Revised September 21, 2010

The Forgotten History of Domestic Debt

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Abstract

There is a rich scholarly literature on sovereign default on ***external*** debt. Comparatively little is known about sovereign default on ***domestic*** debt. Even today, cross-country data on domestic public debt remains curiously exotic, particularly prior to the 1980s. We have filled this gap in the literature by compiling a database on central government public debt (external and domestic). The data span 1914 to 2010 for most countries, reaching back into the nineteenth century (and earlier) for many. Our findings here on debt sustainability, sovereign defaults, the temptation to inflate, and the hierarchy of creditors only scratch the surface of what the domestic public debt data can reveal. First, domestic debt is big—for the 64 countries for which we have long time series, domestic debt accounts for almost two-thirds of total public debt. For most of the sample, this debt carries a market-determined interest rate (except for the financial repression era between WWII and financial liberalization). Second, the data go a long way toward explaining the puzzle of why countries so often default on their external debts at seemingly low debt thresholds. Third, domestic debt has largely been ignored in the vast empirical work on inflation. In fact, domestic debt (a significant portion of which is long term and non-indexed) is often much larger than the monetary base in the run-up to high-inflation episodes. Last, the widely held view that domestic residents are strictly junior to external creditors does not find broad support.

JEL: E6, F3, N0

* The authors are grateful to David Nowakowski, Michael Reddell, Vincent Reinhart, Andrew Scott, John Singleton, and seminar participants at Columbia, Harvard, and Maryland universities for useful comments and suggestions and to Ethan Ilzetzki for excellent research assistance.

I. Introduction

This paper is as much an exercise in archeology as in economics. We have recently unearthed a vast trove of historical time-series data on domestic public debt for 64 countries ranging back to 1914. Our key sources are publications of the now-defunct League of Nations, including updates until the early 1980s by its successor, the United Nations. We also make use of national sources and work by scholars to supplement, cross-check and extend the data, both back before 1914 for some countries plus forward to the present for most. Although it may come as quite a surprise to most readers that historical time series on domestic debt should be exotic for so many countries, it is. This is in contrast to *external* sovereign debt, on which there is a vast literature.[1] Other than our own related recent research, we are not aware of any academic or policy study that uses similar data, certainly not one encompassing such a long time period and so many countries.[2]

Indeed, historical data on domestic (internal) government debt has been ignored for so long that many observers have come to believe that the emerging market issuance boom of the 2000s is something entirely new and different.[3] This perspective is based on the belief that, historically, domestic government debt played only a minor role in the

[1] Domestic public debt is issued under home legal jurisdiction. In most countries, over most of their history, it has been denominated in the local currency and held mainly by residents. By the same token, the overwhelming majority of external public debt—debt under the legal jurisdiction of foreign governments—has been denominated in foreign currency and held by foreign residents. Theoretical models that try to explain default include Eaton and Gersovitz (1981) and Bulow and Rogoff (1989). Empirical studies of external debt that range from in-depth case studies (such as the classics by Winkler, 1928, or Wynne, 1951) to systematic cross-country analysis (Bordo and Eichengreen, 1999, Sturzenegger and Zettelmeyer, 2006 and Tomz, 2007). Eichengreen (1991) provides an authoritative summary of the early literature.

[2] See Reinhart and Rogoff (2008, 2009 and 2010) and Reinhart (2010). Importantly, this paper extends our data set to incorporate the recent global financial crisis, includes domestic and external defaults we had not previously identified, and refines our analysis in number of directions.

[3] See for example, the IADB 2006 annual report, or the April 2007 IMF *Global Financial Stability* Report.

public finances of most developing and post-conflict countries.[4] The new data set thoroughly dispels this notion. Our key findings can be summarized as follows[5]:

First, domestic debt is large—for the 64 countries for which we have long time series, domestic debt averages almost two-thirds of total public debt; for most of the sample these debts typically carried a market interest rate, except for the era of financial repression after World War II. Second, recognizing the significance of domestic debt goes a long way toward explaining the puzzle of why many countries default on (or restructure) their external debts at seemingly low debt thresholds. In fact, when heretofore ignored domestic debt obligations are taken into account, fiscal duress at the time of default is often revealed to be quite severe.[6] A third and related point is that domestic debt may also explain the paradox of why some governments seem to choose inflation rates far above any level that might be rationalized by seignorage revenues leveraged off the monetary base (e.g., as in Cagan's classic, 1956, article on postwar hyperinflations). Although domestic debt is largely ignored in the vast empirical literature on high and hyperinflation, we find that there are many cases where the hidden overhang of pre-existing domestic public debt was at least the same order of magnitude as base money, and sometimes a large multiple.[7]

Last, our paper offers a first attempt to catalogue episodes of overt default on and rescheduling of domestic public debt across more than a century. This phenomenon appears to be somewhat rarer than external default, but far too common to justify the

[4] See for example, Eichengreen and Hausman (1999), who mainly focus on the post 1980 period.
[5] For a closely related discussion, see Reinhart and Rogoff (2009).
[6] This puzzling "debt intolerance" is examined by Reinhart, Rogoff, and Savastano (2003).
[7] See Fischer, Sahay, and Vegh (2002) for an excellent treatise on this subject (and the classic papers that are cited therein). A few theoretical treatments (for example Calvo, 1989) have recognized the potential significance of nominal domestic debt. Yet, since many researchers have long believed domestic debt to be relatively small and unimportant, the incentives to inflate it away have received scant attention in the empirical literature.

extreme assumption that governments always honor the nominal face value of domestic debt. When overt default on domestic debt does occur, it appears to occur under situations of greater duress than for pure external defaults—both in terms of an implosion of output and marked escalation of inflation. It is important to note that we do not here catalogue episodes of major *de facto* partial defaults, say through a sharp unexpected increase in financial repression (e.g., of the type India and China still impose today).

The rest of the paper proceeds as follows. Since our new public debt database is central to our analysis, we begin by reviewing some of its key features. Specifically, we focus on four broad areas: the composition of public debt (domestic versus external); the structure of domestic debt by maturity; the interest rates on domestic and external debt; and, lastly, what little is known of its currency composition. Further details are discussed in the Appendices.

Section III introduces our approach to cataloguing defaults on domestic public debt. Such defaults typically leave few footprints in the mainstream international or business press and are therefore much more difficult to detect than external defaults (which our database comprehensively catalogues). In section IV, we look at the potential role of domestic debt during episodes of external default. Section V explores the connection between high inflation and domestic debt in emerging markets and post-conflict countries. Section VI attempts to shed light on the issue of who gets heavily defaulted on more often, domestic or foreign residents.

In our conclusion, we raise the question of whether the difficulties in unearthing domestic public debt data should be addressed by an international agency that coordinates greater transparency across sovereign debt issuers. The League of Nations once enforced

such reporting, although the results were under-publicized and subsequently forgotten. Should not today's multilateral lending institutions, such as the International Monetary Fund and the World Bank, be able to do the same today, if not better? The IMF's Special Data Dissemination Standard (SDDS) takes a step in that direction but only the most recent figures appear and debt categories vary substantially by country. Absent a comprehensive borrowing history, it is impossible to conduct any meaningful credit analysis. How can one know the danger zone for debt levels absent any quantitative parameters on what debt levels have proven problematic in the past? Given the relative infrequency of financial and debt crises, how can one meaningfully study and default and crisis risk absent the kind of very long time series we employ here.[8]

II. Domestic Public Debt: Some Features

Unquestionably, the single most remarkable feature of our cross-country data set is its apparent uniqueness. Until now, obtaining comprehensive long-term time series on domestic debt has been extremely difficult for most countries. Even for the relatively rich countries, the OECD database only goes back to 1970, and constructing long-term time series from national sources is far less straightforward than one might imagine.[9] Outside the OECD countries, the dearth of data is stunning.

Only recently, a few groups of scholars have begun constructing data for the contemporary period. Reinhart, Rogoff and Savastano (2003) draw on national sources to develop a data set for selected developing countries and emerging markets covering the

[8] As Reinhart and Rogoff (2009) emphasize, how can one study hundred year floods with only a quarter century of data?

[9] To be sure, there do exist very long dated (17th century and even earlier) debt series for a number of countries including Italy, the Netherlands, Portugal, Spain, Sweden, the UK, and the US, among others (see Reinhart, 2010) but most for the very early periods often these data do not distinguish between domestic and external debt (the focus of this study).

years 1990 to 2002. More recently, Jeanne and Guscina (2006) provide detailed data on domestic debt for nineteen important emerging markets for 1980 to 2005. Cowan, Levy-Yeyati, Panizza and Sturzenegger (2006) provide data for all the countries in the Western Hemisphere from 1980 (or 1990) to 2004.[10]

Figure 1 plots the share of domestic debt in total public debt for 1900 to 2010, which averaged between 40 and 80 percent of total debt. See data appendix for data availability by country. The figures in this chart are simple averages across countries, but these ratios are also fairly representative for many of the emerging markets in the sample (including now-rich countries when they were still emerging markets, such as Greece, Austria, and Spain).[11] As the figure underscores, the data set here contains significant representation from every continent, not just for a handful of Latin American and European countries, as in most of the external debt literature.

Of course, the experience is diverse. For advanced economies, domestic debt accounts for the lion's share of public-sector liabilities (bottom panel of Figure 1). At the other extreme, in some emerging markets, especially in the 1980s and 1990s, domestic debt markets were dealt a brutal blow by many governments' propensity to inflate—or hyperinflate. For instance, in the years following the hyperinflation of 1989 to 1990, domestic debt only accounted for 10 to 20 percent of Peru's public debt. Yet, this was not always so. As with many other countries in Latin America, the early (end of World War I) entries of the League of Nations data show that Peru's domestic debt then

[10] Reinhart and Rogoff (2008, 2009) describe a companion database covering a broad range of related variables, including external debt that we also draw upon here.

[11] Domestic public debt has never amounted to much in a few Latin American countries (Uruguay stands out in this regard), and public debt markets are virtually nonexistent in the CFA African countries (which originally were the *Colonies françaises d'Afrique*).

accounted for about two-thirds of public-sector debt. Indeed, the share was even higher in the 1950s, when the world's financial centers were not engaged in much external lending.

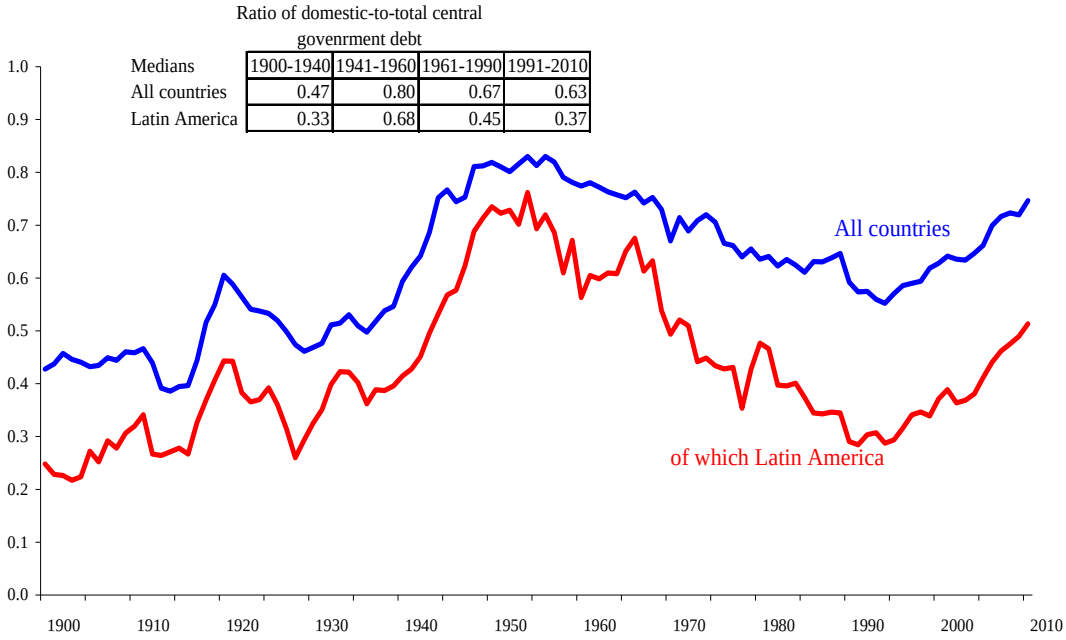
Figure 2 shows total and domestic debt as a percent of GDP for the full sample over 1900-2010. The figure makes the compelling complementary point that not only has domestic debt been an important share of public debt (as shown in both panels of Figure 1) but domestic debt/GDP levels, which oscillate between about 20 and 60 percent of GDP since 1900 and have climbed to record levels since the onset of the recent are too significant to ignore in any calculation of debt sustainability or inflation prospects.

In addition to showing that the debt is large, the data also dispel the belief that until recently, emerging markets (and developing countries) had never been able to borrow long term. As Figure 3 shows, long-term debt (defined in most documents as debts with maturities longer than a year) constitutes a large share of the total debt stock over a significant part of the sample, at least for the period 1914 to 1959.[12] It may come as a surprise to many readers (as it did to these authors) that modern bias towards short-term debt is a relatively recent phenomenon, evidently a product of the "inflation fatigue" of the 1970s and 1980s—particularly in chronic inflation countries in Latin America.

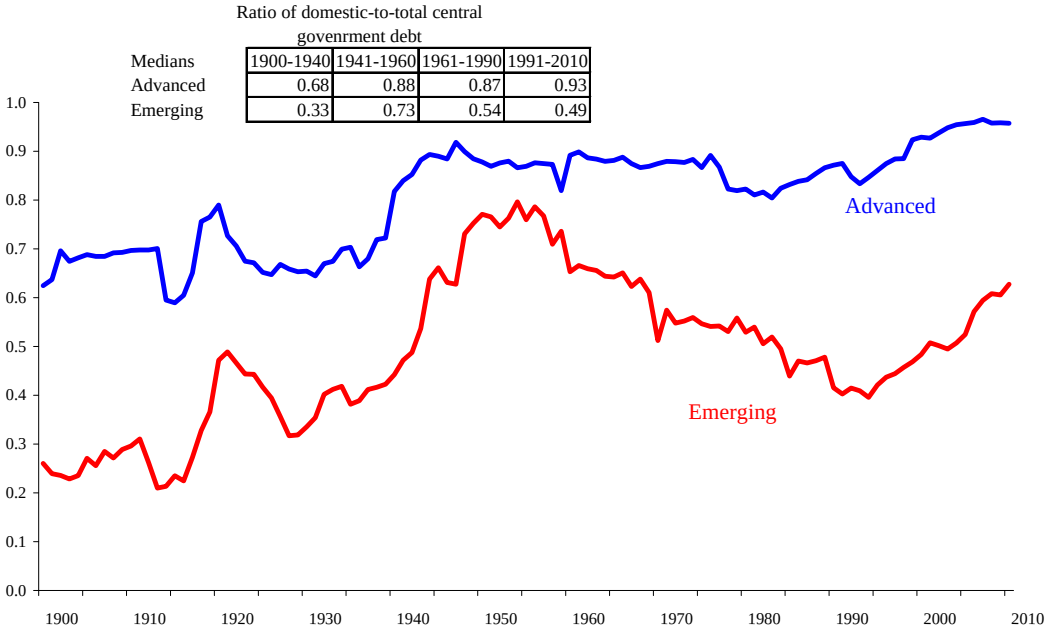
[12] Over this period, the League of Nations/UN database provides considerable detail on maturity structure. Notably the particulars of each individual external and domestic bond issued is listed.

Figure1. Central Government Debt: Domestic as a Share of Total, 1900-2010

All countries and Latin America

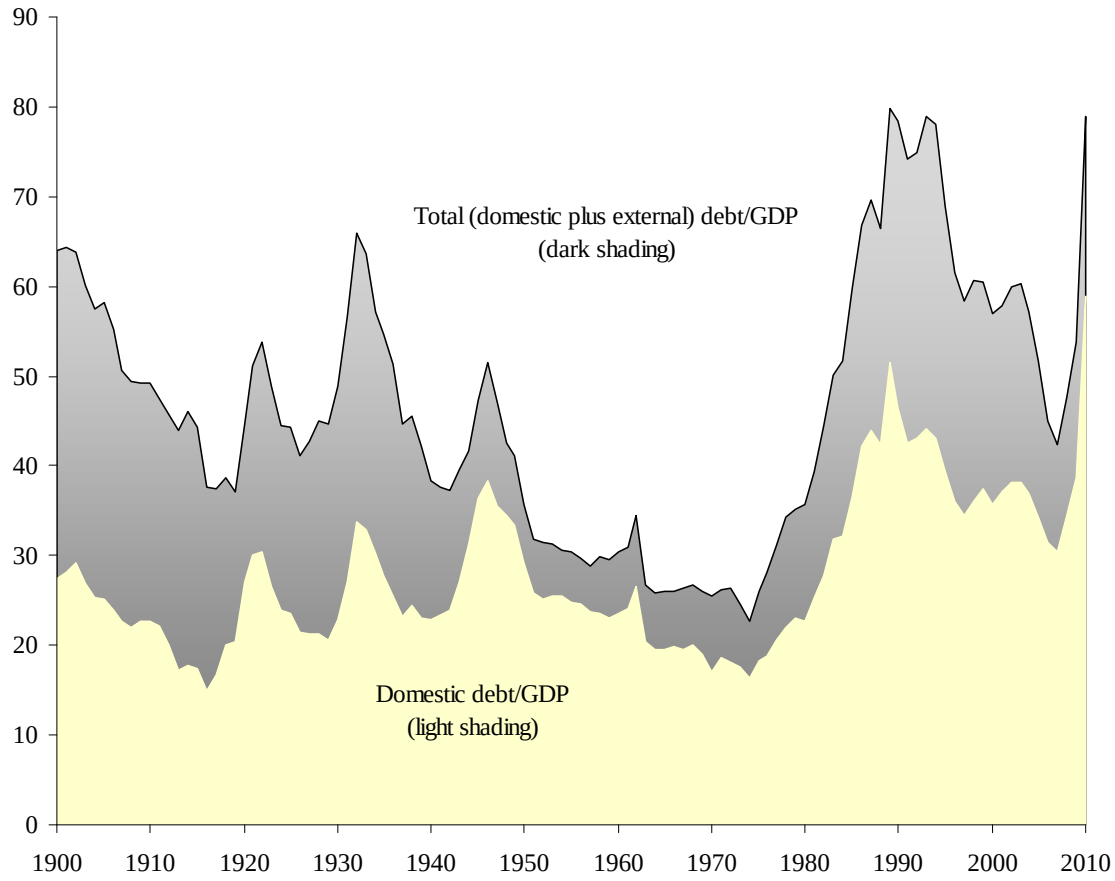


Advanced and emerging economies



Sources: See Appendix II for domestic debt data; see Reinhart and Rogoff (2008) for external debt data.

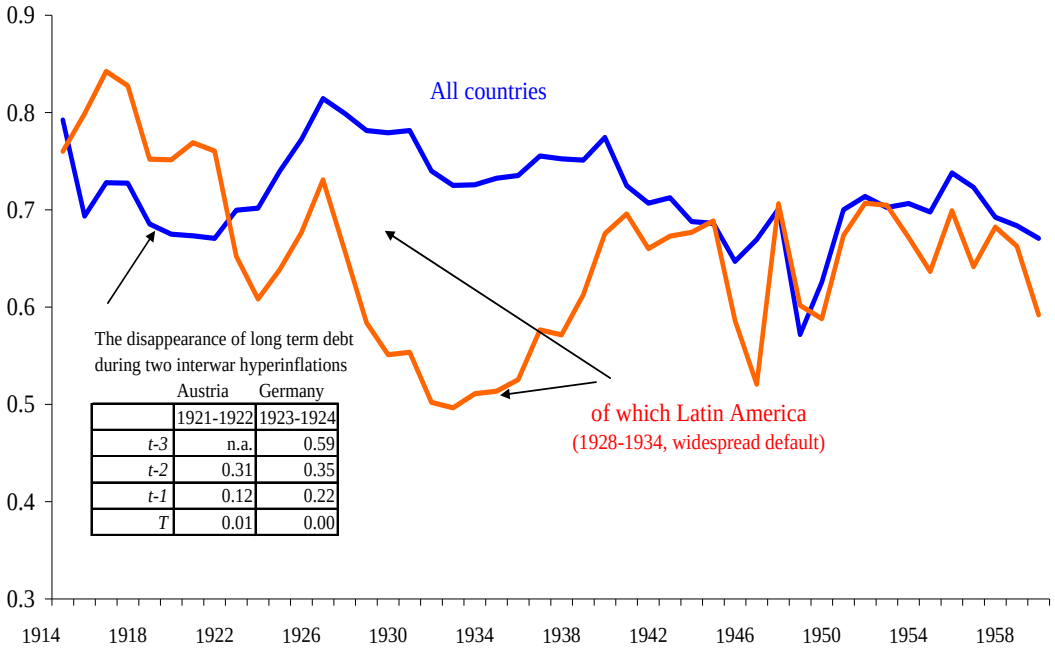
Figure 2. Total (domestic plus external) and Domestic Debt as a Percent of GDP: All Countries, 1900-2010 (percent)



Sources: See Appendix II for domestic debt data; see Reinhart and Rogoff (2008) and (2009) for external debt data.

Figure 3. Central Government Debt: Share of Long-term Domestic Debt, 1914-1959

All countries and Latin America



Sources: See appendices and sources cited therein.

Nor is the fact that many emerging markets are now paying market-oriented interest rates on domestic debt new. Of course, during the post–World War II era, many governments did repress domestic financial markets, with low deposit rate ceilings and high bank reserve requirements, among other devices. But in fact, interest rate data for the first half of the twentieth century shows that financial repression was neither so strong nor so universal. As Table 1 illustrates for the years 1928–1946, the period over which we have the best documentation, interest rates on domestic and external debt issues were relatively similar, supporting the notion that the debt was market determined.

A final issue is indexation of domestic currency denominated debt to inflation or foreign currency. Until very recently, most observers held that domestic public debt was mostly non-indexed local currency obligations. Most externally issued emerging market public debt was similarly viewed as

Table 1. Interest Rates on Domestic and External Debt: 1928–1946

Country	Range of interest rates (in percent)	
	Domestic debt issues	External debt issues
Argentina	3–6	3 ½–4 ½
Australia	2–4	3 3/8 –5
Austria	4 ½–6	5
Belgium	3 ½–5	3–7
Bolivia	¼ – 8	6–8
Brazil	4–7	4–7
Bulgaria	4–6½	7–7½
Canada	1–5½	1 ¼ –5½
Chile	1–8	4 ½–7
Colombia	3–10	3–6
Costa Rica	6	5–7½
Denmark	2 ½–5	4 ½–6
Ecuador	3	4–8
Egypt	2 ½–4 ½	3 ½–4
Finland	4–5½	2 ½–7
Germany	3 ½–7	5 ½–6
Greece	3–9	3–10
Hungary	3 ½–5	3 –7 ½
India	3–5 ½	3–5 ½
Italy	3 ½–5	No external debt
Japan	3 ½–5	4–6½
Netherlands	2 ½–6	No external debt
New Zealand	2 ½–4	2 ½–5
Nicaragua	5	4–5
Poland	3–7	3–7
Portugal	2.1–7	3–4
Romania	3 ½–5	4–7
South Africa	3½–6	3½–6
Spain	3 ½–6	3–4
Sweden	2 ½–4 ½	No external debt
Thailand	2 ½–4 ½	4 ½–7
Turkey	2½–5 ½	6½–7½
United Kingdom	1½ –4	No **marketable** external debt
United States	1½–2½	No external debt
Uruguay	5–7	3 ½–6
Venezuela	3	3

Notes: These are rates on domestic long-term debt, as it facilitates comparisons to external debt, which has a similar maturity profile. The higher interest rates are the most representative.
Source: United Nations (1948).

foreign currency denominated.[13] Indeed, many observers viewed Mexico's famous issuance of dollar-linked domestic debt in the early 1990s (the so-called *tesobonos*) as a

[13] It should also be noted that until the past ten to fifteen years, most countries' external debt was largely public debt. Private external borrowing has become more significant only over the past couple decades; see Prasad et al. (2003). Arellano and Kocherlakota (2008) develop a model of the relationship between private debt and external government default.

major innovation. In reality, Argentina issued domestic government bonds in the late 1800s that were denominated in pound sterling, and Thailand issued dollar-linked domestic debt in the 1960s (See Appendix Table 4 for sources).[14]

We summarize by noting that for most countries over most of history (notably including emerging markets), domestic debt has been large and highly significant. Nothing about the maturity structure or interest rates paid on these debts lends justification to the common practice of ignoring them in calculations of debt sustainability or inflation stability.

We acknowledge that our data set has important limitations. First, the data generally cover only central government debt. Of course, it would be desirable to have long time series on consolidated government debt, including state and local debt and guaranteed debt for quasi-public agencies. Furthermore, many central banks across the world issue debt on their own, often to sterilize foreign exchange intervention (see Calvo, 1991, on these "perilous" practices). Adding such data, of course, would only expand the perception of how important domestic public debt has been.

We now take up some important potential applications of this data.

III. Cataloguing Defaults on Domestic Public Debt

Theoretical models contain a wide range of assumptions about domestic public debt. The overwhelming majority of models simply assume that debt is always honored. These include models where deficit policy is irrelevant due to Ricardian equivalence (Barro, 1976), where domestic public debt is a key input in price-level determination through the government's budget constraint (Woodford, 1995), and where generations

[14] Of course, during the early years of the interim war period, many countries pegged their currencies to gold (See Appendix Table 3).

overlap (Diamond, 1965). There is a small literature that aims to understand why governments honor domestic debt at all (e.g., Persson and Tabellini, 2000, or Kotlikoff, Persson, and Svensson, 1988). However, the general assumption throughout the literature is, whereas governments may inflate away debt, outright defaults on domestic public debt are extremely rare. This is in stark contrast to the literature on external public debt, where the government's incentive to default is one of the main focuses of inquiry.[15]

In fact, our reading of the historical record is that overt *de jure* defaults on domestic public debt, while less common than external defaults, are hardly rare. Our data set includes 68 cases of overt default (compared to 250 post-1800 external debt defaults). These *de jure* defaults took place via a potpourri of mechanisms, ranging from forcible conversions, to lower coupon rates, to unilateral reduction of principal (sometimes in conjunction with a currency conversion), to suspensions of payments. Appendix Table 3 lists these episodes.

As we have already emphasized, our catalogue of domestic defaults is almost certainly a lower bound, as domestic defaults are far more difficult to detect than defaults on international debt. Even the widespread defaults on domestic debt during the 1930s Great Depression in both advanced and developing economies are not well documented. As a more recent example, consider Argentina. Between 1980 and 2001, Argentina 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. However, the large-scale 1989 default, which did not involve a new default on external debt, is scarcely known outside Argentina.

[15] In an important historical paper, Sargent and Velde (1995) draw the distinction between French and British attitudes towards debt in the 18th century, including domestic debt.

Why would a government refuse to pay its domestic public debt in full when it can simply inflate the problem away? One answer, of course, is that inflation causes distortions, especially to the banking system and the financial sector. Sometimes, the government may view repudiation as the lesser evil. The potential costs of inflation are especially problematic when the debt is relatively short term or indexed, since the government then has to inflate much more aggressively to achieve a significant real reduction in debt service payments. In other cases, such as the United States during the Great Depression, default (by abrogation of the gold clause in 1933) was a precondition for reinflating the economy through expansionary fiscal and monetary policy.

Of course, there are other forms of *de facto* default (besides inflation). The combination of heightened financial repression with rises in inflation was an especially popular form of default from the 1960s to the early 1980s. Brock (1989) makes the point that inflation and reserve requirements are positively correlated, particularly in Africa and Latin America.[16] Interest rate ceilings combined with inflation spurts are also common. For example, during the 1972–1976 external debt rescheduling episodes in India, interest rates (interbank) in India were 6.6 and 13.5 percent in 1973 and 1974, while inflation spurted to 21.2 and 26.6 percent. These episodes of *de facto* default through financial repression are not listed among our *de jure* credit-event dating. Only to the extent that inflation exceeds the 20 percent threshold we use to define an inflation crisis, do they count at all.[17] The phenomenon of financial repression as a mechanism for partially

[16] Average reserve requirements for developing countries in his 1960 to early 1980s sample ran at about 0.25, more than three times the average for advanced economies.

[17] Another subtle type of default is illustrated by the Argentine government's treatment of its inflation-indexed debt in 2007. Most impartial observers agree that Argentina's official inflation rate considerably understates actual inflation because of government manipulation. This represents a partial default on index-

defaulting on government debt is an extremely important topic for future research. Financial repression, of course, can take many forms. These range from regulation Q limits imposed on bank account interest rates in the United States until the late 1970s to the much more severe forms of financial repression practiced in China today, where most savers have very limited options outside official bank accounts with tightly capped interest rates. A common feature of financial repression is that governments take advantage of captive domestic savings to place government debt at much lower real interest rates than they would be able to in a liberalized market.

Clearly, the assumption embedded in many theoretical models that governments always honor the nominal face value of debt is a significant overstatement, particularly for emerging markets past and present. Nevertheless, we would also caution against reaching the opposite extreme conclusion, that governments can ignore powerful domestic stakeholders and simply default at will (*de jure* or *de facto*) on domestic debt. We will now proceed to explore some implications of the overhang of large domestic debt on external default and inflation.

IV. Domestic Debt and External Default: The Missing Link

We begin by revisiting the conventional wisdom on external debt default and its implications for debt sustainability exercises and debt default thresholds. Indeed, in the 250 external debt default episodes in our database, it is clear that domestic debt loomed large across the vast majority of them. Table 2 gives the ratio of both external debt and total debt (including domestic and external liabilities) relative to government revenues on the eve of many of the nineteenth and twentieth centuries' most notable defaults. We

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linked debt by any reasonable measure, and it affects a large number of bondholders. Yet, Argentina's *de facto* domestic bond default has not registered heavily in the external press or with rating agencies.

normalize debt by government revenues because data on nominal GDP is sketchy or nonexistent for the nineteenth-century default episodes. (For many countries, standard sources such as Maddison, 2004, do not provide anything close to a continuous time series for GDP for the nineteenth century.) Exports, which usually have longer time series, are not the obvious benchmark once domestic debt is added to the calculus of debt sustainability.

Table 2. Debt Ratios at the Time of Default: Selected Episodes

Country	Year of default	External public debt/ revenue	Total public debt/ revenue
Mexico	1827	1.55	4.20
Spain	1877	4.95	15.83
Argentina	1890	4.42	12.46
Germany	1932	0.64	2.43
China	1939	3.10	8.96
Turkey	1978	1.38	2.69
Mexico	1982	3.25	5.06
Brazil	1983	0.83	1.98
Philippines	1983	0.23	1.25
South Africa	1985	0.09	1.32
Russia	1998	3.90	4.95
Pakistan	1998	3.32	6.28
Argentina	2001	1.59	2.62

Sources: See Data Appendices I and II in Reinhart and Rogoff (2008).

Looking more broadly at our the sample, Figure 4a is based on the 90 episodes of external default over the period 1827 to 2008 where we have full data on external debt, total debt, and revenues. In all regions except Latin America, external debt accounts for less than half of total debt during the year a country defaults on external debt; for Latin America, the average ratio is higher, but still only 60 percent. The inset in Figure 4a, presents the comparable total and external debt/revenue ratios for selected countries in the sample that had default or near-default (Korea, 1997-1998) episodes during tranquil periods. These tranquil periods are averages of these ratios for the full sample excluding the year of the debt crisis and the three years that bracket the crisis (before and after). Domestic debt is no less important (relative to the better documented external debt) in

tranquil periods, the main difference, of course is debt/revenue ratios tend to be consistently lower than those recorded in tranquil times.

Thus, uncovering data on domestic debt suggests at least a partial answer to one of the most basic puzzles in the entire literature on international debt, emphasized by Bulow and Rogoff (1987) among others: Why do emerging market governments tend to default at such stunningly low levels of debt repayments and debts to GDP? Reinhart, Rogoff and Savastano (2003), for example, present evidence that "serial defaulters" tend to default at ratios of debt to GDP that are below the euro area's "Maastricht Treaty" upper bound of 60 percent. In fact, taking into account domestic public debt, the anomaly largely disappears.[18]

Figure 4b gives a different perspective on the data by providing the frequency distribution of external debt to GDP and total debt to GDP across all the external default episodes in our sample for which we have full data. As the figure illustrates, external debt to government revenue ratios are massed at a much smaller average than total debt to government revenue ratios during the year of an external default, with a mean of 2.38 versus 4.21. This order-of-magnitude difference is consistent across individual episodes (as Table 2 above highlights for some well-known cases). It is also consistent across regions (Figure 4a) and time. Obviously, if domestic debt were trivial, then the frequency distribution of the total debt ratio at the time of default should overlap that of domestic debt. This is hardly the case, and a standard battery of tests rejects this hypothesis across the board.[19]

[18] We emphasize that puzzle of why governments default at seemingly low debt levels largely pertains to emerging markets .

[19] For example, the Kolmogorov–Smirnov test rejects the hypothesis that the two frequency distributions are equal at the 1% level.

Figure 4a. Public debt-to-revenue ratios during external default: 90 episodes, 1827-2008

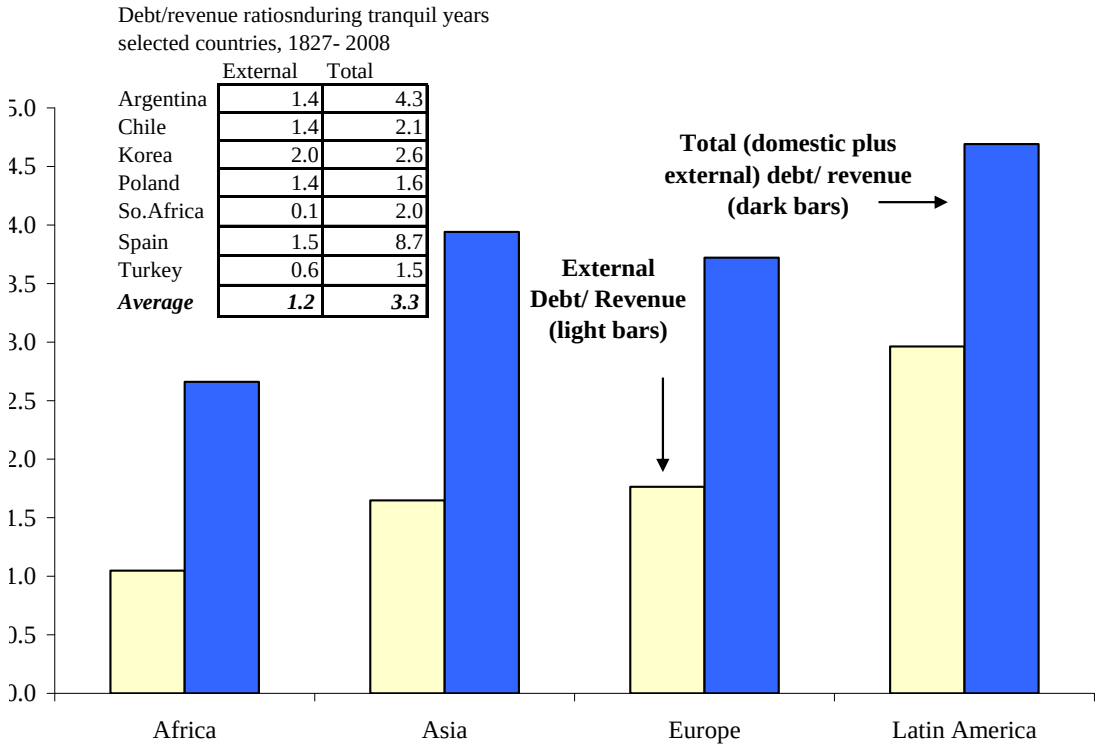
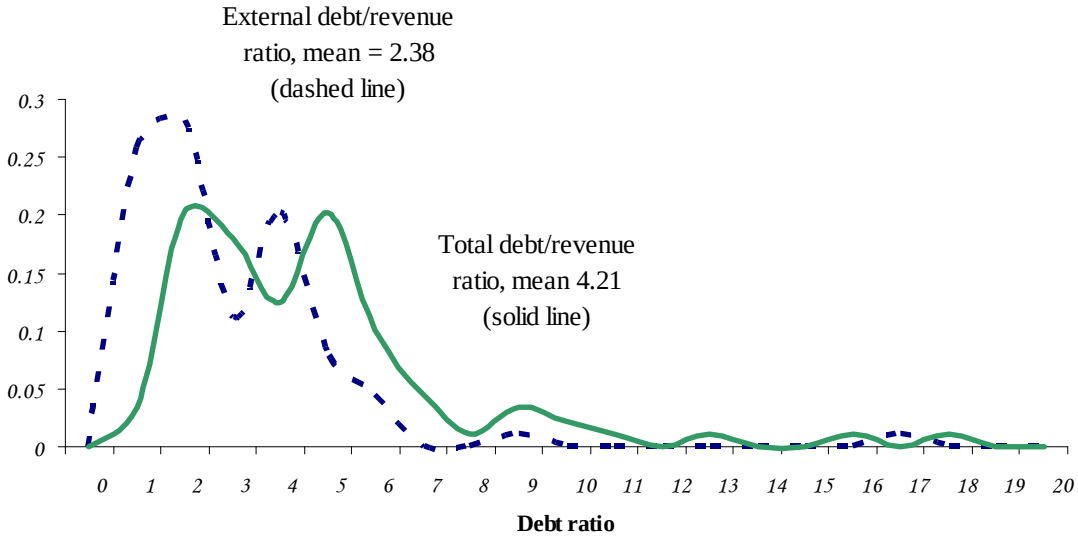


Figure 4b. Public debt-to-revenue ratios during external default: frequency of occurrence, 1800-2008



Sources: See data appendices, sources cited therein, and authors' calculations.

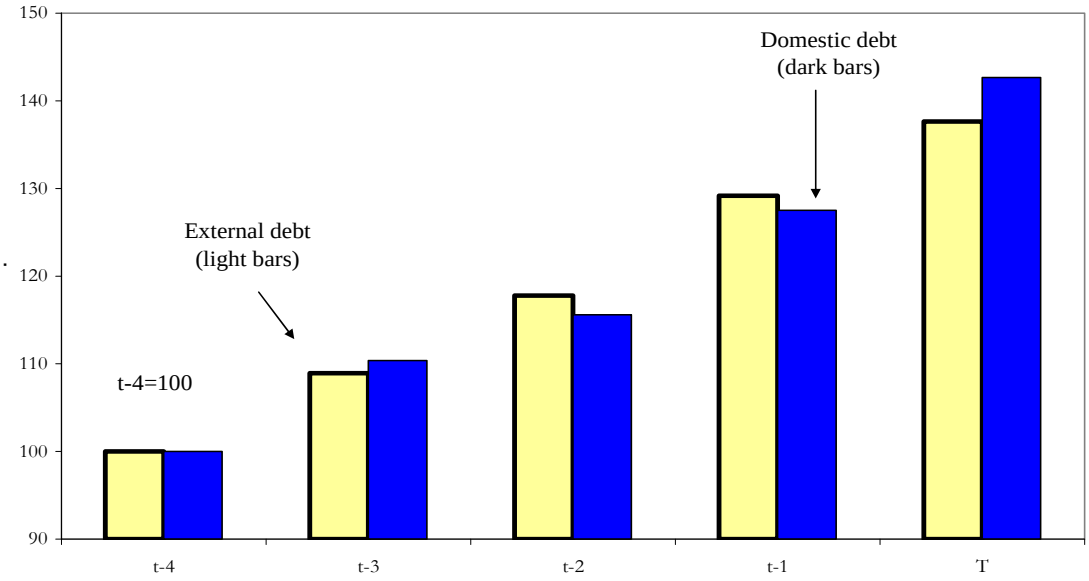
Finally, we note that domestic debt is not static around default episodes. In fact, domestic debt often shows the same frenzied increases in the run-up to external default as foreign borrowing does. The pattern is illustrated in Figure 5, which depicts debt accumulation during the five years up to and including external default across all the episodes in our sample. Presumably, the comovement of domestic and foreign debt is produced by the same procyclical behavior of fiscal policy documented by previous researchers.[20] As shown repeatedly over time, emerging market governments are prone to treating favorable shocks as permanent, fueling a spree in government spending and borrowing that ends in tears.[21] Figure 5 does not continue past the default date *T*. If it did, we would see that countries often continue to run up domestic public debt after they are shut off from international capital markets.

Domestic debt often builds up in the aftermath of external defaults. The case of pre-communist China is a caricature of the typical post-default trajectory. China's government depended almost exclusively on external debt until two major defaults in 1921 and 1939, with public domestic debt exploding in the aftermath of both incidents. By the mid-1940s, China's government relied almost exclusively on domestic debt.

[20] See Gavin and Perotti (1997) and Kaminsky, Reinhart, and Vegh (2004) for evidence on procyclical macroeconomic policies. See also Aguiar and Gopinath (2007) for a model in which the procyclical behavior of the current account can be rationalized by the high ratio of permanent to transitory shocks in emerging markets.

[21] Reinhart and Rogoff (2008, 2009) argue that there are strong parallels between today's emerging markets and the behavior of today's rich countries when they were at the same stage of development.

Figure 5. The Run-Up in Domestic and External Debt on the Eve of External Default: Average Default Episode, 1800-2008



Sources: See Data Appendices I and II in Reinhart and Rogoff (2008).
Notes: There are no new defaults during 2009-2010; there are a number of continuing default episodes.

V. Domestic Debt in High-Inflation Episodes: Again a Missing Link?

Another literature that has by and large ignored domestic debt is the empirical literature on high and hyperinflation. Ever since Cagan (1956), researchers have concentrated on the government's incentives to gain seignorage revenues off the monetary base.[22] Indeed, a recurring paradox in this literature is why governments sometimes seem to inflate above and beyond the seignorage-maximizing rate. Many clever and plausible answers have been offered to this question, with issues of time consistency and credibility featuring prominently. We submit, however, that the presence of significant pre-existing domestic public debt may be a major overlooked factor,

[22] Sargent (1982) does include data on central bank holdings of treasury bills for the five post–World War I countries (Austria, Germany, Poland, Hungary, Czechoslovakia) in his classic paper. But of course, these debts are essentially a wash on the consolidated government balance sheet.

especially considering—as we have already discussed—that a large share of debt was often long term and non-indexed. We do not refer simply to the study of rare hyperinflation episodes but equally to the much more common phenomenon of high and moderately high inflation as studied, for example, by Dornbusch and Fischer (1986) and many others since.

Although there are literally hundreds of empirical papers on inflationary finance in developing countries and post-conflict economies, domestic debt is rarely mentioned, much less employed in time-series analysis. As in the external debt literature, the implicit assumption is that domestic public debt is relatively unimportant. But is this a good approximation? Perhaps the answer is yes in some cases, but as Table 3 suggests, there are many important episodes where domestic debt appears to have been a major factor in the government's incentive to inflate, if not indeed the dominant one.[23] Thus a comparison of actual inflation rates to any hypothetical "seignorage-maximizing rate," calculated only off the monetary base, may often be beside the point.

We see in Table 3, for example, that when post–World War I inflation first spiked up to 66 percent in Germany in 1920, domestic debt was almost triple the size of the monetary base. In the case of Brazil, debt was almost 20 times the size of the money base.[24]

The importance of domestic debt is hardly confined to hyperinflations. Table 3 lists a number of high-inflation episodes as well. Domestic public debt was almost 80

[23] Of course, the possibility of using unanticipated inflation to default on nominal debt is well understood in the theoretical literature, e.g., Barro (1983).

[24] The Brazil case is exceptional in that some of the debt was indexed to inflation, although lags in the indexation scheme still made it possible for the government to largely inflate away the debt with a high enough rate of inflation. Indeed, this appears to be exactly what happened as the country lurched in and out of hyperinflation for many years.

percent of total domestic liabilities (including currency) in 1945 Japan, when inflation went over 500 percent. In all of the cases listed in Table 3, domestic public debt is at least the same order of magnitude as the monetary base (with the exception of Norway in 1918, where it was slightly below).

Precise calculations of how much governments gained by inflating down the real value of debt require considerably more information on the maturity structure and interest payments than is available in our cross-country data set. In the limiting case, where all debt is of very long term duration, then governments can essentially inflate away the value of debt as easily as the currency supply. At the other extreme, where all debt is of very short term duration, governments have little capacity to inflate away debt since higher inflation is immediately reflected in higher interest rates the government must pay to roll over its debt.

One also needs to understand bank reserve requirements, interest rate regulations, the degree of financial repression, and other constraints to make any kind of precise calculation. But the fact that domestic nominal debt is so large compared to base money across so many important high-inflation episodes suggests that this factor needs to be given far more attention in future studies.[25]

VI: Who Is Senior? Domestic Residents or Foreigners?

We have shown that domestic debt is large in general, and in many episodes of external default or high inflation, in particular. Clearly, in trying to understand how crises play out, it would be helpful to better understand the relative seniority of domestic

[25] Calvo and Guidotti (1992) develop a model of the optimal maturity structure of nominal debt, where the government trades off flexibility (the option to inflate away long-term debt when under financial duress) versus maintaining high credibility for maintaining a low inflation rate (achieved by having very short-term debt which is more difficult to inflate away).

and foreign debt. This section is an attempt to provide a first pass at some key characteristics of the data. Clearly, the answer is going to differ across countries and time. Many factors, such as central bank independence and exchange rate regime, are likely going to be relevant. Nevertheless, a few simple comparisons of the trajectory of output and inflation during the run-up and aftermath to domestic and external defaults are revealing.[26]

Our calculations can be taken only as suggestive for several reasons. One is simply that, as we have already emphasized, there is no comprehensive database on overt domestic debt defaults prior to our own, much less on *de facto* defaults. While we are confident that we have a relatively complete picture of external defaults and episodes of high inflation in our sample, we simply do not know how many domestic default episodes we may have missed, even restricting attention to *de jure* defaults. Appendix I provides a broad indication of how hidden in the historical archives are clear episodes of domestic default or restructuring. Thus, our list of domestic defaults is surely a lower bound on the actual incidence.

[26] It should also be noted that other economic indicators (besides inflation and per capita GDP growth, which we examine in detail) would provide a richer answer to the broad question of how bad conditions have to be before contemplating default (specifically, the impacts of domestic versus foreign default on social indicators relating to poverty, health, income distribution, etc., are bound to be quite different).

Table 3. Inflation and Domestic Debt: Selected Episodes, 1917–1994

Country	Year	Inflation	Domestic debt/GDP	Base Money/GDP	Domestic debt/ Total domestic liabilities
		Some Hyperinflations			
Argentina	1989	3079.5	25.6	16.4	61.2
Brazil	1987	228.3	164.9	9.8	94.4
	1990	2947.7	155.1	7.1	95.6
Germany	1920	66.5	52.6	19.4	73.0
	1923	22220194522.37	0.0	0.0	1.0
		High Inflations			
Greece	1922	54.2	53.0	34.3	60.7
	1923	72.6	41.3	32.7	55.9
Italy	1917	43.8	79.1	24.1	76.6
	1920	56.2	78.6	23.5	77.1
Japan	1944	26.6	236.7	27.8	89.5
	1945	568.1	266.5	74.4	78.2
Norway	1918	32.5	79.3	86.4	47.9
	1920	18.1	106.9	65.6	62.3
Philippines	1981	13.1	10.4	6.6	61.1
	1984	46.2	11.0	13.9	44.2
Turkey	1990	60.3	14.7	7.4	66.6
	1994	106.3	20.2	7.1	73.9

Sources: See Reinhart and Rogoff (2008, Appendix I). Money and Debt stock refer to levels at the beginning of each episode.

Finally, but worthy of discussion, our approach is systematic in documenting the *incidence* of default but it is silent on assessing the *magnitude* of default. Even though our new database on public debt can provide a valuable insight on the magnitudes involved in the original default or restructuring, it would be a stretch of the imagination to suggest that these data provide a snapshot of the subsequent restructuring nuances or the actual recovery rates. With these caveats in mind, a number of results stand out.

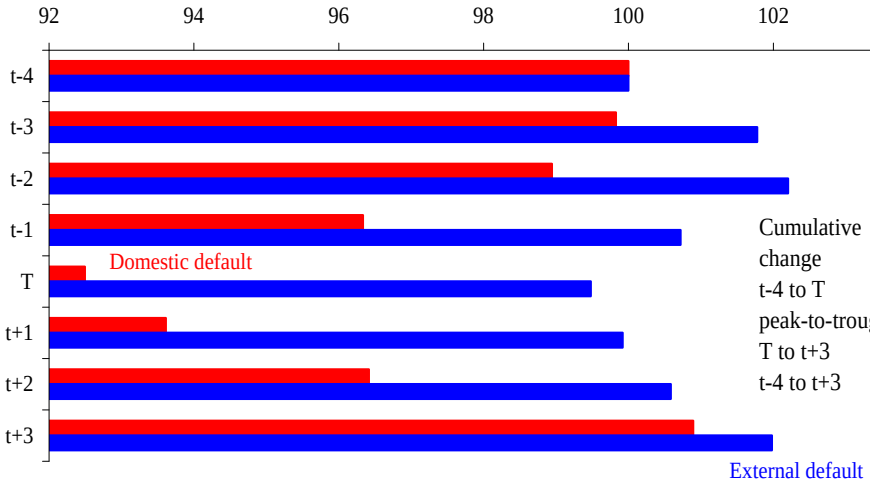
The antecedents of domestic and external default

First, how bad are macroeconomic conditions on the eve of default? Unambiguously, output declines in the run-up to default on domestic debt are typically significantly worse than for external debt. As highlighted in Figure 6 and 7, the average

cumulative decline in output during the three-year run-up to a domestic default crisis is 8 percent. The output decline on the year of the domestic debt crisis alone is 4 percent; the comparable average decline for the external debt events is 1.2 percent. To compare the antecedents of the domestic and external defaults, we performed a variety of tests for individual years, as well as for the cumulative change in the window prior to default. In the latter test, there are a total of 224 observations for domestic crises (that is, the number of annual observations in advance of domestic crises) and 813 for external crashes (again, years times number of crises).

As noted earlier, the results have to be interpreted with care, as many domestic episodes are twin default crises and, as such, output is also suffering from limited access (if at all) to external credit.

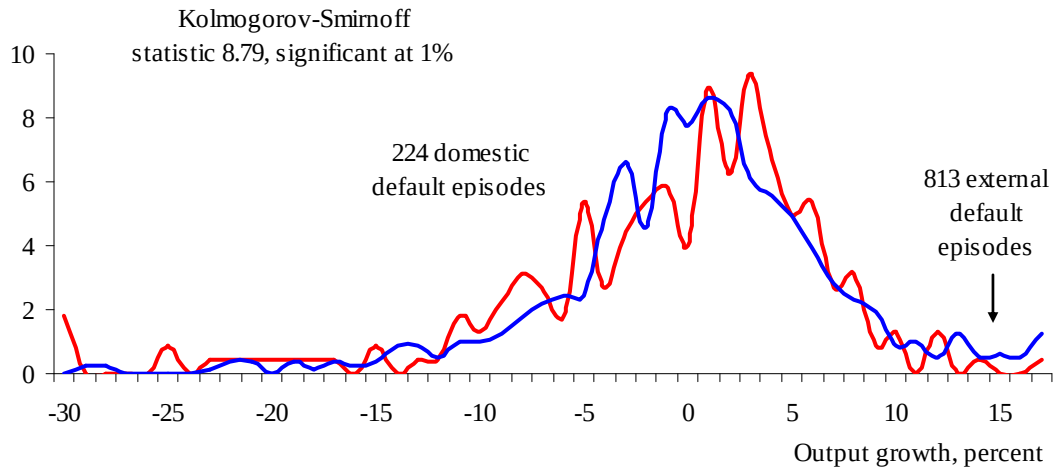
Figure 6. Domestic and External Crises and Real GDP
(Level, t-4 = 100)



Cumulative change	Default on: domestic debt	external debt
t-4 to T	-7.3	-0.5
peak-to-trough	-7.3	-2.7
T to t+3	9.1	2.5
t-4 to t+3	1.1	2.0

Figure 7. Real GDP growth three years before and the year of domestic and external crises

frequency of occurrence, percent



Sources: Maddison (2003), Total Economy Database (2010), Reinhart and Rogoff (2008 and 2009) and sources cited therein, and authors' calculations.

The comparable exercise for the inflation rate yields even starker differences (Figures 8a, 8b and 9); default through inflation goes hand in hand with domestic default—before, during, and after the more explicit domestic expropriations. The

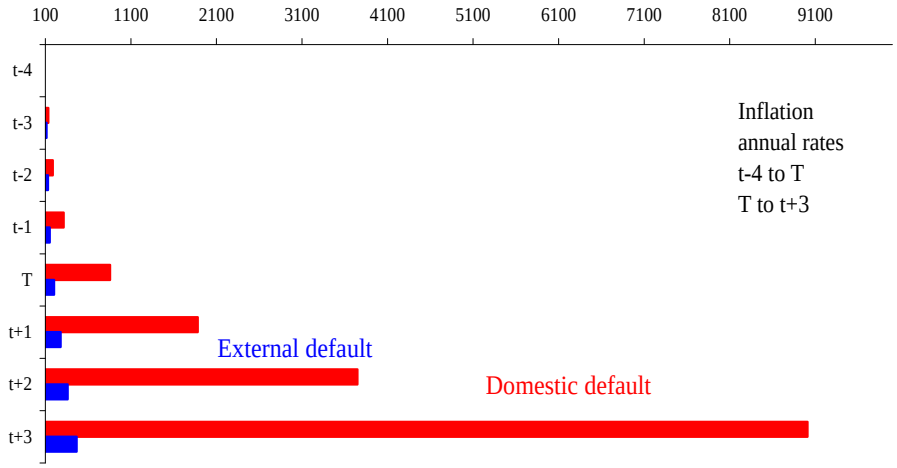
extensive scholarly literature on inflation has been silent on this point.[27] Inflation during the year of external default is on average high, at 33 percent.[28] However, inflation truly gallops during domestic debt crises, averaging 170 percent in the year of the default.[29] The cumulative (annualized) inflation rates before and after default are shown in the insets to Figures 8a and 8b. Even when the most extreme cases of hyperinflation are excluded (as in the bottom panel of Figure 8), after the domestic default, inflation remains at about 44 percent in the following years, significantly above pre-default readings. We conclude that overt domestic default tends to occur only in times of severe macroeconomic distress.

[27] Reinhart and Savastano (2003) do discuss the forcible conversion of foreign currency bank deposits (as in Argentina in 2002) during the hyperinflations in Bolivia and Peru (the dates of these episodes are listed in Appendix III.

[28] See the IMF's *World Economic Outlook*.

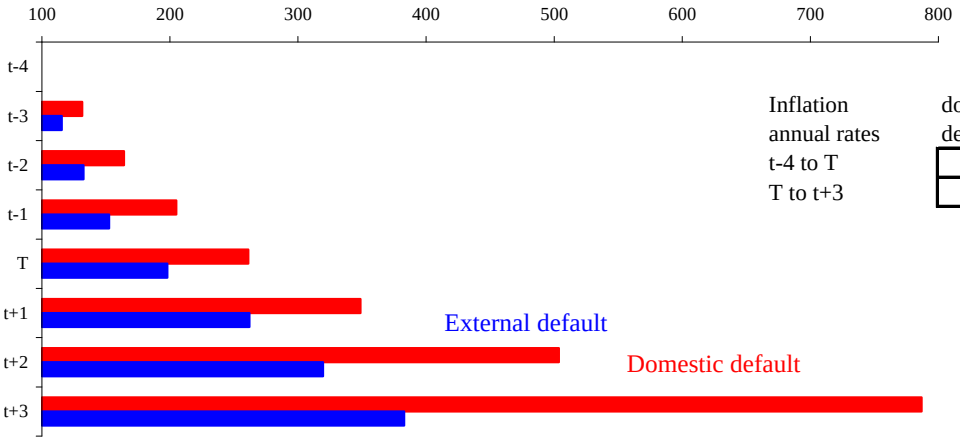
[29] We have excluded Bolivia's 1982 domestic default from these averages, as inflation peaks at over 11,000 percent on the year before (t–1) the domestic default.

Figure 8a Domestic and External Crises and Prices and Inflation
(Price Level, t-4 = 100, all episodes)



Inflation annual rates	Default on: domestic debt	external debt
t-4 to T	71.1	19.4
T to t+3	119.0	32.0

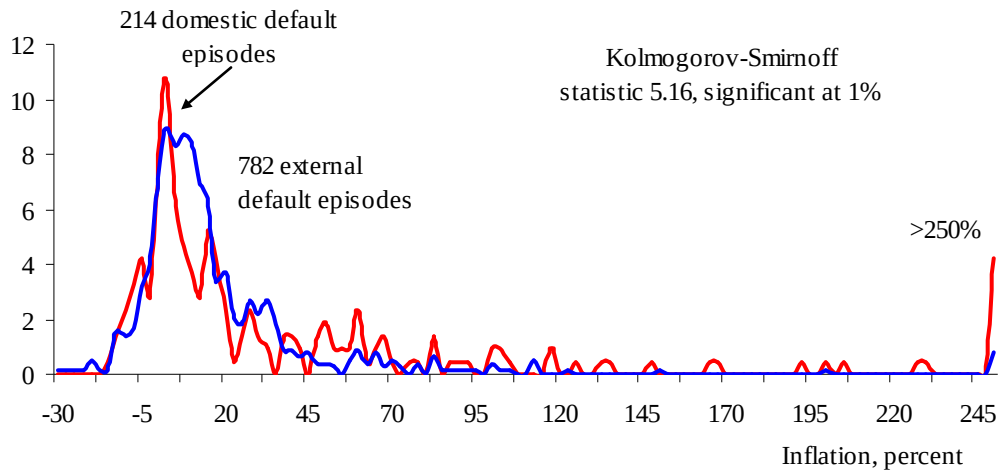
Figure 8b Domestic and External Crises and Prices and Inflation
(Price Level, t-4 = 100, excluding hyperinflation episodes)



Inflation annual rates	Default on: domestic debt	external debt
t-4 to T	27.1	18.6
T to t+3	44.4	24.6

Sources: Reinhart and Rogoff (2008 and 2009) and sources cited therein, and authors' calculations.

Figure 9. Inflation three years before and the year of domestic and external crises
frequency of occurrence, percent



Sources: Reinhart and Rogoff (2008 and 2009) and sources cited therein, and authors' calculations.

The incidence of domestic and external default

To shed some light on the incidence of expropriation of residents versus nonresidents, we constructed four time series for the period 1800–2007: the probability of external default (or the share of countries in our sample that are in external default in a given year); the comparable statistic for domestic default episodes; the probability of an inflation crisis (defined here as the share of countries in any given year during our more than 200-year sample where the annual rate of inflation exceeded 20 percent); and the sum of the incidence of high inflation and domestic default, which summarizes the expropriation of the holdings of domestic residents.[30, 31]

[30] Details on the underlying macroeconomic data are given in Reinhart and Rogoff (2008).
[31] The United States is, of course, the modern exception. Virtually all U.S. debt is domestic (as the Carter bonds have been extinguished), yet about 40 percent is held by nonresidents (mostly central banks and other official institutions), but it is dollar denominated. Thus, inflation in the United States would also affect nonresidents.

Figure 10 shows the probability of external default versus the comparable statistic for domestic default either through inflation or explicit default. For the early period through World War II, the incidence of external default is higher.[32] Table 5 presents some summary statistics on the underlying data. For 1800–1939, the probability of external default is about 20 percent versus 12 percent for domestic residents. For the entire sample, there is no statistically significant difference in the incidence of default on locals versus foreigners. With the widespread adoption of fiat money, inflation apparently became the more expedient form of expropriation. As a result, the incidence of taxing locals increased after World War II.[33]

Figure 11 plots the probability of domestic default as a share of the probability of default. A ratio above 0.5 implies domestics do worse, while one less than 0.5 implies foreigners do worse.

Certainly, this admittedly very crude first pass at the evidence does nothing to dissuade our prior belief that domestic debt is often held by important political stakeholders in debtor countries, and cannot always be lightly dismissed as strictly junior debt.

[32] The huge spike in external defaults in the 1820s owes to the much-studied first wave of sovereign defaults of the newly independent Latin American countries—but Greece and Portugal also defaulted at this time.

[33] See the memorandum item in Table 5.

Figure10. Who is expropriated? Residents or Foreigners, 1800-2010

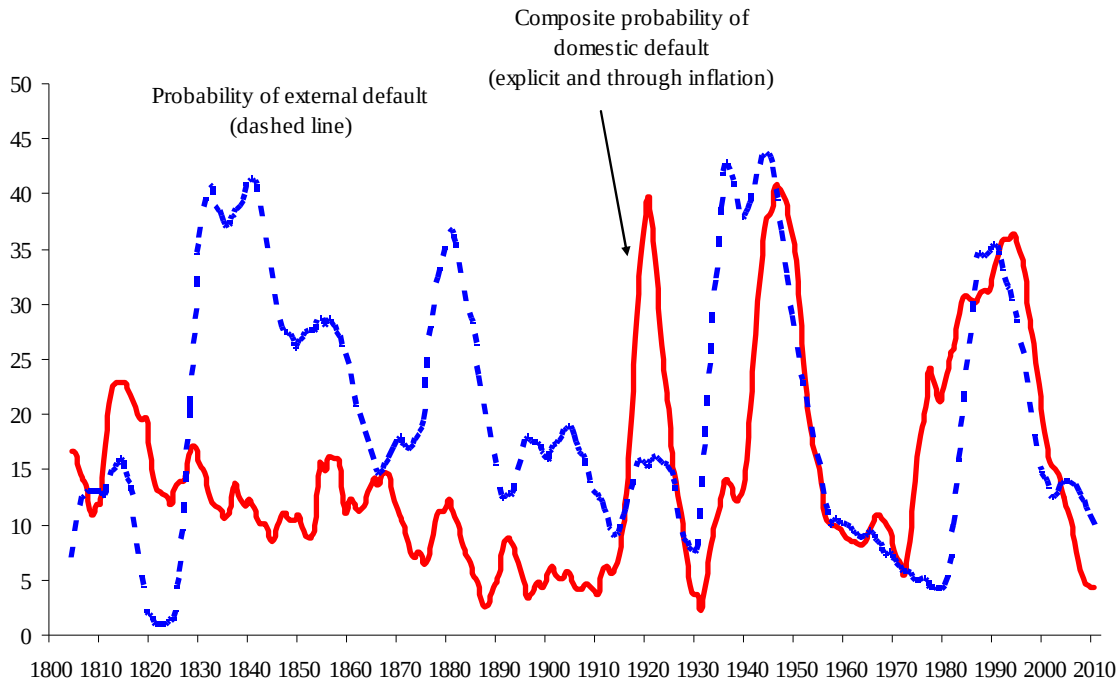
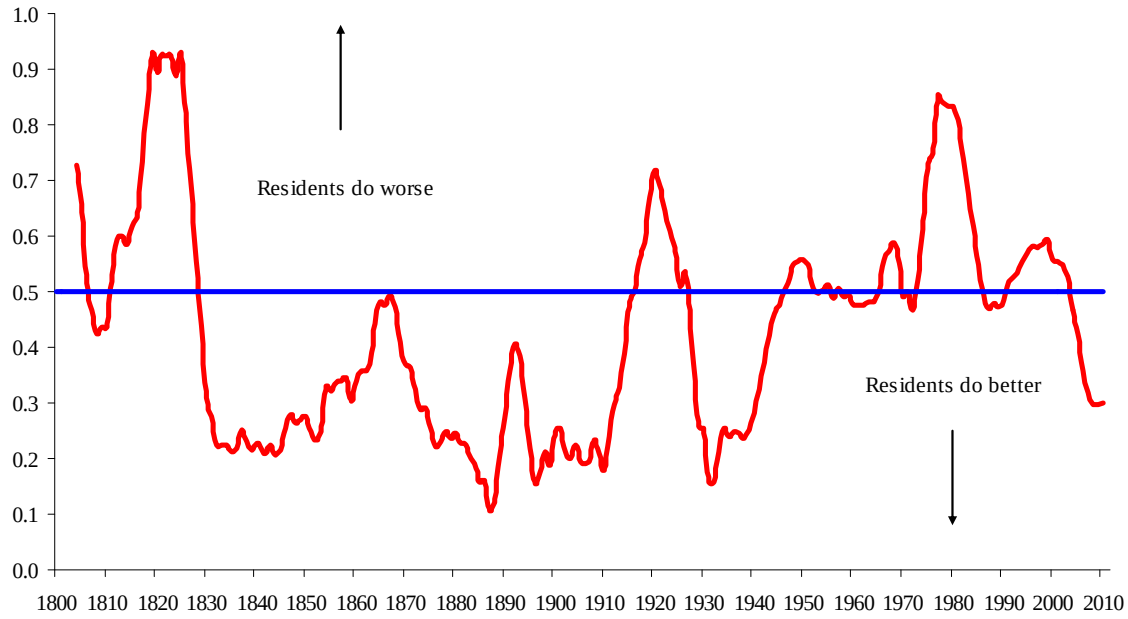


Figure 11. Composite Probability of Domestic Default as a Share of Total Default Probability, 1800-2010



Sources: Reinhart and Rogoff (2008 and 2009) and sources cited therein, and authors' calculations.

VII. Conclusions

In this paper, we employ an extensive new cross-country data set on a key macroeconomic variable that governments often manage to keep remarkably hidden from view: domestic public debt. We also present attempt at a cross-country international catalogue of historical defaults on domestic public debt, spanning two centuries and sixty-four countries.[34]

An analysis of the new data set also suggests that researchers need to revisit the empirical literature on the sustainability of external government debt and on government's incentives to engage in high and hyperinflation, taking into account the newly uncovered data on domestic public debt. Of course, how the overhang of domestic debt impacts inflation and external default will vary across episodes and circumstances. In some cases, the domestic debt is eliminated through high inflation, in other cases, governments default on external debt. Further study of default through financial repression – especially where governments essentially force captive domestic markets to absorb government debt at well below market interest rates – is especially important.

How did domestic public debt in emerging markets fall off many economists' radar screen? Many researchers, aware only of difficulties that emerging markets had in issuing debt in the ultra-high-inflation 1980s and 1990s, simply believed that no one would ever voluntarily lend money to a kleptocratic emerging market government. The logical implication was that such debt must not exist. True, there are exceptions. Alesina and Tabellini (1990) consider a theoretical case where domestic debt is honored ahead of external debt. But absent any data, or even any awareness of the one-time existence of

[34] As noted earlier, our classification of domestic debt defaults here extends and refines that presented in Reinhart and Rogoff (2008, 2009).

significant quantities of domestic public debt in virtually every emerging market, these isolated examples have had no great impact on the mainstream academic or policy literature.

Perhaps the most surprising and significant finding of our study is simply the lack of transparency so many governments and multilateral institutions exhibit in making time series on domestic debt easily available. After all, these governments routinely tap domestic and foreign markets to sell debt. Standard auction theory—much of which is admittedly static—suggests that it should be in the interest of sellers to convey information, especially when the debt can be resold in secondary markets. Even more puzzling is why global investors do not insist on historical information relevant to the value of securities they may purchase. Understanding why so many governments do not make it easier for standard databases to incorporate their debt history is an important question for future research.

From a policy perspective, there is a plausible case that an international agency would be providing a valuable public good if it could enforce (or at least promote) basic reporting requirements and transparency across countries. Given the apparent large historical role of domestic public debt in helping to precipitate developing country external debt and inflation crises, it is a great curiosity indeed that today's multilateral financial institutions have never fully taken up the task of systematically publishing the data. This failure, especially in light of these agencies' supposed role at the vanguard of warning policymakers and investors about crisis risks, is stunning. Absent a long dated historical data set, how can one meaningfully think about what debt levels are associated with elevated risk of default and financial crisis? Instead, the system has seemed to forget

about the history of domestic debt entirely, thinking that the relatively recent blossoming of internal public debt markets is something entirely new and different.[35] But as our historical data set on domestic debt underscores with surprising force, nothing could be further from the truth.

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[35] Beyond simply reporting debt data, international financial institutions such as the International Monetary Fund or the World Bank can, of course, also help with disseminating best practices (see, for example, the institutional evolution discussed in Wallis and Weingast, 1988).

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Appendix I. The sample

The debt data covers the countries shown in Appendix Table 1 (9 in Africa; 9 in Asia; 23 in Europe; 19 in Latin America, 2 in North America; and 2 in Oceania). The domestic default episodes encompass all countries that have defaulted on their domestic debt (See Appendix Table 2 for a definition of default and Appendix Table 3 for a full list of the episodes).

As the final column in Appendix Table 1 illustrates, our sample of sixty-four countries indeed accounts for about 90 percent of world GDP. Many of these countries, particularly those in Africa and Asia, have become independent nations only relatively recently (column 2).

Appendix 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			
Cote D'Ivoire	1960	0.00	0.06
Egypt	1831	0.40	0.53
Ghana	1957	0.06	0.06
Kenya	1963	0.00	0.10
Mauritius *	1968	0.00	0.03
Morocco	1956	0.13	0.24
South Africa	1910	0.36	0.54
Tunisia[a]	1881-1957	0.06	0.10
Zimbabwe	1965	0.00	0.05
Asia			
China	1368	8.80	7.70
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
Philippines	1947	0.34	0.53
Singapore *	1965	0.02	0.16
Thailand *	1769	0.27	0.94
Europe			
Austria	1282	0.86	0.48
Belgium *	1830	1.18	0.63
Bulgaria	1878	0.26	0.18
Czechoslovakia	1918	0.00	0.49
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
Ireland	1922	0.44	0.15
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
Switzerland	1291	0.60	0.54
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; we do not include intergovernmental war loans such as the US loans to Great Britain during World War I.
[a]Tunisia was a protectorate of France from 1881 to 1956.

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

	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
Haiti	1804	0.00	0.02
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: 64 countries		93.5	89.9

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

Appendix II: Domestic debt data

The central government debt data assembled in this study is both broad in its cross-country coverage and spans nearly one-hundred years for most countries (1914 to

2007) and even longer for many others.[36] Here we present a synopsis of "state-of-the-art" information on public debt (available data, sources, scope, etc.). We also highlight some of the salient characteristics of the long time series we study, in addition to what we have already discussed in section II of the text.[37]

Data preliminaries

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 reported, with no particulars provided for 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.[38] Data is only provided for the G-7 from 1980 onwards (out of 183 countries covered in the WEO).

The most comprehensive data on public debt in emerging market economies comes from the World Bank's *Global Development Finance*—GDF (known previously as the World Debt Tables). It is an improvement on other databases in that it begins (for most countries) in 1970 and provides extensive detail on the particulars of **external debt**.

[36] The regional coverage is, unfortunately, uneven: coverage of Africa is relatively sparse (although we incorporate some excellent data from colonial records); it is, of course, most complete for Europe, North America, and Oceania.

[37] For compete references underlying this appendix and its accompanying database, see Reinhart and Rogoff (2008).

[38] 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."

Yet, GDF also has serious limitations, besides the fact that it covers only external debt. Neither advanced economies are included to facilitate comparisons, nor are such newly industrialized countries as Israel, Korea, or Singapore. Unlike data from the IMF and the World Bank for exchange rates, prices, government finances, etc., there is no data prior to 1970. For a few countries, such as Panama or Cote D'Ivoire, external debt is a sufficient statistic on government liabilities, because domestic public debt levels are relatively trivial. For most countries, however, domestic debt accounts for an important share of total government debt. As we have already noted in the text, the all-country average oscillates between 40 to 80 percent during 1900 to 2006.[39]

In search of the elusive data on total public debt, we examined the archives of the League of Nations and found that the 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. In 1948, the UN Department of Economic Affairs published a special volume on public debt that spanned 1914 to 1946. From that time onwards, the UN continued to collect and publish the domestic and external debt data in the same format as their prewar predecessor on an annual basis in their *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. In total, these sources yield time series that span 1914 to 1983 for the most complete cases. It covers advanced and developing economies. For the most part, it also disaggregates

[39] For some countries, such as the Netherlands, Singapore, and the United States, practically all public debt is domestic.

domestic debt into its long-term and short-term components. To the best of our knowledge, these data are not available electronically in any database. Hence obtaining it required going to the original publications. These data provide the starting point for our public debt series, which have been extended to the period prior to 1914 and post 1983 whenever possible. The sources are numerous. The material comes from large-scale historical statistical compendiums (such as Carreras and Tafunell, 2005, *Estadísticas Históricas de España, Siglos XIX-XX*) or from individual scholars (for example, Bazant's, 1968, careful study of Mexico's domestic and foreign debt, *Historia de la Deuda Exterior de Mexico: 1823-1946*). Colonial records were also a valuable source of information for pre-1914; country-specific statistical and government agencies provide data for the more recent period.[40] Data Appendix IV provides details for the sources by country and time period. Foreign external debt is from Reinhart and Rogoff (2008).

Appendix III: Crises dates

Appendix Table1 defines the criteria as to what constitutes a domestic debt crisis. Specifically, as with sovereign default it is defined as:

1. A failure to meet a principal or interest payment on the due date (or within the specified grace period). (These episodes also include instances where rescheduled debt is ultimately extinguished on less favorable terms.)

2. The freezing of bank deposits and or forcible conversions of such deposits from dollars to local currency.

3. The abrogation of indexation clauses, as the United States did in the 1930s and as Argentina is doing at the time of this writing in 2008.

[40] For Australia, Ghana, India, Korea, South Africa among others, we have put together debt data for much of the colonial period from British statistical sources which tracked the colonies. We also have similar colonial data for former Japanese colonies.

To our knowledge, this is the first effort to chronicle systematically sovereign defaults on domestic debts, along the lines that economic historians have documented external sovereign defaults. The closest source comparable to these dates on domestic sovereign default is *Standard and Poor's.*[41]

For a detailed description of all other data used in this study by country and by year see Reinhart and Rogoff (2008).

Appendix Table 2. Defining Debt Crises by Events: A Summary

Type of Crisis	Definition and or Criteria	Comments
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. For this 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 Poor's. Historically, it is very difficult to date these episodes and in many cases (such as banking crises), it is impossible to ascertain the date of the final resolution.

[41] See the careful analysis of Beers and Chambers, *Sovereign Defaults At 26-Year Low, To Show Little Change In 2007*, which covers domestic default post-1975. Since this study is focused only on domestic public debt, it does miss some key episodes, such as forcible conversions of foreign currency bank deposits. These episodes constitute defaults on domestic debt because, typically, the government simultaneously writes down the value of treasury debt held by banks.

Appendix Table 3. Episodes of Domestic Debt Default or Restructuring, 1650–1920

Country	Dates	Commentary
Argentina	1890	This default also extended to several so-called "internal" bonds. These bonds although not issued in London, were denominated in a foreign currency (£s) and marketed abroad—the forerunners of the Mexican Tesobonos of the 1990s.
China	March 1921	Consolidated internal debt plan to deal with the arrears on most government bonds since 1919.
Denmark	January 1813	During the crisis, foreign debts were serviced but domestic debt was reduced by 39 percent.
Mexico	November 30, 1850	After the restructuring of foreign debt in October of that year, domestic debt was roughly cut in half. Domestic debt accounted for 60 percent of total public debt.
Peru	1850	Domestic colonial debts were not cancelled—debt prices collapsed and this debt was only restructured in 1850.
Russia	December 1917–October 1918	Repudiation of debts and confiscation of gold in all forms followed by confiscation of all foreign exchange.
United Kingdom	1672	The Great Stop of the Exchequer. Repudiation of state debt under Charles II.
United Kingdom	*1749, 1822, 1834, 1888–89 (these restructurings appear to be mostly voluntary)*	Among several conversions of debt into lower coupon rates. Reductions in rates were mostly 0.5–1.0 percent in these episodes.
United States	January 1790	Nominal interest was maintained at 6 percent, but a portion of the interest was deferred for 10 years.
United States (9 states)	1841–1842	Three states repudiated their debts altogether.
Confederate States of Anerica	1864-1865	The Confederate Currency Reform Act of 1864, which repudiated one-third of the Confederate money supply. The monetary reform act took effect April 1, 1864 east of the Mississippi River, but did not take effect until July 1, 1864 in the Trans-Mississippi Confederacy. See Weidenmeier (2010).
United States (states and many local governments)	1873–83 or 1884	By 1873, 10 states were in default. In the case of West Virginia, settlement was as late as 1919.

Appendix Table 3. Selected Episodes of Domestic Debt Default or Restructuring, 1920s–1960s

Country	Dates	Commentary
For additional possible domestic defaults in several European countries during the 1930s, see notes below.		
Australia	1931/1932	The Debt Conversion Agreement Act in 1931/32 which appears to have done something similar to the later NZ induced conversion. See New Zealand entry. [1]
Bolivia	1927	Arrears of interest lasted until at least 1940.
Canada (Alberta)	April 1935	The only province to default—which lasted for about 10 years.
China	1932	First of several "consolidations", monthly cost of domestic service was cut in half. Interest rates were reduced to 6 percent (from over 9 percent)—amortization periods were about doubled in length.
Greece	1932	Interest on domestic debt was reduced by 75 percent since

		1932; Domestic debt was about 1/4 of total public debt.
Mexico	1930s	Service on external debt was suspended in 1928. During the 1930s, interest payments included "arrears of expenditure and civil and military pensions."
New Zealand	1933	In March 1933 the New Zealand Debt Conversion Act was passed providing for voluntary conversion of internal debt amounting to 113 million pounds to a basis of 4 per cent for ordinary debt and 3 per cent for tax-free debt. Holders had the option of dissenting but interest in the dissented portion was made subject to an interest tax of 33.3 per cent. [1]
Peru	1931	After suspending service on external debt on May 29, Peru made "partial interest payments" on domestic debt.
Romania	February 1933	Redemption of domestic and foreign debt is suspended (except for three loans).
Spain	October 1936–April 1939	Interest payments on external debt were suspended, arrears on domestic debt service.
United States	1933	Abrogation of the gold clause. In effect, the U.S. refused to pay Panama the annuity in gold due to Panama according to a 1903 treaty. The dispute was settled in 1936 when the US paid the agreed amount in gold *balboas*.
United Kingdom	1932	Most of the outstanding WWI debt was consolidated into a 3.5 percent perpetual annuity. This domestic debt conversion was apparently voluntary. However, some of the WWI debts to the United States were issued under domestic (UK) law (and therefore classified as domestic debt) and these were defaulted on following the end of the Hoover 1931 moratorium.
Uruguay	November 1, 1932–February, 1937	After suspending redemption of external debt on January 20, redemptions on domestic debt were equally suspended.
Austria	December 1945	Restoration of schilling (150 limit per person). Remainder placed in blocked accounts. In December 1947, large amounts of previously blocked schillings invalidated and rendered worthless. Temporary blockage of 50 percent of deposits.
Germany	June 20, 1948	Monetary reform limiting 40 Deutschemark per person. Partial cancellation and blocking of all accounts.
Japan	March 2, 1946–1952	After inflation, exchange of all bank notes for new issue (1 to 1) limited to 100 yen per person. Remaining balances were deposited in blocked accounts.
Russia	1947	The monetary reform subjected privately held currency to a 90 percent reduction.
	April 10, 1957	Repudiation of domestic debt (about 253 billion rubles at the time).

[1] See Schedvin (1970) and Prichard (1970), for accounts of the Australian and New Zealand conversions, respectively, during the Depression. Michael Reddell kindly alerted us to these episodes and references.

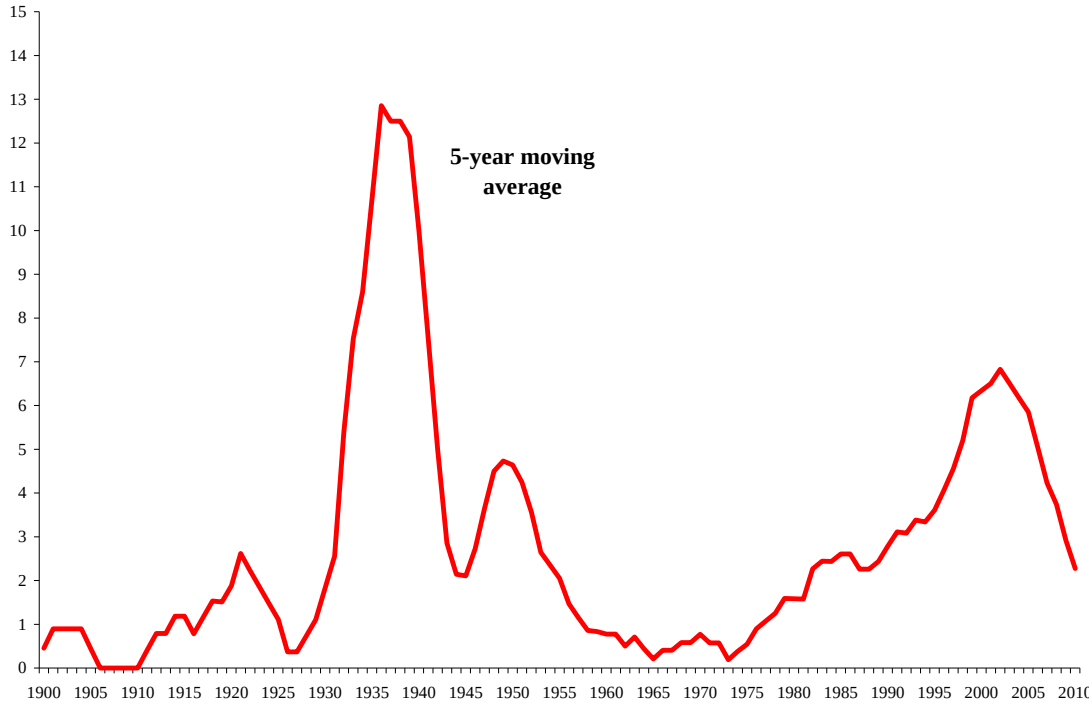
Notes: We have made significant further progress in sorting out the defaults on World War I debts to the United States, notably by European countries. In all cases these episodes are classified as a default on external debts. However, in some case –such as the UK--some of the WWI debts to the US were also issued under the domestic law and, as such, would also qualify as a domestic default. The external defaults on June 15, 1934 included: Austria, Belgium, Czechoslovakia, Estonia, France, Greece, Hungary, Italy, Latvia, Poland, United Kingdom. Only Finland made payments. See *New York Times*, June 15, 1934.

Appendix Table 3. Selected Episodes of Domestic Debt Default or Restructuring, 1970–2007 (concluded)

Country	Dates	Commentary
	Africa	
Angola	1976, 1992–2002	
Cameroon	2004	
Congo (Kinshasa)	1979	
Gabon	1999–2005	
Ghana	1979, 1982	Default on central bank notes (in the context of conversion to a new currency).
Liberia	1989–2006	
Madagascar	2002	
Mozambique	1980	
Rwanda	1995	No external default.
Sierra Leone	1997–1998	
Sudan	1991	
	Asia	
Mongolia	1997–2000	
Myanmar	1984, 1987	
Sri Lanka	1996	No external default.
Solomon Islands	1995–2004	
Vietnam	1975	
	Europe and the Middle East	
Croatia	1993–1996	
Kuwait	1990–1991	
Russia	1998–1999	Largest local currency debt default (US $39 billion) since Brazil 1990.
Ukraine	1998–2000	Bond maturities were unilaterally extended.
	Western Hemisphere	
Antigua and Barbuda	1998–2005	
Argentina	1982, 1989–90, 2002–2005	Forcible conversion of U.S. dollar debt to peso debt.
Bolivia	1982	U.S. dollar deposits were forcibly converted into local currency. Foreign currency deposits were again allowed in 1985 as part of the stabilization plan when capital controls were lifted.
Brazil	1986–87, 1990	Abrogation of inflation-linked indices embedded in the original contracts. Largest default (US$ 62 billion) in 1990.
Dominica	2003–2005	
Dominican Republic	1975–2001	
Ecuador	1999	
El Salvador	1981–1996	The only case in Latin America where there was a default in domestic debt that was NOT accompanied by external default.
Grenada	2004–2005	
Mexico	1982	Forcible conversion of dollar deposits to pesos.
Panama	1988–1989	Arrears in domestic suppliers' credit, wages, and civil and military pensions.
Peru	1985	U.S. dollar deposits were forcibly converted into local currency. Foreign currency deposits were allowed again in 1988.
Surinam	2001–2002	
Venezuela	1995–1997, 1998	
Zimbabwe	2006	With over 98.5 percent of domestic debt with maturities less than a year, there is a restructuring.

Appendix Figure 1 plots for the years 1900–2006 (where our data set is most complete) the percentage of all independent countries in a state of default or restructuring on domestic sovereign debt during any given year. One fact that jumps out from the figure are the two long periods where a higher percentage of all countries are in a state of default or restructuring. Like banking crises (see Reinhart and Rogoff, 2008), domestic debt crises are bunched during the Great Depression of the 1930s and debt crises which began in the early 1980s.

Appendix Figure 1. Sovereign Domestic Debt: Percent of Countries in Default or Restructuring, 1900-2010



Sources: Reinhart and Rogoff (2008 and 2009), Reinhart (2010), sources cited therein, and Appendix Table 3.

Appendix IV. Public Debt: Detailed Sources

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

Appendix Table 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	Denmark'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

Appendix Table 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/GFD	
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

Appendix Table 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

Appendix Table 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