] Indonesia prior to 1972 is a good example where this exercise was particularly useful.

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 our earlier work (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 highlights, hyperinflations are of modern vintage, with Hungary 1946 holding the record in our sample.

Currency crashes

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 (as in Frankel and Rose, 1996 and Kaminsky and Reinhart, 1999) 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, however, goes to Greece in 1944.

Table A1. Defining Crises: A Summary of Quantitative Thresholds			
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 1800–1913 1914–2006	173.1 159.6 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 1914–2006	275.7 3.37E+09
Currency debasement: Type I	A reduction in the metallic content of coins in circulation of **5 percent** or more.	1258–1799 1800–1913	−56.8 −55.0
Currency debasement: Type II	A currency reform 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.	

Currency debasement

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. Figure A1, which depicts the track record for Russia and Austria during the Napolenic Wars, is indeed representative of many more episodes.

Finally, we also date currency "reforms" or conversions and their magnitudes. Such conversions form a part of every hyperinflation episode in our sample, 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 from1986 to1994. 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 (but not necessarily hyper inflation), and these cases are also included in our list of modern debasements.

Figure A1. Changes in the Silver Content of the Currency: Austria and Russia During the Napolenic Wars, 1799-1815
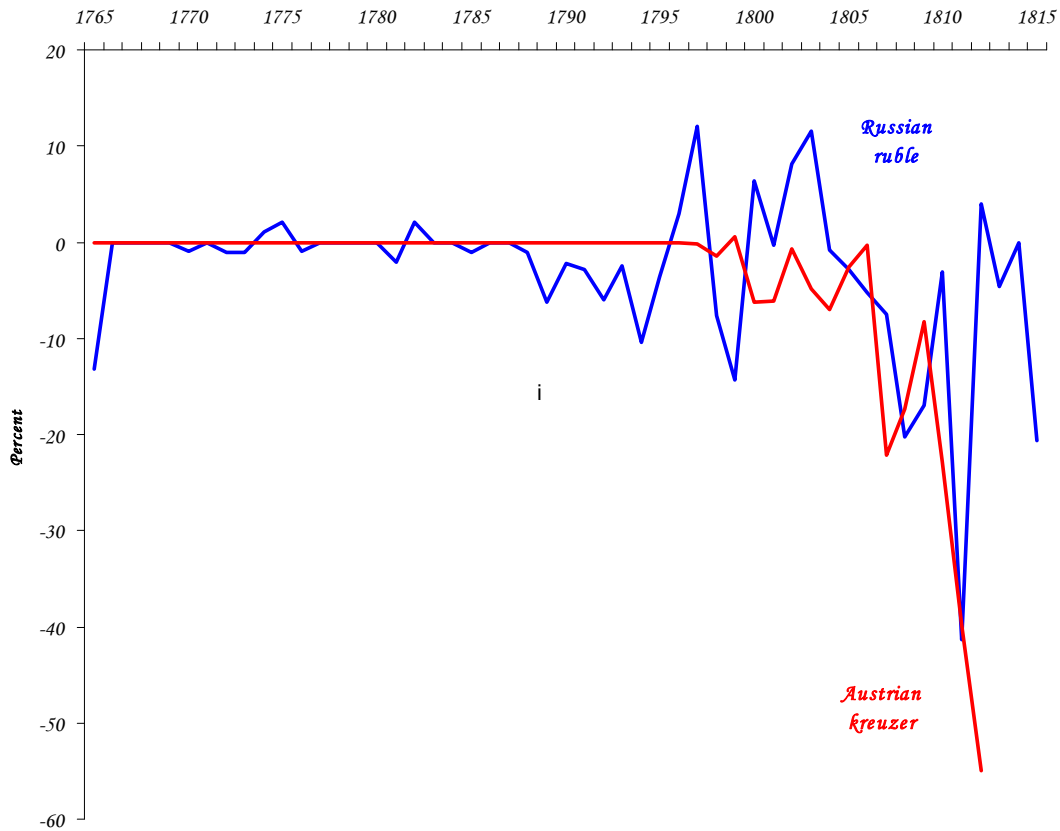
The same quantitative methodology could be applied to date the burst of asset price bubbles (equity or real estate) that are so commonplace in the run-up to banking crises, but we do not encompass such episodes in this study and leave it for future research.[32]

2. Crises defined by events: banking crises and domestic and external debt defaults

In this section, 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.

Banking Crises

With regard to banking crises, our analysis stresses events. The main reason for following this approach has to do with the lack of long time series data that allows us to date banking or

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[32] See Kaminsky and Reinhart (1999) for the construction of thresholds to date equity price crashes and Reinhart and Rogoff (2008) for a depiction of the behavior of real estate prices on the eve of banking crises in industrialized economies.

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 domestic banks do not have publicly traded equity).

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, if at all; 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: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions (as in Venezuela in 1993 or Argentina in 2001); and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions), that marks the start of a string of similar outcomes for other financial institutions (as in Thailand 1996–97). We rely on existing studies of banking crises and on the financial press; according to these studies the fragility of the banking sector was widespread during these periods.

Many country-specific studies (such as Camprubi, 1957, for Peru; Cheng, 2003, and McElderry, 1976, 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; Kaminsky and Reinhart (1999), and Jacome (2008) for Latin America round out the

sources. For pre–World War II, Kindleberger (1989), Bordo et al. (2001), and Willis (1926)

provide multicountry coverage on banking crises.

We relegate a summary discussion of the limitations of this event-based dating approach to

Table A2, while the years in which the banking crises began are listed in Table A3—unfortunately,

for many of the early episodes it is difficult to ascertain how long the crisis lasted.

Table A2. Defining Crises by Events: A Summary		
Type of Crisis	Definition and/or Criteria	Comments
Banking crisis Type I: systemic/severe Type II: financial distress/ milder	We mark a banking crisis by two types of events: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions; and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions), that marks the start of a string of similar outcomes for other financial institutions.	This approach to dating the beginning of 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.
Debt crises: **External**	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.	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. Fort his reason we also work with a crisis dummy that only picks up the first year.
Debt crisis: **Domestic**	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.	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.

External Debt Crises

External debt crises involve outright default on payment of external debt obligations (Argentina 2001 holds the record for the largest default), repudiation (as in Mexico 1867, when an over 100 million pesos of debt, issued by Maximillian, was repudiated by the Juarez government), or the restructuring of debt into terms less favorable to the lender than those in the original contract (for instance, India's little-known external restructurings in 1958–1972.

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.[33] 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). Of course, required reading in this field includes Winkler (1933) and Wynne (1951).

Methodology

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.[34] Looking at 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—even if they weren't exactly prosperous years. Thus, in addition to constructing the country-specific dummy variables to cover the entire episode,

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[33] This is not meant to be an exhaustive list of the scholars that have worked on historical sovereign defaults.
[34] At present, Honduras remains in default since 1981, 27 years.

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. As in Reinhart and Rogoff (2008), this allows us to analyze the behavior of various economic and financial indicators surrounding the crisis.

Domestic Debt Crises

Information on domestic debt crises is scarce but it is not because these crises do not take place. Indeed, as Reinhart and Rogoff (2008) 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. Of course, this is not always the case, Mexico's much-publicized near-default in 1994–1995 would have been a "famous" domestic default crisis indeed, since the dollar-linked government debt, the Tesebonos, that were on the verge of default, were issued under domestic law and were part of domestic debt. One can only speculate that if the Tesobonos had not been so widely held by nonresidents, perhaps this crisis would have received less attention. Since 1980, Argentina has defaulted three times on its domestic debt—the two defaults that coincided with defaults in external debt (1982 and 2001) did attract considerable international attention. The large-scale 1989 default that did not involve a new default on external debt and did not involve nonresidents is scarcely known in the literature. Even the many defaults on domestic debt during the Great Depression in advanced economies and developing ones are not well documented.

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 well known.

Table A3. Banking Crises Dates and Capital Mobility: 1800–2007

High Income		Middle Income		Low Income	
Country (ies)	BeginningYear	Country (ies)	BeginningYear	Country (ies)	BeginningYear
Capital Mobility: Low-Moderate, 1800–1879					
Denmark	1813				
US	1818				
UK, US	1825				
US	1836				
UK	1837				
UK	1847				
Belgium	1848				
UK, US	1857			India	1863
Italy, UK	1866				
Austria, US	1873	Peru	1873		
		South Africa	1877		
Capital Mobility: High, 1880–1914					
Germany	1880				
France	1882	Mexico	1883		
US	1884				
Denmark	1885				
Italy	1887				
France	1889				
UK, US	1890	Argentina, Brazil, Chile, South Africa	1890		
Germany, Italy, Portugal	1891				
Australia	1893				
Netherlands, Sweden	1897				
Norway	1898	Chile	1899		
Finland	1900	Brazil	1900		
Germany, Japan	1901				
Denmark, France, Italy, Japan, Sweden, US	1907	Mexico	1907		
		Chile	1908		
		Mexico	1913	India	1913
Belgium, France, Italy, Japan, Netherlands, Norway, UK, US	1914	Argentina, Brazil	1914		
Capital Mobility: Low, 1915–1919					
		Chile	1915		

Table A3. Banking Crises Dates and Capital Mobility: 1800–2007 (continued)					
High Income		Middle Income		Low Income	
Country (ies)	BeginningYear	Country (ies)	BeginningYear	Country (ies)	BeginningYear
Capital Mobility: Moderate, 1920–1929					
Portugal	1920	Mexico	1920		
Finland, Italy, Netherlands, Norway	1921			India	1921
Canada, Japan, Taiwan	1923	China	1923		
Austria	1924				
Belgium, Germany	1925	Brazil, Chile	1926		
Japan, Taiwan	1927				
US	1929	Brazil, Mexico	1929	India	1929
Capital Mobility: Low, 1930–1969					
France, Italy	1930				
Belgium, Finland, Germany, Greece, Portugal, Spain, Sweden	1931	Argentina, Brazil, China	1931		
Belgium	1934	Argentina, China	1934		
Italy	1935	Brazil	1937		
Belgium, Finland	1939				
				India	1947
		Brazil	1963		
Capital Mobility: Moderate, 1970–1979					
		Uruguay	1971		
UK	1974	Chile	1976	Central African Republic	1976
Germany, **Israel, Spain**	1977	South Africa	1977		
		Venezuela	1978		

Table A3. Banking Crises Dates and Capital Mobility: 1800–2007 (continued)					
High Income		Middle Income		Low Income	
Country (ies)	BeginningYear	Country (ies)	BeginningYear	Country (ies)	BeginningYear
Capital Mobility: Moderate, 1920–1929					
Portugal	1920	Mexico	1920		
Finland, Italy, Netherlands, Norway	1921			India	1921
Canada, Japan, Taiwan	1923	China	1923		
Austria	1924				
Belgium, Germany	1925	Brazil, Chile	1926		
Japan, Taiwan	1927				
US	1929	Brazil, Mexico	1929	India	1929
Capital Mobility: Low, 1930–1969					
France, Italy	1930				
Belgium, Finland, Germany, Greece, Portugal, Spain, Sweden	1931	Argentina, Brazil, China	1931		
Belgium	1934	Argentina, China	1934		
Italy	1935	Brazil	1937		
Belgium, Finland	1939				
				India	1947
		Brazil	1963		
Capital Mobility: Moderate, 1970–1979					
		Uruguay	1971		
UK	1974	Chile	1976	Central African Republic	1976
Germany, **Israel, Spain**	1977	South Africa	1977		
		Venezuela	1978		

Table A3. Banking Crises Dates and Capital Mobility: 1800–2007 (continued)					
High Income		Middle Income		Low Income	
Country (ies)	BeginningYear	Country (ies)	BeginningYear	Country (ies)	BeginningYear
		Capital Mobility: High, 1980–2007			
France	1994	Armenia, Bolivia, Bulgaria, Costa Rica, Jamaica, Latvia, Mexico, Turkey	1994	Burundi, Congo (Rep.), Uganda	1994
UK	1995	Argentina, Azerbaijan, Brazil, Cameroon, Lithuania, Paraguay, Russia, Swaziland,	1995	Guinea-Bissau, Zambia, Zimbabwe	1995
		Croatia, Ecuador, Thailand	1996	Myanmar Yemen	1996
Taiwan	1997	Indonesia, Korea, Malaysia, Mauritius, Philippines, Ukraine	1997	Vietnam	1997
		Colombia, Ecuador, El Salvador Russia	1998		
		Bolivia, Honduras, Peru	1999		
		Nicaragua	2000		
		Argentina, Guatemala	2001		
		Paraguay Uruguay	2002		
		Dominican Republic	2003		
		Guatemala	2006		
US	2007				

Data Appendix I. Macro Time Series

This data appendix covers the macro time series used, while a separate appendix is devoted to the database on government debt.

Abbreviations of Frequently-used Sources (Additional sources listed in tables below)

DIA: Diaz (et. al)
ESFDB: European State Finance Data Base
GFD: Global Financial Data
GPIHG: Global Price and Income History Group
IISH: International Institute of Social History
IFS: *International Financial* Statistics, IMF.
KRV: Kaminsky, Reinhart, and Vegh
MAD: Maddison
MIT: Mitchell
OXF: Oxford Latin American History Database
RR: Reinhart and Rogoff
TED: Total Economy Database
WEO: *World Economic Outlook,* IMF

List of Tables

Table AI. 1 Prices: Consumer or cost-of-living indices
(unless otherwise noted)

Country	Period covered	Sources	Commentary
Algeria	1869-1884	Hoffman et. al.	Wheat prices
	1938-2007	GFD/WEO	
Angola	1914-1962	MIT	
	1991-2007	WEO	
Argentina	1775-1812	Gardner	Buenos Aires only
	1864-1940	Williamson et. al.	
	1884-1913	Flandreau & Zumer	
	1900-2000	OXF	
	1913-2000	Diaz et. al.	
	1913-2007	GFD/WEO	
Australia	1818-1850	Butlin, Vanplew, GPIHG	New Wales, food prices
	1850-1983	Shergold, GPIHG	Sidney, food
	1861-2007	GFD/WEO	
Austria	1440-1800	Allen	Vienna
	1800-1914	Hoffman et. al.	Wheat prices
	1880-1913	Flandreau & Zumer	
	1919-2007	GFD/WEO	
Belgium	1462-1913	Allen	Antwerp
	1835-2007	GFD/WEO	
Bolivia	1936-2007	GFD/WEO	
Brazil	1763-1820	Garner	Rio de Janeiro only
	1830-1937	Williamson et. al.	Rio de Janeiro only
	1861-2000	Diaz et. al.	
	1912-2007	GFD/WEO	
Canada	1867-1975	CanStat	
	1910-2007	GFD/WEO	
Central African Republic	1956-1993	MIT	
	1980-2007	WEO	
Chile	1754-1806	Garner	Santiago only
	1810-2000	Diaz e. al.	
	1900-2000	OXF	
	1913-2007	GFD/WEO	
China	1500-1910	Peng	Rice prices
	1638-1936	Wang	Rice prices
	1867-1935	Hsu	Wholesale prices
	1926-1948, 1978-2007	GFD/WEO	
Colombia	1863-1940	Williamson et. al.	
	1900-2000	OXF	
	1923-2007	GFD/WEO	
Costa Rica	1937-2007	GFD/WEO	
Cote D'Ivoire	1951-2007	GFD/WEO	
Denmark	1748-1800	Hoffman et. al.	Wheat prices
	1815-2007	GFD/WEO	
Dominican Republic	1942-2000	OXF	
	1980-2007	WEO	
Ecuador	1939-2007	GFD/WEO	

Table AI.1 Prices: Consumer or cost-of-living indices-continued
(unless otherwise noted)

Country	Period covered	Sources	Commentary
Egypt	1859-1941	WILL	
	1913-2007	GFD/WEO	
	1915-1999	GFD	
El Salvador	1937-2000	OXD	
	1980-2007	WEO	
Finland	1860-2001	Finnish Historical National Accounts	
	1980-2007	WEO	
France	1431-1786	Allen	
	1840-1913		
	1807-1935	Dick	Retail prices
	1840-2007	GFD/WEO	
Germany	1427-1765	Allen	Munich
	1637-1855	Hoffman et. al.	Wheat prices
	1820-2007	GFD/WEO	
Greece	1833-1938	Kostelenos et. al.	GDP deflator
	1922-2007	GFD/WEO	
Ghana	1949-2007	GFD/WEO	
Guatemala	1938-2000	OXD	
	1980-2007	WEO	
Honduras	1938-2000	OXD	
	1980-2007	WEO	
Hungary	1923-2007	GFD/WEO	
India	1866-2000	Diaz et. al.	
	1873-1939	Williamson et. al.	
	1913-2007	GFD/WEO	
Indonesia	1820-1940	Williamson et. al.	
	1948-2007	GFD/WEO	
Italy	1548-1645	Allen	Naples
	1734-1806		
	1701-1860	DeMaddalena	Wheat prices, Milan
	1861-2007	GFD/WEO	
Korea	1690-1909	Jun & Lewis	Rice prices in the southern region of Korea
	1906-1939	Williamson et. al.	
	1948-2007	GFD/WEO	
Japan	1600-1650	Kimura	Rice prices, Osaka
	1818-1871	Bunko	Rice prices, Osaka
	1860-1935	Williamson et. al.	
	1900-2007	GFD/WEO	
Kenya	1947-2007	GFD/WEO	
Malaysia	1948-2007	GFD/WEO	
Mauritius	1946-2007	GFD/WEO	

Table AI.1 Prices: Consumer or cost-of-living indices-continued
(unless otherwise noted)

Country	Period covered	Sources	Commentary
Mexico	1786-1821	Garner	Zacatecas
	1877-1940	Williamson et. al.	
	1918-2007	GFD/WEO	
Morocco	1939-3007	GFD/WEO	
Myanmar (Burma)	1870-1940	Williamson et. al.	
	1939-2007	GFD/WEO	
Netherlands	1500-1800	Van Zanden	
	1800-1913	Van Riel	
	1880-2007	GFD/WEO	
New Zealand	1857-2004	Statistics New Zealand	
	1980-2007	WEO	
Nicaragua	1937-2007	GFD/WEO	
Nigeria	1953-2007	GFD/WEO	
Norway	1516-2005	Grytten	
	1980-2007	WEO	
Panama	1939-2000	OXD	
	1980-2007	WEO	
Paraguay	1938-2007	GFD/WEO	
	1750-1816	Garner	Potosi
Peru	1790-1841	Garner	Lima
	1800-1873	Diaz et. al.	
	1913-2000		
	1980-2007	WEO	
Philippines	1899-1940	Williamson et. al.	
	1937-2007	GFD/WEO	
Poland	1701-1815	Hoffman et. al.	Oats Prices-Warsaw
	1816-1914	Allen	Warsaw
	1921-1939	GFD/WEO	
	1983-2007		
Portugal	1728-1893	Hoffman et. al.	Wheat prices
	1881-1997	Bordo et. al.	
	1980-2007	WEO	
Romania	1779-1831	Hoffman et. al.	Wheat prices, Wallachia
	1971-2007	WEO	
Russia	1853-1910	Borodkin	Wheat and rye flour, St. Petesburg
	1880-1913	Flandreau & Zumer	
	1917-1924, 1927-1940, 1944-1972, 1991-2007	GFD/WEO	
Singapore	1948-2007	GFD/WEO	
South Africa	1895-2007	GFD/WEO	
Spain	1500-1650	Hamilton	Valencia
	1651-1800	Hamilton, Hoffman et. al.	Wheat, eggs, and linen prices
	1800-2000	Diaz et. al.	
	1980-2000	WEO	
Sri Lanka	1939-2007	GFD/WEO	

Table AI.1 Prices: Consumer or cost-of-living indices-concluded
(unless otherwise noted)

Country	Period covered	Sources	Commentary
Sweden	1732-1800	Hoffman et. al.	Wheat prices
	1800-2000	Edvinsson	
	1980-2007	WEO	
Taiwan	1897-1939	Williamson et. al.	
	1980-2007	WEO	
Thailand (Siam)	1820-1941	Williamson et. al.	
	1948-2007	GFD/WEO	
Tunisia	1939-2007	GFD/WEO	
Turkey	1469-1914	Pamuk	Istanbul
	1854-1941	Williamson et. al.	
	1922-2007	GFD/WEO	
United Kingdom	1450-1999	Van Zanden	Southern England
	1781-2007	GFD/WEO	
United States	1720-1789	Historical Statistics of the United States	Wholesale prices
	1774-2003	Historical Statistics of the United States	
	1980-2007	WEO	
Uruguay	1870-1940	Williamson et. al.	
	1929-2000	OXF	
	1980-2007	WEO	
Venezuela	1830-2002	Baptista	
	1914-2007	GFD/WEO	
Zambia	1938-2007	GFD/WEO	
Zimbabwe	1920-1970	Mitchell	
	1930-2007	GFD/WEO	

Table AI.2 Modern Nominal Exchange Rates
(Domestic currency units per US dollar and other currencies noted)

Country	Period covered	Source	Other relevant rates
Algeria	1831-2007	GFD/IFS	French francs/euro
Angola	1921-2007	GFD/IFS	
Argentina	1880-1913	Flandreau & Zumer	French francs
	1885-2007	GFD/IFS	
Australia	1835-2007	GFD/IFS	UK pound
Austria	1814-2007	GFD/IFS	UK pound, German DM
Belgium	1830-2007	GFD/IFS	French francs
Bolivia	1863-2007	GFD/IFS	
Brazil	1812-2007	GFD/IFS	UK pound
Canada	1858-2007	GFD/IFS	UK pound
Central African Republic	1900-2007	GFD/IFS	French francs
Chile	1830-1995	Braun et. al.	UK pound
	1878-2007	GFD/IFS	
China	1848-2007	GFD/IFS	UK pound
Colombia	1900-2000	OXF	UK pound
	1919-2007	GDF/IFS	
Costa Rica	1921-2007	GDF/IFS	
Denmark	1864-2007	GDF/IFS	UK pound, German DM
Dominican Republic	1905-2007	GDF/IFS	
Ecuador	1898-2000	OXF, Picks	
	1980-2007	IFS	
Egypt	1869-2007	GFD/IFS	UK pound
El Salvador	1870-2007	GFD/IFS	
Finland	1900-2007	GFD/IFS	German DM
France	1619-1810	ESTDB/Course of the Exchange	UK pound
	1800-2007	GFD/IFS	UK pound, German DM
Germany	1698-1810	ESTDB/Course of the Exchange	UK pound
	1795-2007	GFD/IFS	
Greece	1872-1939	Lazaretou	UK pound, German DM
	1901-2007	GFD/IFS	
Guatemala	1900-2007	GFD/IFS	
Honduras	1870-2007	GFD/IFS	
Hungary	1900-2007	GFD/IFS	Austrian schilling
India	1823-2007	GFD/IFS	UK pound
Indonesia	1876-2007	GFD/IFS	Dutch guilder
Italy	1816-2007	GFD/IFS	UK pound, German DM
Japan	1862-2007	GFD/IFS	UK pound
Kenya	1898-2007	GFD/IFS	UK pound
Korea	1905-2007	GFD/IFS	Japanese yen
Malaysia	1900-2007	GFD/IFS	UK pound
Mauritius	1900-2007	GFD/IFS	UK pound
Mexico	1814-2007	GFD/IFS	UK pound, French franc
	1823-1999	GFD	

Table AI.2 Modern Nominal Exchange Rates-concluded
(Domestic currency units per US dollar and other currencies noted)

Country	Period covered	Source	Other relevant rates
Morocco	1897-2007	GFD/IFS	French franc/euro
Myanmar (Burma)	1900-2007	GFD/IFS	UK pound
Netherlands	1698-1810	ESTDB/Course of the Exchange	UK pound
	1792-2007	GFD/IFS	German DM
New Zealand	1892-2007	GFD/IFS	UK pound
Nicaragua	1912-2007	GFD/IFS	
Nigeria	1900-2007	GFD/IFS	UK pound
Norway	1819-2007	GFD/IFS	Swedish krona, German DM
Panama	1900-2007	GFD/IFS	
Paraguay	1900-2000	OXD	Argentine peso
	1980-2007	IFS	
Peru	1883-2007	GFD/IFS	UK pound
Philippines	1893-2007	GFD/IFS	Spanish peseta
Poland	1916-2007	GFD/IFS	
Portugal	1750-1865	Course of the Exchange	Dutch grooten
	1794-2007	GDF/IFS	UK pound, German DM
Romania	1921-2007	GDF/IFS	
Russia	1815-2007	GFD/IFS	French franc
	1814-2007	GFD	
	1900-2000	OXF/IFS	
Singapore	1834-2007	GFD/IFS	UK pound
South Africa	1900-2007	GFD/IFS	UK pound
Spain	1814-2007	GFD/IFS	German DM
Sri Lanka	1900-2007	GFD/IFS	UK pound
Sweden	1814-2007	GDF/IFS	UK pound, German DM
Taiwan	1895-2007	GDF/IFS	UK pound, Japanese yen
Thailand (Siam)	1859-2007	GFD/IFS	UK pound
Tunisia	1900-2007	GFD/IFS	French franc
Turkey	1859-2007	GFD/IFS	UK pound
United Kingdom	1619-1810	ESTDB/Course of the Exchange	French franc
	1660-2007	GFD/IFS	
United States	1660-2007	GFD/IFS	
Uruguay	1900-2007	GFD/IFS	
Venezuela	1900-2007	GFD/IFS	
Zambia	1900-2007	GFD/IFS	UK pound
Zimbabwe	1900-2007	GFD/IFS	UK pound

Table AI.3 Early Silver-based Exchange Rates
(Domestic currency units per UK pence)

Country	Period Covered	Source	Currency/Commentary
Austria	1371-1860	RR, Table A4	kreuzer, Vienna
Belgium	1349-1801	RR, Table A4	Hoet
France	1258-1789	RR, Table A4	livre tournois
Germany	1350-1830	RR, Table A4	composite pfenning
Italy	1289-1858	RR, Table A4	lira fiorentina
Netherlands	1366-1800	RR, Table A4	Composite
Portugal	1750-1855	RR, Table A4	Reis
Russia	1761-1840	RR, Table A4	common ruble
Spain	1351-1809	RR, Table A4	Composite
Sweden	1523-1573	RR, Table A4	mark ortug
Turkey	1555-1914	RR, Table A4	Akche

Table AI.4 Silver Content of Currencies

Country	Period Covered	Sources	Currency/Commentary
Austria	1371-1860	Allen & Unger	kreuzer, Vienna
Belgium	1349-1801	Korthals	Hoet
France	1258-1789	Allen & Unger	livre tournois
Germany	1350-1798	Allen & Unger	pfenning/Frankfurt
	1417-1830		pfenning/Augsburg
Italy	1289-1858	Malanima	lira fiorentina
Netherlands	1366-1575	Allen & Unger	Flemish grote
	1450-1800	Van Zanden	Guilder
Portugal	1750-1855	Godinho	Reis
Russia	1761-1840	Lindert, Mironov	common ruble
	1761-1815		Assignatzia
Spain	1351-1650	Allen & Unger	dinar, Valencia
	1501-1800		vellon maravedis, New Castille
	1630-1809	Montfort	Real
Sweden	1523-1573	Soderberg	mark ortug
Turkey	1555-1914	Ozmukur & Pamuk	Akche
United Kindgom	1261-1918	Allen & Unger	Pence
United States	1800-1979	Allen & Unger	Dollar

Table AI.5 Nominal and Real Gross National Product and Output Index
(Domestic currency units)

Country	Period covered	Source	Commentary
Algeria	1950-2007	GFD/WEO/IFS	
Angola	1962-2007	GFD/WEO/IFS	
	1969-2007		
Argentina	1884-1913	Flandreau & Zumer	Nominal
	1875-2000	Diaz et. al.	Index of total production (1995=100)
	1900-2000	OXF	Real (base=1970)
	1900-2007	GFD/WEO	
Australia	1798-2007	GFD/WEO	Nominal
	1820-2000	Diaz.et. al.	Index of total production (1995=100)
Austria			
Belgium	1835-2007	BNB, Centre d'études économiques de la KUL	Nominal
Bolivia			
Brazil	1861-2007	GFD/WEO	Nominal
	1850-2000	Diaz et. al.	Index of total production (1995=100)
	1900-2000	OXF	(base=1970)
Canada			
Central African Republic			
Chile	1810-2000	Diaz et. al.	Index of total production (1995=100)
China			
NNP	1962-1999	GFD	
Colombia	1900-2000	OXF	Real, (base=1970)
	1925-1999	GFD	
Costa Rica	1947-1999	GFD	
Cote D' Ivoire			
Denmark	1818-1975	Nordic Historical National Accounts	
Dominican Republic			
Ecuador			
Egypt	1886-1945	Yousef	
	1952-2007	GFD/WEO	
	1821-1859	Landes	Cotton output
El Salvador			
Finland	1860-2001	Nordic Historical National Accounts	
France			
Germany			
Greece	1833-1939	Kostelenos et. al.	
	1880-1913	Flandreau & Zumer	
GNI	1927-1999	GFD	
	1948-1999	GFD	
Guatemala			
Honduras			

Table AI.5 Nominal and Real Gross National Product and Output Index
(Domestic currency units)

Country	Period covered	Source	Commentary
India	1900-1921, 1948-2007	GFD/WEO	
	1861-1899	Brahamanda	Real, per capita
	1820-2000	Diaz et. al.	Index of total production
Indonesia	1815-1913	VanZanden	Java
	1910-1970	Bassino and Van der Eng	
	1921-1939, 1951-1999	GFD	
	1911-1938, 1953-1999	GFD	
Korea	1911-1940	Myun Soo Cha and Nak Kim	Thousand yen,GNI also calculated
GNI	1953-1999	GFD	
Malaysia	1910-1970	Bassino and Van der Eng	
	1949-1999	GFD	
Mexico	1820-2000	DIA	Index of total production (1995=100)
	1900-2000	OXF	
	1900-2000	OXF	Real, (base=1970)
	1925-1999	GFD	
Myanmar (Burma)	1913-1970	Bassino and Van der Eng	
	1950-1999	GFD	
Netherlands	1800-1913	National Accounts of the Netherlands	
Norway	1830-2003	Grytten	
Peru	1900-2000	OXF	Real (base=1970)
	1900-2000	OXF	Nominal
	1942-1999	GFD	
Philippines	1910-1970	Bassino and Van der Eng	
	1946-2997	GFD/WEO	
Poland			
Portugal			
Russia	1885-1913	Flandreau & Zumer	Nominal
GNI	1928-1940, 1945-1995	GFD	
	1979-1997	GFD	
	1992-1999	GFD	Production
South Africa	1911-1999	GFD	
Spain			
Sri Lanka	1900-1970	Bassino and Van der Eng	
Sweden	1720-2000	Edvinsson	Real, per capita
	1800-2000		Nominal and real
Taiwan	1910-1970	Bassino and Van der Eng	
Thailand (Siam)			
	1946-2007	GFD/WEO	
	1910-1970	Bassino and Van der Eng	

Table AI.5 Nominal and Real Gross National Product and Output Index
(Domestic currency units)

Country	Period covered	Source	Commentary
Tunisia			
Turkey	1923-2005		Nominal
	1950-1999	GFD	
United Kingdom	1830-1999	GFD	GNI
	1948-1999	GFD	
United States	1790-2002	Historical Statistics of the United States	Real, per capita
	1948-1999	GFD	
Uruguay	1935-1999	GFD	
	1955-2000	OXF	
	1900-2000	OXF	Real (base=1970)
GNI	1955-1999	GFD	
Venezuela	1830-2002	Baptista	
	1900-2000	OXF	Real (base=1970)
	1950-2007	GFD/WEO	
Zambia			
Zimbabwe			

Table AI.6 Gross National Product: PPP in constant dollars
(also available on a per capita basis)

Country	Period covered	Source	Commentary
Algeria	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
Angola	1950-2005	MAD/TED	
Argentina	1875-2000	Diaz et. al	(base=1996)
	1900-2005	MAD/TED	
	1870-2005	RR	Interpolation 1871-1899
Australia	1820-2006	MAD/TED	
Austria	1870-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1869
Belgium	1846-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1845
Bolivia	1945-2005	MAD/TED	
	1936-2005	RR	Interpolation 1936-1944
Brazil	1820-2000	DIA	(base=1996)
	1870-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1869
Canada	1870-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1869
Central African Republic	1950-2003	MAD	
Chile	1810-2000	Diaz et. Al.	(base=1996)
	1820-2005	MAD/TED	
China	1929-1938	MAD/TED	
	1950-2006		
Colombia	1900-2005	MAD/TED	
Costa Rica	1920-2005	MAD/TED	
Denmark	1820-2006	MAD/TED	
Dominican Republic	1950-2005	MAD/TED	
	1942-2005	RR	Interpolation 1942-1949
Ecuador	1939-2005	MAD/TED	
	1900-2000	OXF	(base=1970)
	1900-2005	RR	Interpolation 1900-1938
Egypt	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
El Salvador	1900-2000	OXF	(base=1970)
Finland	1860-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1859
France	1820-2006	MAD/TED	
Germany	1850-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1849
Greece	1921-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1920
Guatemala	1920-2005	MAD/TED	
Honduras	1920-2005	MAD/TED	
Hungary	1824-2006	MAD/TED	
	1870-2006	RR	Interpolation 1871-1923

Table AI.6 Gross National Product: PPP in constant dollars
(also available on a per capita basis)

Country	Period covered	Source	Commentary
India	1884-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1883
Indonesia	1870-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1869
Japan	1870-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1869
Kenya	1950-2005	MAD/TED	
Korea	1911-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1910
Malaysia	1911-2005	MAD/TED	
	1820-2006	RR	Interpolation 1821-1910
Mauritius	1950-2005	MAD/TED	
Mexico	1900-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1899
Morocco	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
Myanmar (Burma)	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
Panama	1945-2005	MAD/TED	
	1939-2005	RR	Interpolation 1939-1944
Paraguay	1939-2005	MAD/TED	
Peru	1895-2005	MAD/TED	
Philippines	1902-2005	MAD/TED	
	1870-2005	RR	Interpolation 1871-1901
Poland	1929-1938	MAD/TED	
	1950-2006		
	1870-2005	RR	Interpolation 1871-1928
Portugal	1865-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1864
Romania	1926-1938	MAD/TED	
	1950-2006		
Russia	1928-2006	MAD/TED	
Singapore	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
South Africa	1950-2005	MAD/TED	
	1905-2005	RR	Interpolation 1905-1949
Spain	1850-2006	MAD/TED	
	1820-2005	RR	Interpolation 1821-1849

Table AI.6 Gross National Product: PPP in constant dollars
(also available on a per capita basis)

Country	Period covered	Source	Commentary
Sweden	1820-2006	MAD/TED	
Thailand (Siam)	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
Tunisia	1950-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1949
Turkey	1923-2005	MAD/TED	
United Kingdom	1830-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1829
United States	1870-2006	MAD/TED	
	1820-2006	RR	Interpolation 1821-1869
Uruguay	1870-2005	MAD/TED	
Venezuela	1900-2005	MAD/TED	
	1820-2005	RR	Interpolation 1821-1899
Zambia	1950-2005	MAD/TED	
Zimbabwe	1950-2005	MAD/TED	
	1919-2005	MAD/TED	

Table AI.7 Central Government Expenditure and Revenue
(Domestic currency units unless otherwise noted)

Country	Period covered	Sources	Commentary
Algeria	1834-1960	MIT	Revenues begin in 1830
	1964-1975		
	1994-1996		
	1963-2003	KRV	
Angola	1915-1973	MIT	
	1980-2003	KRV	
Argentina	1864-1999	MIT	
	1880-1913	Flandreau & Zumer	
	1963-2003	KRV	
Australia	1839-1900	MIT	Revenues begin in 1824, New South Wales and other provinces circa 1840
	1901-1997	MIT	Commonwealth
	1965-2003	KRV	
Austria	1791-1993	MIT	World War I and II, missing data
	1965-2003	KRV	
Belgium	1830-1993		World War I missing data
	1965-2003	KRV	
Bolivia	1888-1999	MIT	Revenues begin 1885
	1963-2003	KRV	
Brazil	1823-1994	IBGE/MIT	
	1980-2003	KRV	
Canada	1806-1840	MIT	Lower Canada
	1824-1840		Upper Canada
	1867-1995		Canada
	1963-2003	KRV	
Central African Republic	1906-1912	MIT	
	1925-1973		
	1963-2003	KRV	
Chile	1810-1995	Braun et. al.	(base=1995)
	1857-1998	MIT	
	1963-2003	KRV	
China	1927-1936	Cheng	Nationalist goverrment
	1963-2003	KRV	
Colombia	1905-1999	MIT	
	1963-2003	KRV	
Costa Rica	1884-1999	MIT	
	1963-2003	KRV	
Cote D'Ivoire	1895-1912	MIT	
	1926-1999		
	1963-2003	KRV	
Denmark	1853-1993	MIT	
	1965-2003	KRV	

Table AI.7 Central Government Expenditure and Revenue
(Domestic currency units unless otherwise noted)

Country	Period covered	Sources	Commentary
Dominican Republic	1905-1999	MIT	
	1963-2003	KRV	
Ecuador	1884-1999	MIT	
	1979-2003	KRV	
Egypt	1821-1879	Landes	
	1852-1999	MIT	
	1963-2003	KRV	
El Salvador	1883-1999	MIT	
	1963-2003	KRV	
Finland	1882-1993	MIT	
	1965-2003	KRV	
France	1600-1785	ESFDB	
	1815-1993	MIT	
	1965-2003	KRV	
Germany (Prussia)	1688-1806	ESFDB	
Germany	1872-1934	MIT	Revenues end in 1942
	1946-1993		West Germany
	1979-2003	KRV	
Greece	1885-1940	MIT	Expenditure begins in
	1954-1993		1833 and again in 1946
	1963-2003	KRV	
Guatemala	1882-1999	MIT	
	1963-2003	KRV	
Honduras	1879-1999	MIT	
	1963-2003	KRV	
Hungary	1868-1940	MIT	
India	1810-2000	MIT	
	1963-2003	KRV	
Indonesia	1821-1940	Mellegers	Netherlands East Indies,
			florins, high government
	1816-1939	MIT	
	1959-1999		
	1963-2003	KRV	
Italy	1862-1993	MIT	
	1965-2003	KRV	
Japan	1868-1993	MIT	
	1963-2003	KRV	
Kenya	1895-2000	MIT	
	1970-2003	KRV	
Korea	1905-1939	MIT	Japanese yen
	1949-1997		South Korea
	1963-2003	KRV	
Malaysia	1883-1938	MIT	Malaya
	1946-1999		
	1963-2003	KRV	
Mauritius	1812-2000	MIT	
	1963-2003	KRV	

Table AI.7 Central Government Expenditure and Revenue
(Domestic currency units unless otherwise noted)

Country	Period covered	Sources	Commentary
Mexico	1825-1998	MIT	
	1963-2003	KRV	
Morocco	1938-2000	MIT	Revenues also 1920-1929
	1963-2003	KRV	
Myanmar (Burma)	1946-1999	MIT	
	1963-2003	KRV	
Netherlands	1845-1993	MIT	
	1965-2003	KRV	
New Zealand	1841-2000	MIT	
	1965-2003	KRV	
Nicaragua	1900-1999	MIT	
	1963-2003	KRV	
Nigeria	1874-1998	MIT	
	1963-2003	KRV	
Norway	1850-1992	MIT	
	1965-2003	KRV	
Panama	1909-1996	MIT	
	1963-2003	KRV	
Paraguay	1881-1900	MIT	Revenues through 1902
	1913-1993		
	1963-2003	KRV	
Peru	1846-1998	MIT	
	1963-2003	KRV	
Philippines	1901-2000	MIT	World War II missing data
	1963-2003	KRV	
Poland	1922-1937	MIT	
	1947-1993		Expenditure only
Portugal	1879-1902	MIT	
	1917-1992		
	1975-2003	KRV	
Romania	1883-1992	MIT	Expenditure begins in 1862
Russia	1769-1815	ESFDB	
	1804-1914	MIT	
	1924-1934		
	1950-1990		
	1914-1921	Katzenellenbaum	
	1931-1951	Condoide	National budget
Singapore	1963-2000	MIT	

Table AI.7 Central Government Expenditure and Revenue
(Domestic currency units unless otherwise noted)

Country	Period covered	Sources	Commentary
South Africa	1826-1904	MIT	Natal begins in 1850
	1905-2000		
	1963-2003	KRV	
Spain	1520-1553	ESFDB	Not continuous
	1753-1788		
	1850-1997	MIT	
	1965-2003	KRV	
Sri Lanka	1811-2000	MIT	
	1963-2003	KRV	
Sweden	1881-1993	MIT	
	1980-2003	KRV	
Taiwan	1898-1938	MIT	
	1950-2000		
Thailand (Siam)	1891-2000	MIT	Revenue begins in 1851
	1963-2003	KRV	
Tunisia	1909-1954	MIT	
	1965-1999		
	1963-2003	KRV	
Turkey	1923-2000	MIT	
	1963-2003	KRV	
United Kingdom	1486-1815	ESFDB	
	1791-1993	MIT	
	1963-2003	KRV	
United States	1789-1994	MIT	
	1960-2003	KRV	
Uruguay	1871-1999	MIT	
	1963-2003	KRV	
Venezuela	1830-1998	MIT	
	1963-2003	KRV	
	1963-2003	KRV	
Zambia	1963-2003	KRV	
Zimbabwe	1894-1997	MIT	
	1963-2003	KRV	

Table AI.8 Total Exports and Imports
(local currency units and US$, as noted)

Country	Period covered	Sources	Currency/ Commentary
Algeria	1831-2007	GFD/WEO	
Angola	1891-2007	GFD/WEO	
Argentina	1864-2007	GFD/WEO	Lcu
	1885-2007	GFD/WEO	US$
	1880-1913	Flandreau & Zumer	Exports
Australia	1826-2007	GFD/WEO	
Austria	1831-2007		
Belgium	1846-2007	GFD/WEO	
	1816-2007	GFD/WEO	US$
Bolivia	1899-1935	GFD	Lcu
	1899-2007		US$
Brazil	1821-2007	GFD/WEO	
	1880-1913	Flandreau & Zumer	Exports
Canada	1832-2007	GFD/WEO	Lcu
	1867-2007		US$
Chile	1857-1967	GFD/WEO	Lcu
China	1865-1937	GFD/WEO	Lcu
	1950-2007		
Colombia	1835-1938		Lcu
	1919-2007	GFD/WEO	US$
Costa Rica	1854-1938	GFD/WEO	Lcu
	1921-2007		US$
Cote D'Ivoire	1892-2007	GFD/WEO	Lcu
	1900-2007		US$
Denmark	1841-2007	GFD/WEO	Exports begin in 1818, lcu
	1865-2007		US$
Ecuador	1889-1949	GFD/WEO	Lcu
	1924-2007		US$
Egypt	1850-2007	GFD/WEO	Lcu
	1869-2007		US$
El Salvador	1859-1988	GFD/WEO	Exports begin in 1854, lcu
	1870-2007		US$
Finland	1818-2007	GFD/WEO	Lcu
	1900-2007		US$
France	1800-2007	GFD/WEO	
Germany	1880-2007	GFD/WEO	
Ghana	1850-2007	GFD/WEO	Lcu
	1900-2007		US$
Greece	1849-2007	GFD/WEO	Lcu
	1900-2007		US$
Guatemala	1851-2007	GFD/WEO	

Table AI.8 Total Exports and Imports
(local currency units and US$, as noted)

Country	Period covered	Sources	Currency
Honduras	1896-2007	GFD/WEO	
India	1832-2007	GFD/WEO	
Indonesia	1823-1974	GFD/WEO	Lcu
	1876-2007		US$
Italy	1861-2007	GFD/WEO	
Japan	1862-2007	GFD/WEO	
Kenya	1900-2007	GFD/WEO	
Korea	1886-1936	GFD/WEO	Lcu
	1905-2007		US$
Malaysia	1905-2007	GFD/WEO	Includes Singapore until 1955
Mauritius	1833-2007	GFD/WEO	Lcu
	1900-2007		US$
Mexico	1797-1830	GFD/WEO	UK pound
	1872-2007		Lcu
	1797-1830		US$
	1872-2007		
Morocco	1947-2007	GFD/WEO	
Myanmar (Burma)	1937-2007	GFD/WEO	
Netherlands	1846-2007	GFD/WEO	
Nicaragua	1895-2007	GFD/WEO	
Norway	1851-2007	GFD/WEO	
Panama	1905-2007	GFD/WEO	Lcu
Paraguay	1879-1949	GFD/WEO	US$
	1923-2007		
Peru	1866-1952	GFD/WEO	Lcu
	1882-2007		US$
Philippines	1884-2007	GFD/WEO	
Poland	1924-2007	GFD/WEO	
Portugal	1861-2007	GFD/WEO	
Romania	1862-1993	GFD/WEO	Lcu
	1921-2007		US$
Russia	1802-1991	GFD/WEO	Lcu
	1815-2007		US$
Singapore	1948-2007	GFD/WEO	
South Africa	1826-2007	GFD/WEO	Lcu
	1900-2007		US$

Table AI.8 Total Exports and Imports
(local currency units and US$, as noted)

Country	Period covered	Sources	Currency
Spain	1822-2007	GFD/WEO	
Sri Lanka	1825-2007	GFD/WEO	Lcu
	1900-2007		US$
Sweden	1832-2007	GFD/WEO	
Taiwan	1891-2007	GFD/WEO	
Thailand (Siam)	1859-2007	GFD/WEO	
Turkey	1878-2007	GFD/WEO	
United Kingdom	1796-2007	GFD/WEO	
United States	1788-2007	GFD/WEO	
Uruguay	1862-1930	GFD/WEO	
	1899-2007		
Venezuela	1830-2007	GFD/WEO	
	1900-2007		
Zambia	1908-2007	GFD/WEO	
Zimbabwe	1900-2007	GFD/WEO	

Table AI.9 Global Indicators and Financial Centers

Country	Series	Period covered	Sources
United Kingdom	Current account balance/GDP	1816-2006	Imlah, Mitchell, and United Kingdom National Statistics
	Consol rate	1790-2007	GFD and Bank of England
	Discount rate	1790-2007	GFD and Bank of England
United States	Current account balance/GDP	1790-2006	Historical Statistics of the United States, WEO
	60-90 day commercial paper	1830-1900	Historical Statistics of the United States
	Discount rate	1915-2007	GFD and Board of Governors of the Federal Reserve
	Federal funds rate	1950-2007	Board of Governors of the Federal Reserve
	Long-term bond	1798-2007	Historical Statistics of the United States, Board of Governors of the Federal Reserve
World	Commodity prices, nominal and real	1790-1850	Gayer, Rostow, and Schwartz
		1854-1990	Boughton-IMF
		1862-1999	*Economist*
		1980-2007	WEO
	Sovereign external default dates	1341-2007	Macdonald, Purcell and Kaufman, Reinhart, Rogoff, and Savastano, Suter, and Standard and Poor's

Appendix II. Public Debt

This data appendix covers the government debt series used, while Appendix I is devoted to the database on macro time series.

Abbreviations of frequently-used sources (additional sources listed in tables below)

CLYPS: Cowan, Levy-Yeyati, Panizza, Sturzenegger
ESFDB: European State Finance Data Base
GFD: *Global Financial Data*, The World Bank
IFS: *International Financial* Statistics, IMF.
LM: Lindert & Morton
LofN: League of Nations
MAR: Marichal
MIT: Mitchell
RR: Reinhart and Rogoff
UN: United Nations
WEO: *World Economic Outlook,* IMF
Lcu: local currency units

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Table AII.4 Domestic Public Debt

Table AII. 1 Public Debentures: External Government Bond Issues

Country	Period covered	Sources	Commentary
Argentina	1824-1968	LM, MAR	Includes first loan
	1927-1946	UN	
Australia	1857-1978	Attard, LM	
	1927-1946	UN	
Bolivia	1864-1930	MAR	
	1927-1946	UN	
Brazil	1843-1970	Bazant, LM, MAR, Summerhill	Includes first loan
	1928-1946	UN	
Canada	1860-1919	LM	
	1928-1946	UN	
Chile	1822-1830	LM, MAR	Includes first loan
	1928-1946	UN	
China	1865-1938	Huang, Winkler	
Colombia	1822-1929	MAR	
	1928-1946	UN	
Costa Rica	1871-1930	MAR	
Egypt	1862-1965	Landes, LM	Includes first loan
	1928-1946	UN	
El Salvador	1922-1930	MAR	
	1928-1946	UN	
Greece	1824-1932	Levandis	Includes first loan (Independence loan)
	1928-1939	UN	
Guatemala	1856-1930	MAR	
	1928-1939	UN	
Honduras	1867-1930	MAR	
India			
	1928-1945	UN	
Japan	1870-1965	LM	Includes first loan
	1928-1939	UN	
Mexico	1824-1946	Bazant, LM, MAR	Includes first loan
	1928-1944	UN	
Panama	1923-1930		
	1928-1945	UN	
Peru	1822-1930	MAR	Includes first loan
	1928-1945	UN	
Russia	1815-1916	Crisp, LM, Miller	
South Africa	1928-1946	UN	
Thailand (Siam)	1928-1947	UN	
Turkey	1854-1965	Clay, LM	Includes first loan
	1933-1939	UN	
Uruguay	1871-1939	MAR	
	1928-1947	UN	
Venezuela	1822-1930	MAR	Includes first loan
	1928-1947	UN	

Table AII.2 Total (Domestic plus External) Public Debt
(currency units are noted)

Country	Period covered	Source	Commentary
Argentina	1863-1971	Garcia Vizcaino	Lcu
	1914-1981	LofN/UN	Lcu
	1980-2005	GFD, Jeanne & Guscina	
Australia	1852-1914	Page	
	1914-1981	LofN/UN	Lcu
	1980-2007	Australian Office of Financial Management	Lcu
Austria	1880-1913	Flandreau & Zumer	Lcu
	1945-1984	UN	Lcu
	1970-2006	Austrian Federal Financing Agency	euros
Belgium	1830-2005	BNB, Centre d'études économiques de la KUL	euros
Bolivia	1914-1953	LofN/UN	Lcu
	1968-1981		
	1991-2004	CLYPS	US$
Brazil	1880-1913	Flandreau & Zumer	Lcu
	1923-1972	LofN/UN	Lcu
	1991-2005	GFD, Jeanne & Guscina	
Canada	1867-2007	Statistics Canada, Bank of Canada	Lcu
Chile	1827-2000	Diaz et. al.	Lcu
	1914-1953	LofN/UN	Lcu
	1990-2007	Ministerio de Hacienda	US$
China	1894-1950	Cheng, Huang, RR	
	1981-2005	GFD, Jeanne & Guscina	
Colombia	1923-2006	Contraloria General de la Republica	Lcu
Costa Rica	1892-1914	Soley-Guell	Lcu
	1914-1983	LofN/UN	Lcu
	1980-2007	CLYPS, Ministerio de Hacienda	US$
Cote D'Ivoire	1970-1980	UN	Lcu
Denmark	1880-1913	Flandreau & Zumer	Lcu
	1914-1975	LofN/UN	Lcu
	1990-2007	Danmark's National Bank	Lcu
Dominican Republic	1914-1952	LofN/UN	Lcu
Ecuador	1914-1972	LofN/UN	Lcu
	1990-2006	Ministry of Finance	US$

Table AII.2 Total (Domestic plus External) Public Debt-continued
(currency units are noted)

Country	Period covered	Source	Commentary
Egypt	1914-1959	LofN/UN	Lcu
	2001-2005	Ministry of Finance	Lcu
El Salvador	1914-1963	LofN/UN	Lcu
	1976-1983		
	1990-2004	CLYPS	US$
	2003-2007	Banco Central de Reserva	US$
Finland	1914-1983	LofN/UN	Lcu
	1978-2007	State Treasury Finland	Lcu
France	1880-1913	Flandreau & Zumer	Lcu
	1913-1972	LofN/UN	Lcu
	1999-2007	Ministère du Budget, des comptes public	Lcu
Germany	1880-1913	Flandreau & Zumer	Lcu
	1914-1983	LofN/UN	Lcu
	1950-2007	Bundesbank	Lcu
Greece	1869-1893	Levandis	Not continuous, Lcu
	1880-1913	Flandreau & Zumer	Lcu
	1920-1983	LofN/UN	Lcu
	1993-2006	OECD	
Guatemala	1921-1982	LofN/UN	Lcu
	1980-2005	CLYPS	US$
Honduras	1914-1971	LofN/UN	Lcu
	1980-2005	CLYPS	US$
Hungary	1913-1942	LofN/UN	Lcu
	1992-2005	Jeanne & Guscina	
India	1840-1920	Statistical Abstract Relating to British India	
	1913-1983	LofN/UN	Lcu
	1980-2005	Jeanne & Guscina	
Indonesia	1972-1983	UN	Lcu
	1998-2005	Bank Indonesia/GDF	
Italy	1880-1913	Flandreau & Zumer	Lcu
	1914-1894	LofN/UN	Lcu
	1982-2007	Dipartamento del Tesoro	Lcu
Japan	1872-2007	Historical Statistics of Japan/Bank of Japan	Lcu
Kenya	1911-1935	Frankel	UK pounds
	1961-1980	LofN/UN	Lcu
	1997-2007	Central Bank of Kenya	Lcu
Korea	1910-1938	Mizoguchi & Umemura	Yen
	1970-1984	LofN/UN	
	1990-2004	Jeanne & Guscina	
Malaysia	1947-1957	UN	Lcu
	1976-1981		
	1980-2004	Jeanne & Guscina	
Mauritius	1970-1984	LofN/UN	Lcu
	1998-2007		Lcu

Table AII.2. Total (Domestic plus External) Public Debt-continued
(currency units are noted)

Country	Period covered	Source	Commentary
Mexico	1814-1946	Bazant	Not continuous
	1914-1979	LofN/UN	Lcu
	1980-2006	Direccion General de la Deuda Publica	
Morocco	1965-1980	UN	Lcu
Netherlands	1880-1914	Flandreau & Zumer	Lcu
	1914-1977	LofN/UN	Lcu
	1914-2008	Dutch State Treasury Agency	Lcu
New Zealand	1858-2006	Statistics New Zealand/NZ Treasury	Lcu
Nicaragua	1914-1945	LofN/UN	Lcu
	1970-1983		
	1991-2005	CLYPS	US$
Norway	1880-1914	Flandreau & Zumer	Lcu
	1913-1983	LofN/UN	Lcu
	1965-2007	Ministry of Finance	Lcu
Panama	1915-1983	LofN/UN	US$
	1980-2005	CLYPS	US$
Paraguay	1927-1947	LofN/UN	Lcu
	1976-1982		
	1990-2004	CLYPS	US$
Peru	1918-1970	LofN/UN	Lcu
	1990-2005	CLYPS	US$
Philippines	1948-1982	LofN/UN	Lcu
	1980-2005	GFD, Jeanne & Guscina	
Poland	1920-1947	LofN/UN	
	1994-2004	GFD, Jeanne & Guscina	
Portugal	1851-1997	INE-Portugese Statistical Agency	
	1914-1975	LofN/UN	Lcu
	1980-2007	Banco de Portugal	In euros from 1999
Russia	1880-1914	Crisp, Flandreau & Zumer	French francs and Lcu
	1922-1938	LofN/UN	
			Lcu
	1993-2005	Jeanne & Guscina	
Singapore	1969-1982	UN	Lcu
	1986-2006	Monetary Authority	Lcu
South Africa	1859-1914	Page	UK pounds
	1910-1982	LofN/UN	Lcu
	1946-2006	South Africa Reserve Bank	Lcu

Appendix Table AII.2 Total (Domestic plus External) Public Debt-concluded
(currency units are noted)

Country	Period covered	Source	Commentary
Spain	1504-1679	ESFDB	Not continuous
	1850-2001	Estadisticas Historicas de España: Siglos XIX-XX	Lcu
	1999-2006	Banco de España	Euro
Sri Lanka	1861-1914	Page	UK pounds
	1950-1983	UN	Lcu
	1990-2006	Central Bank of Sri Lanka	Lcu
Sweden	1880-1913	Flandreau & Zumer	
	1914-1984	LofN/UN	Lcu
	1950-2006	Riksgälden	Lcu
Thailand (Siam)	1913-1984	LofN/UN	Lcu
	1980-2006	Jeanne & Guscina, Bank of Thailand	
Tunisia	1972-1982	LofN/UN	Lcu
	2004-2007	Central Bank of Tunisia	Lcu
Turkey	1933-1984	LofN/UN	Lcu
	1986-2007	Turkish Treasury	US$
United Kingdom	1693-1786	Quinn	Total funded debt
	1781-1915	Bazant, Page	1787-1815, not contiuous
	1850-2007	UK Debt Management Office	
United States	1791-2007	Treasury Direct	
Uruguay	1914-1947	LofN/UN	Lcu
	1972-1984		
	1999-2007	Banco Central del Uruguay	US$
Venezuela	1914-1982	LofN/UN	
	1983-2005	Jeanne & Guscina	
Zimbabwe	1924-1936	Frankel	UK pounds
	1969-1982	UN	

Table AII.3 External Public Debt
(currency units are noted)

Country	Period covered	Source	Commentary
Algeria	1970-2005	GFD	US$
Angola	1989-2005	GFD	US$
Argentina	1863-1971	Garcia Vizcaino	Lcu
	1914-1981	LofN/UN	Lcu
	1970-2005	GFD	US$
Australia	1852-1914	Page	
	1914-1981	LofN/UN	Lcu
	1980-2007	Australian Office of Financial Management	Lcu
Austria	1945-1984	UN	Lcu
	1970-2006	Austrian Federal Financing Agency	euros
Belgium	1914-1981	LofN/UN	Lcu
	1992-2007		
Bolivia	1914-1953	LofN/UN	Lcu
	1968-1981		
	1970-2005	GFD	
	1991-2004	CLYPS	US$
Brazil	1824-2000	IBGE	£s and US$
	1923-1972	LofN/UN	Lcu
	1970-2005	GFD	US$
	1991-2005	Jeanne & Guscina	US$
Canada	1867-2007	Statistics Canada, Bank of Canada	Lcu
Central African Republic	1970-2005	GFD	US$
Chile	1822-2000	Diaz et. al.	Lcu
	1970-2005	GFD	US$
	1822-1930	RR	Estimated from debentures
China	1865-1925	RR	Estimated from debentures
	1981-2005	GFD	US$
Colombia	1923-2006	Contraloria General de la Republica	Lcu
Costa Rica	1892-1914	Soley-Guell	Lcu
	1914-1983	LofN/UN	Lcu
	1980-2007	CLYPS, Ministerio de Hacienda	US$
Cote D'Ivoire	1970-2005	GFD	US$
Dominican Republic	1914-1952	LofN/UN	Lcu
	1961-2004	Banco de la Republica	US$
Ecuador	1914-1972	LofN/UN	Lcu
	1970-2005	GFD	US$
`	1990-2007	Ministry of Finance	US$
Egypt	1862-1930	RR	Estimated from debebtures
	1914-1959	LofN/UN	Lcu
	1970-2005	GFD	US$

Table AII.3 External Public Debt-continued
(currency units are noted)

Country	Period covered	Source	Commentary
France	1913-1972	LofN/UN	Lcu
	1999-2007	Ministère du Budget, des comptes public	Lcu
Germany	1914-1983	LofN/UN	Lcu
Greece	1920-1983	LofN/UN	Lcu
Guatemala	1921-1982	LofN/UN	Lcu
	1970-2005	GFD	US$
	1980-2005	CLYPS	US$
Honduras	1914-1971	LofN/UN	Lcu
	1970-2005	GDF	US$
	1980-2005		US$
Hungary	1913-1942	LofN/UN	Lcu
	1982-2005	GDF	US$
	1992-2005	Jeanne & Guscina	
India	1840-1920	Statistical Abstract relating to British India	
	1913-1983	LofN/UN	Lcu
	1980-2005	Jeanne & Guscina	
Indonesia	1972-1983	UN	Lcu
	1970-2005	GDF	US$
Italy	1880-1913	Flandreau & Zumer	Lcu
	1914-1984	LofN/UN	Lcu
	1982-2007	Dipartamento del Tesoro	Lcu
Japan	1872-2007	Historical Statistics of Japan/Bank of Japan	Lcu
	1910-1938	Mizoguchi & Umemura	Yen
Kenya	1961-1980	LofN/UN	Lcu
	1970-2005	GDF	US$
	1997-2007	Central Bank of Kenya	Lcu
Korea	1970-1984	LofN/UN	Lcu
	1970-2005	GDF	US$
	1990-2004	Jeanne & Guscina	US$
Malaysia	1947-1957	LofN/UN	Lcu
	1976-1981		
	1970-2005	GDF	US$
	1980-2004	Jeanne & Guscina	
Mauritius	1970-1984	LofN/UN	Lcu
	1970-2005	GDF	US$
	1998-2007	Bank of Mauritius	Lcu

Table AII. External Public Debt-continued
(currency units are noted)

Country	Period covered	Source	Commentary
Mexico	1814-1946	Bazant	Not continuous
	1820-1930	RR	Estimated from debentures
	1914-1979	LofN/UN	Lcu
	1970-2005	GDF	US$
	1980-2006	Direccion General de la Deuda Publica	
Morocco	1965-1980	UN	Lcu
	1970-2005	GDF	US$
Netherlands	1880-1914	Flandreau & Zumer	Lcu
	1914-1977	LofN/UN	Lcu
	1914-2008	Dutch State Treasury Agency	Lcu
New Zealand	1858-2006	Statistics New Zealand/NZ Treasury	Lcu
Nicaragua	1914-1945	LofN/UN	Lcu
	1970-1983		
	1970-2005	GDF	US$
	1991-2005	CLYPS	US$
Norway	1880-1914	Flandreau & Zumer	Lcu
	1913-1983	LofN/UN	Lcu
	1965-2007	Ministry of Finance	Lcu
Panama	1915-1983	LofN/UN	US$
	1980-2005	CLYPS	US$
Paraguay	1927-1947	LofN/UN	Lcu
	1976-1982		
	1970-2005	GFD	US$
	1990-2004	CLYPS	US$
Peru	1822-1930	RR	Estimated from debentures
	1918-1970	LofN/UN	Lcu
	1990-2005	CLYPS	US$
	1970-2005	GFD	US$
Philippines	1948-1982	LofN/UN	Lcu
	1970-2005	GFD	US$
Poland	1920-1947	LofN/UN	Lcu
	1986-2005	GFD	US$
Portugal	1851-1997	INE-Portugese Statistical Agency	
	1914-1975	LofN/UN	Lcu
	1980-2007	Banco de Portugal	In euros from 1999
Russia	1815-1917	RR	
	1922-1938	LofN/UN	Lcu
	1993-2005	Jeanne & Guscina	
Singapore	1969-1982	UN	Lcu

Table AII.3 External Public Debt-concluded
(currency units are noted)

Country	Period covered	Source	Commentary
South Africa	1859-1914	Page	UK pounds
	1910-1983	LofN/UN	Lcu
	1946-2006	South Africa Reserve Bank	Lcu
Spain	1850-2001	Estadisticas Historicas de España: Siglos XIX-XX	Lcu
	1999-2006	Banco de España	Euro
Sri Lanka	1950-1983	UN	Lcu
	1970-2005	GFD	US$
	1990-2006	Central Bank of Sri Lanka	Lcu
Sweden	1914-1984	LofN/UN	Lcu
	1950-2006	Riksgälden	Lcu
Thailand (Siam)	1913-1984	LofN/UN	Lcu
	1970-2005	GFD	US$
	1980-2006	Jeanne & Guscina, Bank of Thailand	Lcu
Tunisia	1970-2005	GFD	US$
	2004-2007	Central Bank of Tunisia	Lcu
	1972-1982	LofN/UN	Lcu
Turkey	1854-1933	RR	Estimated from debentures
	1933-1984	LofN/UN	Lcu
	1970-2005	GFD	US$
	1986-2007	Turkish Treasury	US$
United Kingdom	1914-2007	LofN/UN	Lcu
Uruguay	1871-1930	RR	Estimated from debentures
	1914-1947	LofN/UN	Lcu
	1972-1984		
	1970-2005	GFD	US$
	1980-2004	CLYPS	US$
Venezuela	1822-1842	RR	Estimated from debentures, US $
	1914-1982	LofN/UN	Lcu
Zambia	1970-2005	GFD	
Zimbabwe	1969-1982	UN	Lcu
	1970-2005	GFD	US$

Table AII.4 Domestic Public Debt
(Local currency units unless otherwise noted)

Country	Period covered	Source	Commentary
Argentina	1863-1971	Garcia Vizcaino	Lcu
	1914-1981	LofN/UN	Lcu
	1980-2005	GFD, Jeanne & Guscina	
Australia	1914-1981	LofN/UN	Lcu
	1980-2007	Australian Office of Financial Management	Lcu
Austria	1945-1984	UN	Lcu
	1970-2006	Austrian Federal Financing Agency	euros
Belgium	1914-1983	LofN/UN	Lcu
	1992-2007	BNB, Centre d'études économiques de la KUL	
Bolivia	1914-1953	LofN/UN	Lcu
	1968-1981		
	1991-2004	CLYPS	US$
Brazil	1923-1972	LofN/UN	Lcu
	1991-2005	GFD, Jeanne & Guscina	
Canada	1867-2007	Statistics Canada, Bank of Canada	Lcu
Chile	1827-2000	Diaz et. al.	Lcu
	1914-1953	LofN/UN	Lcu
	1914-1946	UN	
	1990-2007	Ministerio de Hacienda	US$
China	1894-1949	RR (from Cheng, Huang, UN)	Lcu
Colombia	1923-2006	Contraloria General de la Republica	Lcu
Costa Rica	1892-1914	Soley-Guell	Lcu
	1914-1983	LofN/UN	Lcu
	1980-2007	CLYPS, Ministerio de Hacienda	US$
Cote D'Ivoire	1970-1980	UN	Lcu
Denmark	1914-1975	LofN/UN	Lcu
	1990-2007	Danmark's National Bank	Lcu
Dominican Republic	1914-1952	LofN/UN	Lcu
Ecuador	1914-1972	LofN/UN	Lcu
	1990-2006	Ministry of Finance	US$
Egypt	1914-1959	LofN/UN	Lcu
	2001-2005	Ministry of Finance	Lcu

Table AII.4 Domestic Public Debt-continued
(Local currency units unless otherwise noted)

Country	Period covered	Source	Commentary
France	1913-1972	LofN/UN	Lcu
	1999-2007	Ministère du Budget, des comptes public	Lcu
Greece	1920-1983	LofN/UN	Lcu
	1912-1941	UN	
Guatemala	1921-1982	LofN/UN	Lcu
	1980-2005	CLYPS	US$
Honduras	1914-1971	LofN/UN	Lcu
	1980-2005		US$
Hungary	1913-1942	LofN/UN	Lcu
	1992-2005	Jeanne & Guscina	
India	1840-1920	Statistical Abstract relating to British India	
	1913-1983	LofN/UN	Lcu
	1980-2005	Jeanne & Guscina	
Indonesia	1972-1983	UN	Lcu
	1998-2005	Bank Indonesia/GDF	
Italy	1880-1913	Flandreau & Zumer	Lcu
	1914-1894	LofN/UN	Lcu
	1882-2007	Dipartamento del Tesoro	Lcu
Japan	1872-2007	Historical Statistics of Japan/Bank of Japan	Lcu
	1914-1946	UN	
Kenya	1961-1980	LofN/UN	Lcu
	1997-2007	Central Bank of Kenya	Lcu
Korea	1970-1984	LofN/UN	Lcu
	1990-2004	Jeanne & Guscina	Lcu
Malaysia	1947-1957	LofN/UN	Lcu
	1976-1981		
	1980-2004	Jeanne & Guscina	
Mauritius	1970-1984	LofN/UN	Lcu
	1998-2007	Bank of Mauritius	Lcu
Mexico	1814-1946	Bazant	Not continuous
	1914-1979	LofN/UN	Lcu
	1980-2006	Direccion General de la Deuda Publica	
Morocco	1965-1980	UN	Lcu
Netherlands	1880-1914	Flandreau & Zumer	Lcu
	1914-1977	LofN/UN	Lcu
	1914-2008	Dutch State Treasury Agency	Lcu

Table AII.4 Domestic Public Debt-continued
(Local currency units unless otherwise noted)

Country	Period covered	Source	Commentary
New Zealand	1858-2006	Statistics New Zealand/NZ Treasury	Lcu
Nicaragua	1914-1945	LofN/UN	Lcu
	1970-1983		
	1991-2005	CLYPS	US$
Norway	1880-1914	Flandreau & Zumer	Lcu
	1913-1983	LofN/UN	Lcu
	1965-2007	Ministry of Finance	Lcu
Panama	1915-1983	LofN/UN	US$
	1980-2005	CLYPS	US$
Paraguay	1927-1947	LofN/UN	Lcu
	1976-1982		
	1990-2004	CLYPS	US$
Peru	1918-1970	LofN/UN	Lcu
	1990-2005	CLYPS	US$
Philippines	1948-1982	LofN/UN	Lcu
	1980-2005	GFD, Jeanne & Guscina	
Poland	1920-1947	LofN/UN	Lcu
	1994-2004	Jeanne & Guscina	Lcu
Portugal	1851-1997	INE-Portugese Statistical Agency	Lcu
	1914-1975	LofN/UN	Lcu
	1980-2007	Banco de Portugal	In euros from 1999
Russia	1922-1938	LofN/UN	Lcu
	1993-2005	Jeanne & Guscina	
Singapore	1969-1982	UN	Lcu
	1986-2006	Monetary Authority	Lcu
South Africa	1859-1914	Page	UK pounds
	1910-1983	LofN/UN	Lcu
	1946-2006	South Africa Reserve Bank	Lcu
Spain	1850-2001	Estadisticas Historicas de España: Siglos XIX-XX	Lcu
	1999-2006	Banco de España	Euro
Sri Lanka	1950-1983	UN	Lcu
	1990-2006	Central Bank of Sri Lanka	Lcu

Table AII.4 Domestic Public Debt-concluded
(Local currency units unless otherwise noted)

Country	Period covered	Source	Commentary
Sweden	1914-1984	LofN/UN	Lcu
	1950-2006	Riksgälden	Lcu
Thailand (Siam)	1913-1984	LofN/UN	Lcu
	1980-2006	Jeanne & Guscina, Bank of Thailand	Lcu
Tunisia	1972-1982	UN	Lcu
	2004-2007	Central Bank of Tunisia	Lcu
Turkey	1933-1984	LofN/UN	Lcu
	1986-2007	Turkish Treasury	US$
United Kingdom	1914-2007	LofN/UN	Lcu
United States	1791-2007	Treasury Direct	Lcu
Uruguay	1914-1947	LofN/UN	Lcu
	1972-1984		
	1980-2004	CLYPS	US$
Venezuela	1914-1982	LofN/UN	Lcu
	1983-2005	Jeanne & Guscina	Lcu
Zimbabwe	1969-1982	UN	Lcu