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A Distant Mirror of Debt, Default, and Relief[1]

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Abstract

We take a first pass at quantifying the *magnitudes* of debt relief achieved through default and restructuring and examine the subsequent economic performance of the debtors in two distinct samples: credit events in the middle-high income emerging markets, 1979-2010; and the debt hangover of *official* debt created by World War I and the defaults of the major advanced economies, 1920-1939. The indicators we analyze in the post-debt-relief period for both samples include: real per capita GDP (levels and growth rates); sovereign credit ratings (Fitch, Moodys and Institutional Investors); capital flow bonanzas; debt servicing burdens (interest and amortization) relative to GDP, GNI, revenues, and exports; external debt (public plus private) for emerging markets; total, external, and domestic central government debt for interwar episodes (relative to GDP, GNI, and exports). Across 42 default and restructuring episodes over 1932-1939 and 1979-2010 for which we have the required data, debt relief averaged 14 and 16 percent of GDP for advanced economies and middle-high-income emerging markets, respectively; there are numerous reasons why these estimates represent a lower bound on the true magnitude of debt relief. The post *final* debt reduction landscape is characterized by higher income levels and growth, lower debt servicing burdens, lower external debt, sovereign credit ratings and capital flows behaved differently in the interwar and modern periods; in the latter case ratings recover markedly.

JEL E6, F3, and N0

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Introduction

When I was a youngster growing up in South Dakota, we never referred to the national debt, it was always referred to as the war debt because it stemmed from World War I.
George McGovern[2]

Before the subprime financial crisis appeared on the horizon in the summer of 2007, academic and policy discussions on the topic of debt relief were almost exclusively directed toward initiatives for the highly indebted poorest countries (HPIC).[3] Advanced economies, apparently, had outgrown volatile business cycles and financial crises. Sovereign debt crises were a distant memory for them.[4] Emerging markets, having weathered the turbulence of 1994-2003, were also on the mend, helped along by a favorable external environment of low and stable international interest rates and robust commodity prices. The debts of the First World War and the controversial defaults by nearly all advanced economies from 1932 to 1934 were an intellectual curiosity with little relevance to current circumstances.

The global financial crisis and its aftermath (which still lingers) abruptly disrupted that tranquility setting and the accompanying complacency. New restructurings in Greece returned after a hiatus of nearly 80 years (the last Greek default started in 1932 and ended in 1966). The ongoing depression in periphery Europe has already surpassed the economic collapse of the 1930s by some markers, with unemployment rates reaching levels not seen since that era. In most advanced economies, record private debt overhangs are only slowly unwinding, while the steady upward march in public debts continues unabated. The broad subject of sovereign debt crises and the role of debt write-offs in their resolution is no longer a matter solely of academic interest.

Our work until now has been mostly devoted to documenting the *incidence* of external and domestic default, various features of their causes, and the macroeconomic panorama surrounding them.

[2] BrainyQuote.com Web site: http://www.brainyquote.com/quotes/quotes/g/georgemcgo462619.html
[3] See, for example, Chauvin and Kraay (2005) for a skeptical view of the benefits of debt forgiveness for low income countries.
[4] See Stock and Watson (2002) on the Great Moderation and the reduced volatility of output.

This paper, provides a first pass at quantifying the *magnitudes* of debt relief achieved and the subsequent economic performance of the debtors.

We follow two complementary strands of analysis. One focuses on the highly varied credit events in the middle-high income emerging markets in the modern era. Recent work by Cruces and Trebesch (2013, henceforth C&T), which is in line with the approach developed in Sturzenegger and Zettlemeyer (2006), provides an authoritative quantitative analysis of haircuts on sovereign debt for practically the universe of emerging market restructuring episodes from 1979 to 2010. We look at these haircuts not from their vantage point of the investor, but from our perspective of debt relief to the borrower.

The second strand extends our earlier work, bringing to the dissection table crises episodes that are comparatively understudied. Here, we turn our attention to the interwar debt hangover of *official* debt created by World War I.[5] This cloud of debt loomed large over the advanced economies, especially after they suffered systemic financial crises in 1929-1931 and protracted economic depression.[6] Their demise is echoed in the present predicament of predominantly (but not exclusively) periphery Europe. Devaluation and inflation was one way to cope with Fisher's (1933) debt-deflation spiral, but another was to directly slash the debt burden by restructuring and defaulting on existing debt.

Eichengreen and Portes' (1986) study the interwar years with the aim of explaining the incidence of sovereign default (on private creditors) and characterizing the performance of rates of returns on sovereign bonds. We follow their advice on the direction of future research:

> *"A further omission especially relevant to our analysis of default is the treatment of war debts and reparations generally and the 1931 Hoover Moratorium in particular.*
>
> *Another intriguing issue we have not yet begun to address is the relationship of default to the subsequent economic performance of borrowing countries."*

[5] The literature on default is primarily about *private creditors* and sovereign borrowers; World War I debt and reparations are about *official creditors* and sovereign borrowers.
[6] Ahamed (2010) often harks back to the war debt overhang theme.

We assess the magnitude, scope and timing of debt relief for the advanced economies in the 1930s (with a primary focus on War Debts) and the emerging markets post 1979. Our strategy of studying in parallel events and economic outcomes in advanced and emerging market economies is along the lines of Gourinchas and Obstfeld (2012), who examine the antecedents and immediate aftermath of banking, currency, and debt crises. Our time frame of analysis is complementary to theirs, as we are interested in the patterns surrounding the eventual *exit f*rom debt crises. The indicators analyzed in the post-debt-relief period include: real per capita GDP (levels and growth rates); sovereign credit ratings, including Fitch, Moodys and Institutional Investors; capital flow bonanzas; debt servicing burdens (interest and amortization) relative to GDP, GNI, revenues, and exports; external debt (public plus private) for emerging markets; total, external, and domestic central government debt relative to GDP, GNI, and exports.

Our main findings can be summarized as follows:

Across 42 default and restructuring episodes over 1932-1939 and 1979-2010 for which we have the required data, debt relief averaged 14 and 16 percent of GDP for advanced economies and middle-high-income emerging markets, respectively; these estimates represent a lower bound on the true magnitude of debt relief.

The size of the advanced economy debt write downs (relative to GDP) arising from the 1932-1934 defaults on World War I debt are not dissimilar from the estimates for the post-1970 middle-high income emerging market defaults and restructurings.

The cumulative average increase in per capita GDP over the four years following a decisive restructuring or default is 9 and 16 percent for the emerging markets and advanced economies, respectively. Decisive refers to the default or the last write down in a sequence--"restructuring to end all

restructurings." In the case of World War I Debt, the June 15, 1934 default settled the matter for that episode; for the emerging market cases, it is the last restructuring that marks the exit from default status.[7]

The incidence of a marked pick-up in economic activity following a debt write-down is widespread. Of the 47 combined advanced and emerging market episodes for which we have per capita real GDP data, 39 (83 percent) expanded from T to T+4. In six of the remaining eight cases, real per capita GDP was flat (defined as less than or equal to a one percent change in either direction) post-restructuring; and two episodes out of 47 had a significant decline in real per capita GDP.

On the question of capital market access, we look for patterns in the evolution of sovereign credit ratings post default. Here the interwar experience departs considerably from the emerging market (1979-2010) outcomes.

For the emerging market episodes over 1979-2010, we examine Institutional Investor Sovereign Ratings (IIR) for 30 episodes for which there is full data. The average increases (improvement) in the IIR index are 22 percent after two years and 38 percent after four years.

For 7 of the episodes (23 percent), the cumulative increase in the IIR from T to T+4 is in excess of 60 percent. This pattern of recovery is broadly consistent with the findings in Gelos, Sahay, and Sandleris (2011), who conclude market access following default comes swiftly (well within the four year window examined here).

The single lowest IIR reading at T+4 was Ecuador's 0.89 (11 percent lower than when it exited from default in 1995). [8] But this negative outcome was not because Ecuador remained shut out of capital

[7] In a significant number of instances there is only a single restructuring. However, there are numerous default spells where the number of restructurings ranges from two to eight.
[8] There are a total of 3 of the 30 cases (including Ecuador) where the rating was below what is was at the time of the last restructuring.

markets since its "final" Brady Plan restructuring but rather because it was quick to re-leverage after the restructuring. By 1998 (T+4), Ecuador was heading for a *new* debt crisis in 1999-2000.[9]

Debt service burdens (amortizations plus interest payments) as a share of: GDP, GNI, central government revenues, or exports decline following a restructuring. For the War Debt default episodes, the ratio of debt service to revenues falls from an average of about 34 percent in the late 1920s to about 24 percent a decade later. For the emerging markets (1979-2010), debt servicing declines in advance of the "final restructuring," as often there are multiple debt reduction efforts prior to the exit from default. The decline is most pronounced in debt service-to-exports ratio, which drops from 37 percent in the three years prior to default to 19 percent in the three years after exiting from default. We caution that even in the absence of haircuts, external factors could account for some of the observed reduction in debt servicing. Specifically, there is a sustained trend decline in real international interest rates following the abrupt spike in 1979 through mid-1982.

On the question of whether the debt write-downs actually reduced debt, we focus primarily on external debt and compare the advanced economy and emerging market experience over a nine-year span from four years before default (restructuring) to four years afterwards. For the advanced economies, we examine external (foreign) central government debt/GDP. The selection of external debt is warranted by the fact that the War Debts were external debt arrangements among sovereign governments. For the emerging markets, the haircut calculus from Cruces and Trebesch (2013) is also for external credit events. On average (across 35 advanced economy and emerging market episodes for which we have complete debt data), external debt/ GDP or GNI falls 19 percentage points over the nine year window. There is a vast range in variation in the debt outcomes, ranging from a cumulative debt reduction of 125 percent of GDP or GNI to a debt build-up of 37 percent.

[9] See Reinhart, Rogoff, and Savastano (2003) on this phenomenon and the subsection entitled *Did default or restructuring reduce the debt?* this paper.

Two additional observations: First, the number of countries which record deleveraging is considerably higher (27 episodes) than the tally of those ending up with a higher level of external debt (7 episodes).[10] Second, the outcomes corresponding to the advanced economies are not clustered in a particular range and, indeed, their experience is distributed similarly to that of emerging markets. As Gourinchas and Obstfeld (2012) find, the patterns seen in emerging and advanced economies' crises are qualitatively similar, except that emerging market credit ratings were penalized more heavily at the time of default.[11]

The paper proceeds as follows: In the following section we describe the, methodology, data requirements and other conceptual issues while Section III introduces the advanced economies and emerging market restructuring and default episodes that are the centerpiece of the paper Section IV is devoted to the comparisons of the modern emerging market experiences with the defaults on War Debt of the 1930s. Concluding remarks discuss related policy issues and scope for research in this area while appendices present supplementary material.

II. Concepts and Methodology

In the remainder of this section, we provide: (1) definitions for the concepts employed throughout the analysis (be it the type of sovereign crisis, the type of debt, creditor types, etc.); (2) a sketch of our basic methodology to calculate the magnitude of debt relief associated with a default or a restructuring; (3) a brief description of data requirements and their respective sources. A Data Appendix completes the task of providing individual sources in greater detail.

1. Default, restructuring spells, and other concepts

Box 1 provides a compact definition and commentary on the main events studied in this paper—specifically, sovereign debt crises. All the episodes (with a single exception) that are introduced in

[10] The US shows no change in external debt, as it did not have any external debt over this sample. Altogether this brings the total number of advanced and emerging market episodes to 35. The 1934 abrogation of the gold clause is the only domestic restructuring episode in out sample.

[11] Gourinchas and Obstfeld (2012) cover banking, currency, and debt crises over 1973 to 2010. This offers ample opportunity for the comparison of banking and currency crises in EMs and advanced economies. In this window, however, debt crises are confined to emerging markets; the inclusion of the 1930s defaults in advanced economies extends the comparison in an important dimension.

Section III and analyzed in the remainder of the paper fall into the category of sovereign *external* debt crises, as defined in Box 1. The aforementioned exception is a sovereign domestic crisis, which is the category that the United States' January 1934 haircut falls into, as it was confined to debt issued by the United States Treasury under domestic law (it also happened that the debt was held almost exclusively by domestic residents, and denominated in domestic currency, although prior to the haircut, it was linked to gold).

Within the realm of external sovereign debt crisis, we deal with two distinct varieties: The most common variety involves private creditors and sovereign borrowers. This type of credit event, in its many guises, captures the episodes of 1979-2010 in emerging markets. The other variety involves official creditors (specifically sovereign governments) lending to other sovereign governments. The episodes covered in the interwar sample (World War I and reconstruction debts) fall into this category. To be clear, in light of the severe financial crises and economic depression of the 1930s, there were many episodes of default and restructuring involving private creditors as well—but these are not the focal point of our study (we refer to these to the extent that they overlap or interact with the settlement of the War Debt).[12]

Box 1 also defines some of the timing conventions used in our analysis. On other conventions, we use the term default and restructuring interchangeably, as the latter is a partial default (a haircut), and, as described in Box 1, a restructuring changes the terms of the original contract to terms less favorable to the creditor. Rating agencies also treat restructurings in this manner. Before turning to out methodology for estimating the size of debt relief in each default spell, a few more definitions on debt types will clarify our choices of data.

As our debt crises are predominantly external, we focus primarily (but not exclusively) on external debt. In terms of borrowers, external debt can be public, publicly guaranteed, or private (which

[12] See, for instance, Eichengreen and Portes, (1986) and (1990), Eichengreen, (1992).

does not necessarily mean it is not ultimately guaranteed also). As to lenders, these can be official (sovereign governments), multilateral institutions (League of Nations, International Monetary Fund, World Bank, etc), or private creditors.

Box 1. Crisis, Default, and Timing Definitions

Type of Crisis or date	Definition	Comments
External sovereign debt crisis	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). These episodes also include instances where rescheduled debt is ultimately extinguished in terms less favorable than the original obligation. An external sovereign default involves debt that is classified as external because it was issued under foreign law. Usually (but not always) such debt is denominated in a foreign currency and is predominantly held by nonresidents.	In this study, we have two types of external debt crises: Defaults of debts between governments (this encompasses World War I debt and reparations payments) and private sector lending to official borrowers or to institutions that are publicly guaranteed (the emerging market defaults or restructurings fall into this category).
Domestic sovereign debt crisis	The definition given above for external debt applies, except these episodes cover debt issued under domestic law. Such debt may be denominated in domestic or foreign currency and held by either residents or nonresidents. Domestic debt crises have also often involved the freezing of bank deposits and or forcible conversions of such deposits from dollars to local currency.	The US 1934 abrogation of the gold clause is the only domestic debt crisis we examine. In line with the definition above, the delinking from gold meant that the debt was "ultimately extinguished in terms less favorable than the original obligation."
T	In this study we define T as the year of the final restructuring or default; the year of the last debt relief in that default spell.	For WWI defaults, T=1934 for all debtor countries, while debt relief began in 1931 with the Hoover Moratorium, the WWI debt issue was not resolved until the June 15 across the board default. From that date, only Finland made payments on the War debt. 1934 would not be the final date if we were focused on default episodes on private creditors. For example, Germany did not reach its final restructuring until 1952. For emerging market episodes, T is the date of the final restructuring that marks the exit from default. For instance, Mexico defaulted in August 1982 (start of the default spell); it had six restructuring deals between the start date (1982) and 1990 the date of the final restructuring (T=end date=exit from default).

The interwar component of our analysis is focused on public debt, more precisely, external (or foreign) public debt (this refers to central government debt in all cases except Italy where general government debt is used). External public debt is where the War Debt was housed, unless we note otherwise. [13] Over 1920-1939, we also examine the evolution of central government domestic and total debt, as default on War Debt brought about important changes in the composition of the public sector balance sheet.

In the emerging market episodes, we also work with more than one time series. The estimated haircuts are based on public and public guaranteed debt from private creditors (excluding IMF loans, official loans, etc.). To ascertain the larger macroeconomic picture around restructurings, we also trace the evolution of total external debt (the sum of public and private debt from all creditors).

2. Haircuts and debt relief

It is quite common in our sample to see multiple debt reduction efforts in consecutive years (in some years there may even be more than one restructuring); these are not, in our estimation, separate debt crises but the same lingering unresolved one, which as in the 1980s emerging market experience can go on for a decade and longer. [14] As documented in Zettlemeyer, Trebesch, and Muti (2013), the Greek restructuring pattern has been evolving in this mold. It will be one of the largest, if not the largest, debt relief episodes (relative to GDP) to date (it is also a multi-year ongoing process, along the lines described here). In these cases, our interest is to quantify the magnitude of debt relief or the entire default spell rather than the individual deals.

The database on haircuts constructed by C&T (2013) presents, for each restructuring deal, the amount of debt affected as well as two measures of the haircut agreed upon in each deal. Their approach follows Sturzenegger and Zettlemeyer (2006), who focus on eight case studies of more recent crises. This

[13] For example, in the case of Italy, since March 1926, the service of the war debt was relegated to the Autonomous Fund of the War Debts. Where possible, we keep a track record of how the War Debt and its service is integrated in the public sector accounts.
[14] See Reinhart and Rogoff (2009).

information, along with the corresponding US dollar GDP figures for the corresponding years, is shown in Appendix Table 1 for a total of 97 individual restructuring deals in the 30 middle-high income countries we study over 1979-2010. From this information, a *cumulative* haircut measure for the entire default spell is (see C&T, 2013 Appendix pp. 3) and synopsis below.[15] [16] The default spell dates are from Reinhart and Rogoff (2009). Thus, the 97 individual restructurings correspond to 35 default spells in 30 countries. Argentina, Dominican Republic, and Uruguay had two separate default episodes or spells; Ecuador had three.

The cumulative effective haircut can be interpreted as the compound losses of a passive investor who held a face value-weighted basket of all the country's securities and whose debts are restructured sequentially in each deal up to and including the final deal. For the final deal *i* this measure is:

$$(1)\ \text{Cumulative Effective } H_{SZ}^{i} = 1 - \prod_{j=1}^{Ji} WCR_{SZ}^{i,j}$$

where $WCR_{SZ}^{i,j}$ is the wealth conservation ratio in restructuring j, and J^i -1 is the number of non-final deals preceding final deal i. $WCR_{SZ}^{i,j}$ is defined as:

$$(2)\ WCR_{SZ}^{i,j} = \frac{Debt\ Affected^{i,j}}{Total\ Debt_{t-1}^{i}}(1 - H_{SZ}^{i,j}) + \left(1 - \frac{Debt\ Affected^{i,j}}{Total\ Debt_{t-1}^{i}}\right) = 1 - Effective\ H_{SZ}^{i,j}$$

The wealth conservation ratio is 1 minus the effective haircut and draws on GFD data to private creditors.

To calculate debt relief for a full spell (up to and including the final restructuring), DR_i, we calculate the following two ratios, which we refer to as Method 1 and 2, respectively:

$$(3)\ DR_{i,METHOD1} = \text{Cumulative Effective } H_{SZ}^{i} \frac{Debt\ Affected^{i,j}}{Nominal\ GDP_i}$$

[15] *Source:*C &T (2013) https://sites.google.com/site/christophtrebesch/research.

[16] In effect, in the same spirit of C&T (2013) two cumulative haircut estimates can be derived; the first is based on the "preferred" haircut measure for each successive restructuring and a market cumulative measure, which replaces the preferred haircut measure with the market calculation.

Method 2, rather than scaling by final period GDP (which could bias downward the relative importance of earlier restructuring deals assuming nominal GDP is rising over the spell), would be:

$$(4)\ DR_{i,METHOD2} = \text{Cumulative Effective } H^{i}_{SZ} \sum_{j=1}^{j=i} \frac{Debt\ Affected^{j}}{Nominal\ GDP_{j}}$$

A sample calculation for Argentina 1982-1993, tracing out the effects of successive cumulative haircuts over a lengthy (but typical of the debt crisis of the 1980s) default episode, is available from the authors upon request.

For the War Debt defaults, as the entire stock of debt was written off, we work with the outstanding stock of debt as a share of GDP as our rough estimate of the haircut. We document the figures on the stock of unpaid debt from various sources to ascertain their accuracy, an issue we take up in the next section. Whether or not the accumulated interest to default date is included or not yields a second (larger) estimate of debt relief. Section III provides greater details on an episode by episode basis.

3. Data and sources

Our comparisons involve two distinct eras separated by forty years; 1920-1939 and 1979-2010. The interwar defaults are about wartime official debts rather than peacetime private lending. Studying these two groups of necessarily requires a broad array of databases and an even broader collection of sources. While a Data Appendix provides greater detail, the major data sources are briefly introduced in Box 2.

In addition to the sources associated with the time series used in this study, there are also important sources used to build the chronology of events surrounding the interwar settlement of War Debt that ares presented in the next section. Annual League of Nations *World Economic Surveys* covering 1931-1940 are invaluable sources. Pick and Sedillot (1971) and United Nations (1948) figure as prominently useful. Reinhart and Rogoff (2009) and Reinhart (2010) date the credit events.

Box 2
Variable List and Main Data Sources

Haircuts and Affected debt: For interwar calculations, important (but not exhaustive) sources are Bailey (1950), League of Nations (various issues), Lloyd (1933), and United Nations (1948); For 1979-2010 restructurings Cruces and Trebesch (2013) https://sites.google.com/site/christophtrebesch/

Debt series; For the advanced economies interwar comparisons the time series on total, external, and domestic central government debt government debt are from Reinhart and Rogoff (2009) and (2011); the emerging market total external debt, 1970-2011 is from World Bank (2013), *International Debt Statistics*, Washington DC http://data.worldbank.org/data-catalog/international-debt-statistics.

Central government revenues:1920-1939 from Mitchell (1998) and (2003); World Bank (2013), *International Debt Statistics*, Washington DC http://data.worldbank.org/data-catalog/international-debt-statistics provides 1970-2011 emerging market data.

Real GDP: Maddison http://www.ggdc.net/maddison/ and Conference Board and Total Economy Database http://www.conference-board.org/data/economydatabase/

Nominal GDP: Numerous country specific sources, as detailed in the Data Appendix.

Nominal GDP, US dollars: 1980-2011 International Monetary Fund (2013), *World Economic Outlook*.

Nominal Gross National Income (GNI), US dollars: 1970-2011 is from World Bank (2013), *International Debt Statistics*, Washington DC.

Exports, US dollars (BoP): 1970-2011 is from World Bank (2013), *International Debt Statistics*, Washington DC .

Debt servicing: For the interwar, 1920-1939: League of Nations (various issues), and United Nations (1948); *International Debt Statistics*, Washington DC http://data.worldbank.org/data-catalog/international-debt-statistics provides the post 1970 emerging market data.

Sovereign credit ratings: Fitch, Moody's, Gaillard (2012) are used for the 1930s episodes while *Institutional Investor* http://www.institutionalinvestor.com/Article/3165784/Sovereign-Ratings-Track-Economy-Lower-in-Country-Credit-Survey.html provides the post 1979 data.

Source: The authors. See Data Appendix for additional details.

III. The Episodes and Debt Relief

In this section, we introduce the restructuring and default episodes that will be the centerpiece of our study; we sketch some of their more salient features. All episodes except the Unites States' 1934 abrogation of the gold clause involve external debt. The debt in question is predominantly (but not exclusively) issued under foreign law, denominated in a foreign currency, and held by non-residents. In the cases we examine from the 1930s, we largely confine our attention to World War I debt owed to the

United States. War Debt is somewhat of a misnomer though, as for most borrowers (the exception is the United Kingdom) much of the debt included under this rubric was contracted after the war had ended and had the distinct character of reconstruction and stabilization loans.[17] A distinguishing feature of this debt is that it is almost entirely contained within the official sectors—both the borrower and the lenders are sovereign governments. The emerging market episodes of 1978-2010 are different in this respect; the typical pattern involves private creditors and official borrowers. Often enough, however, the debts that end up restructured in these episodes under a sovereign umbrella started out as private debt, which the government stepped in to guarantee at a time of crisis.[18]

The academic literature on sovereign default and restructuring has been primarily preoccupied with private creditors lending to public borrowers. The study of default on official debt is far more limited. The combination and comparison of these hybrid episodes is a novel feature of this paper.

Before launching into a discussion of the war debts and their demise, the environment of the 1930s has to be placed in historical context. Bordo and Jonung (2001) who examine chronologically monetary and fiscal regimes from 1881 through 1995, provide an encompassing international setting and offer the following observations: (i) WWI not only gave rise to the high debt levels we examine here, but also saw governments become increasingly reliant on the inflation tax.[19]; (ii) the return of peace brought a desire for monetary stability but at the same gave rise to the policy dilemma we are interested in. They observe:

"…in several of the belligerent countries a decision had to be made concerning the treatment of public debt, that is over the time path of budget surpluses to amortize outstanding debt. Governments had to choose whether to run contractionary fiscal policies, which would retire outstanding debt, or to default

[17] See Bailey (1950), Lloyd (1933), US Treasury (1920) and (1933).
[18] See Diaz Alejandro (1985) for an early discussion of the contingent liabilities problem and Reinhart (2010) for documenting numerous historical examples.
[19] See also Bordo (2012) for a discussion of the inflation tax in a broad historical context.

explicitly or implicitly via inflation. Any decision would have profound effects on the distribution of income between debtors and creditors."

Over the course of the interwar era (which Bordo and Jonung, 2001 apportion into three distinct regimes: the return to gold in the mid-1920s, the relatively short-lived gold standard, and the final collapse of gold), we will see the progression from earlier attempts to tighten fiscal conditions and pay down the war debt to both explicit default and implicit via reflation and the abandonment of the gold anchor.

1. World War I debts

Table 1a lists 17 countries that, as of 1934, owed debt to the United States from World War I and its aftermath. Finland, which was the only country to fully honor its war debt obligations to the United States, drops out of the analysis.[20] We add to this list of 16 European default cases Germany's 1932-1934 default and the United States 1934 haircut (Table 1b). This brings the total number of 1930s episodes to 18. In the various empirical exercises that follow, these countries are incorporated to the extent that the data permits. The core episodes with the most complete profile are: Austria, Belgium, France, Germany, Greece, Italy, United Kingdom, and United States.

The first column of Table 1a gives the amount of debt outstanding at the time of the generalized default in June 1934. The amounts defaulted on vary somewhat across sources. For instance, the amounts of unpaid obligations that are recorded in the United Nations 1948 publication, *Public Debt, 1914–1946*, are not strictly the same as those shown in Table 1a (although quite close); on the whole, the debts from the United Nations source (the original information was collected by the League of Nations) are somewhat higher. Discrepancies may also arise from what exchange rate are used to convert the debt into local currency, so as to allow one to construct a measure of the debt relief relative to GDP. Our point

[20] Finland was fully preoccupied dealing with Russians following its still recent independence and apparently wished to keep in best terms with the United States.

estimates of debt relief (the last column) are based on the nominal GDP and exchange rates shown. When in doubt, we have opted for the more conservative estimates.

Table 1b presents for the United States episode comparable calculations to those shown for the European countries. The debt outstanding as reported by the US Treasury is based on the end of the fiscal year (then June 30), while nominal GDP are calendar year figures. The adoption of the Gold Reserve Act, which delinked US Treasury debt from gold (among other things) and devalued the dollar against gold, occurs on January 30-31, 1934. To address the lack of synchronicity, we provide the 1933 and 1934 figures to bracket the estimate of debt reduction delivered.

Exhibit. 1 Harmony in Europe, 1932, the *Detroit News*, Artist unknown

Table1a. Unpaid Allied Wartime and Postwar Debt Owed to the United States:
The 1934 Summer Defaults

	Estimated debt outsta US dollars	Nominal GDP local currency, 1934	lcu per US$ 1933 eop	Nominal GDP US$, 1934	Outstanding debt/GDP (debt relief)
United Kingdom	4,277,000,000	4,547,000,000	0.24	19,264,825,087	22.2
France	3,404,818,945	229,989,700,000	16.34	14,075,257,038	24.2
Italy	1,648,034,051	128,410,000,000	14.90	8,615,540,538	19.1
Belgium	379,087,200	64,714,000,000	5.59	11,583,547,147	3.3
Russia	192,601,297	.		.	.
Poland	159,666,972	.		.	.
Czechoslovakia	91,879,671	.		.	.
Yugoslavia	51,758,487	.		.	.
Romania	37,911,153	.		.	.
Greece	27,167,000	42,085,624,562	138.26	304,405,322	8.9
Austria	24,055,709	8,980,000,000	6.47	1,387,212,440	1.7
Estonia	13,999,146	.		.	.
Armenia	11,959,917	.		.	.
Finland (fully repaid)	8,281,926	210,742,000,000	53.45	3,942,561,336	0.2
Latvia	5,132,287	.		.	.
Lithuania	4,981,628	.		.	.
Hungary	1,685,836	.		.	.
Memorandum item:					
	Total owed the US:	US GDP			Owed/GDP
	10,340,021,226	66,800,000,000			15.5

Sources: Debt amounts are from Bailey (1950), p. 701. (see http://www.u-s-history.com/pages/h1358.html). Exchange rates are from *Historical Statistics of the United States* and United Nations (1948) and nominal GDP for 1934 are as follows: US and UK from MeasuringWorth, http://www.measuringworth.com/datasets/usgdp/result.php; France Historical National Accounts Database (HNAD), 1815-1938 http://www.rug.nl/research/ggdc/data/historical-national-accounts; Italy, Francese and Pace (2006) 1861-2006; Belgium,1835-2005, BNB, Centre d'études économiques de la KUL; Greece, Kostelenos (2003), 1830-1939; Austria, 1924-1937, Global Financial Data;and Finland GDP, Historical National Accounts Database (HNAD), 1860-2001, http://www.rug.nl/research/ggdc/data/historical-national-accounts.

Notes: The amounts of debt outstanding under the broad category of WWI debt includes, especially for Eastern Europe, debts were incurred after the war in connection with reconstruction. The breakdown is given for each debtor country in Reinhart and Rogoff (2013).

Table1b. United States: Abrogation of the Gold Clause and Devaluation January30-31, 1934

Fiscal Year	Debt outstanding	Dollar devaluation relative to gold (haircut, percent)	Amount of haircut		Nominal GDP	Debt relief (haircut/GDP)
6/30/1934	27,053,141,414	40.94	11,075,556,095	1934	66,800,000,000	16.6
6/30/1933	22,538,672,560	40.94	9,227,332,546	1933	57,200,000,000	16.1

Sources: Debt from http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt_histo3.htm
Devaluations details, Pick and Sedillot (1971), pg. 110; Nominal GDP, Measuring Worth, http://www.measuringworth.com/usgdp/
Notes: January 1934 devaluation details are: from 1 troy ounce of gold =20.67 US dollars to 1 troy ounce of gold = 35.00US dollars. We provide the debt and nominal GDP figures for 1933 and 1934 to bracket the size of the debt reduction. According to the League of Nations, the United States had no foreign currency debt in 1934, as such, there is no offsetting "cost" from a higher burden of foreign currency debt following the devaluation.

Having introduced both the broader and core sample for the advanced economies defaults and provided some benchmarks for the magnitude of the defaults, we next take up the issue of the timing and sequencing of these credit events.

The estimates of debt relief in Table 1a and 1b use primarily 1934 GDP figures, as it uniformly dates the "de jure" default in that year. While the 1934 default date is appropriate for the United States case, this dating is less clear cut for the others. De facto, default and other irregularities on War Debt payments began earlier. As the chronology presented in Table 2 makes plain, the intentionally temporary Hoover Moratorium is set in motion in 1931 (the moratorium also applies to Germany's reparations payments). However, at the end of the moratorium in 1932, scheduled payments do not resume in uniform and regular fashion. While the United Kingdom, Italy, Czechoslovakia, Finland, Greece, Latvia, Lithuania, Romania, and Yugoslavia make the scheduled December 15 payment on War Debt, France, Belgium, Poland, Estonia and Hungary do not pay (see United States entry).[21] For the latter group, the more relevant default date may be 1932 or 1933 (as payment suspensions occurred at the end of 1932). In June 1933, even those countries that had met their full obligations in December 1932 make token payments. However, no country except Finland, which fully repaid as scheduled, continued to service their War Debt past June 1934, hence our common dating choice.

[2121] League of Nations, *World Economic Survey* (1932/1933), pg. 332.

Table 2. Chronology of Events Leading Up to the Defaults of 1934

	International
August 1924	Dawes Plan laid out German reparations of 1 billion marks a year, rising to 2.5 billion in five years. It was a restructuring of the terms laid out in the 1919 Treaty of Versailles.
June 1929	The Young Plan was designed to ease the terms of the reparation payments made by Germany, making a substantial share of the repayment state contingent. It is a second restructuring.
June 20, 1931	Hoover Moratorium on payments of WWI and other War debts, including interest payments. .
June 15, 1934	

ALL DEBTORS TO US EXCEPTING FINLAND TO DEFAULT TODAY

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	Austria
May 11, 1931	Kreditanstalt failure: Despite the Austrian government's guaranty to cover the bank's foreign debt, the bank failure quickly spread through Europe and international capital markets.
October 9, 1931	Foreign exchange controls and depreciation
May 1933	Payments to the Bank of International Settlements for the service of the League of Nations loan is suspended.
August 1933	Standstill agreement of Austrian banks prolonged until January 1934.
	Belgium
March 18, 1935	Foreign exchange controls reintroduced; devaluation of 28%.
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15
	Czechoslovakia
October 1931	Control on foreign exchanges
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15
	Estonia
October 1931	Control on foreign exchanges
	Finland
June 1934	Pays War debt installment
	France
December 1932	Chamber rejected the government's proposal to meet the War Debt payment to the US scheduled for mid-December.
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15

Table 2. Chronology of Events Leading Up to the Defaults of 1934 (continued)

	Germany
December 1922	Reparations Commission declares Germany in default culminating in the French occupation of the Ruhr.
July 13, 1931	Following the Kreditanstalt crisis in Austria-foreign exchange controls are introduced; a variety of blocked Mark accounts are created through mid-1933.
February 1932	Moratoria on external commercial debt payments.
August 1932	Reparation payments under the Young Plan cancelled but other payments continued
May 1933	Unilateral debt default and widespread capital controls
July 1, 1934	General moratorium on transfers abroad.
December 1, 1936	Death penalty for capital flight.
	Greece
September 28, 1931	Control on foreign exchanges; 49% currency depreciation
April 1932	Moratoria on external public debt service.
June 1934	Postpones for six months payment to US of interest on War Debt due July 1st.
	Hungary
September 1931	Control on foreign exchanges
December 1931	Moratoria on external public debt service.
January 1933	Standstill agreement renewed.
	Italy
September , 1931	Re-introduction of some foreign exchange controls
May 26, 1934	De facto suspension of convertibility; controls on exportation of bank notes
July 22, 1935	Official conversion of convertibility.
	Latvia
October 1931	Control on foreign exchanges
April 1932	Moratoria on external public debt service.
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15
	Lithuania
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15
	Poland
July 1932	Control on foreign exchanges
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15
	Romania
August 1933	Transfer moratorium declared.
September 1933	Negotiation with bondholders to discuss debt service reduction.
July 1934	Foreign debt agreement reached
	United Kingdom
September 21, 1931	Abandonment of gold standard
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15

Table 2. Chronology of Events Leading Up to the Defaults of 1934 (concluded)

	United States
June 20, 1931	Hoover Moratorium on payments of WWI and other War debts, including interest payments. Approved by Congress in December.
November 1932	The US refuses postponement of war debt payments due December 15. France and the UK had made such a request.
December 15,1932	UK, Italy, Czechoslovakia, Finland, Greece, Latvia, Lithuania, Romania, and Yugoslavia make the scheduled payment on War Debt; France, Belgium, Poland, Estonia and Hungary do not pay.
March 6, 1933	Roosevelt Proclamation resulting in embargo on gold and establishment of foreign exchange controls. Bank holiday.
March 9, 1933	Suspension of gold convertibility
April 5, 1933	Compulsory surrender of gold (more than $100) held by individuals.
June 15, 1933	The governments of Britain, Czechoslovakia, Italy, Latvia, Lithuania, and Romania were unable to make full war debt payments to the United States and offered symbolic token payments instead.
January 30, 1934	Gold Reserve Act: Abrogation of the gold clause
January 31, 1934	Devaluation of 40.94%: from 1 troy ounce of gold =20.67 US dollars to 1 troy ounce of gold = 35.00US dollars.
June 1934	Places embargo on export of silver.
	Yugoslavia
October 1931	Control on foreign exchanges
March 1932	Moratoria on external commercial debt payments.
April 1932	Moratoria on external public debt service.
October 1932	Default on two loans.
June 1934	Government notifies US of decision to defer payment on War Debt installment June 15

2. Middle-high income emerging market episodes: 1980s debt crisis to the present

The emerging market default and restructuring episodes covered in this study are a subset of the of the larger universe of debt crises in developing countries. Specifically, we limit our coverage to episodes in middle-to-high-income emerging markets. It is our contention that the emerging markets of today have much in common with the advanced economies of the 1930s. Unfortunately, in recent years the same can be said about the advanced economies of today. Most middle-to-high- income emerging markets have access (albeit with much volatility and frequent sudden stops) to international capital markets and attract private capital flows in a manner more closely resembling pre-World War II advanced economies than the low-income countries that rely more heavily on concessional lending and aid.

In our earlier work (Reinhart and Rogoff, 2009) we examined the incidence of default. In this paper we also aim to quantify the magnitude of the debt relief achieved in the numerous defaults and restructurings in emerging markets since the late 1970s. Our starting point is the comprehensive database

on haircuts recently compiled by Cruces and Trebesch (2013). They provide detailed information on each individual restructuring over 1979-2010 for all emerging and developing countries that have the prerequisite data. We aggregate these individual restructurings into a default spell to the extent that they are sequentially connected. Our dating of default spells is taken from Reinhart and Rogoff (2009).

Table 3 lists the 35 episodes that make up the emerging market sample and column (1) provides the dates of the default spell (or spells, as some countries like Ecuador and Argentina have more than one default or restructuring episode since the late 1970s. The cumulative haircuts shown in column (4) were kindly provided by Juan Cruces and Cristoph Trebesch to these authors; the final column calculates the baseline debt relief as a percent of GDP. A companion Appendix Table 1 presents additional detail on the individual building blocks of the cumulative default measure shown here. As was the case with the advanced economies interwar sample, not all episodes can be documented to the same extent. Some of the transition economies have data that only partially covers their default or restructuring episodes, while some of the smaller island nations are excluded from databases, (Institutional Investor Ratings, Total Economy database, etc.)

Table 3. Middle-High Income Emerging Market Episodes of Default or Debt Restructuring, 1978-2010

Episode number	Country	Full episode	Debt affected	Debt affected/ GDP	Full episode haircut (C&T)	Debt relief/ GDP
		(1)	(2)	(3)	(4)	Baseline
1	Algeria	1991-1996	4,657	9.9	0.054	0.5
2	Argentina	1982-1993	67,891	28.7	0.477	24.0
3	Argentina	2001-2005	60,572	33.4	0.425	14.2
4	Bosnia and H.	1992-1997	1,300	24.6	0.896	22.1
5	Brazil	1983-1994	130,493	23.9	0.375	14.3
6	Bulgaria	1990-1994	7,910	98.7	0.563	55.6
7	Chile	1983-1990	21,731	64.8	0.379	35.6
8	Costa Rica	1983-1990	2,433	42.6	0.791	43.4
9	Croatia	1992-1996	858	3.7	0.11	0.4
10	Dominican Rep.	1982-1994	1,910	13.6	0.731	13.3
11	Dominican Rep. (Bond debt)	2005	1,280	3.8	0.016	0.1
12	Dominica	2003-2005	144	39.9	0.54	21.6
13	Ecuador	1982-1995	12,714	54.3	0.512	31.2
14	Ecuador	1999-2000	6,700	35.9	0.334	12.0
15	Ecuador	2008-2009	3,190	5.5	0.528	2.9
16	Gabon	1986-1994	226	5.3	0.054	0.3
17	Grenada	2004-2005	210	30.2	0.339	10.2
18	Jamaica	1978-1993	1,452	31.1	0.516	24.4
19	Jordan	1989-1993	1,289	23.3	0.227	5.3
20	Macedonia, FYR	1992-1997	229	6.1	0.346	2.1
21	Mexico	1982-1990	177,771	61.8	0.42	36.2
22	Panama	1983-1996	4,967	53.3	0.389	22.9
23	Peru	1980-1997	11,320	19.1	0.64	13.8
24	Poland	1981-1994	30,912	29.8	n.a.	15.1
25	Romania	1981-1986	2,965	6.2	0.158	0.9
26	Russia	1991-2000	68,683	26.4	0.495	11.3
27	Serbia & Montenegro	2003-2004	2,700	11.5	0.709	8.1
28	Seychelles	2008-2010	320	32.9	0.562	18.5
29	Slovenia	1992-1996	812	3.9	0.033	0.1
30	South Africa	1985-1993	23,400	17.9	0.377	9.2
31	Trinidad & Tobago	1988-1989	446	10.3	0.155	1.6
32	Turkey	1978-1982	5,067	5.8	0.316	0.9
33	Uruguay	1983-1991	5,913	47.8	0.46	34.3
34	Uruguay	2003	3,127	26.0	0.079	2.1
35	Venezuela	1983-1990	60,230	124.5	0.387	41.6
	Averages		**20,738**	**30.2**	**0.39**	**15.7**

Sources: Cruces and Trebesch (2013), Reinhart and Rogoff (2009), Table 1, Appendix Table 1, sources cited therein and authors' calculations

3. Debt relief estimates

Subject to the limitations discussed in the preceding section, Figure 1 presents our preferred estimate of the magnitude of debt relief as a share of GDP. The figure shows in ascending order a total 35 individual advanced and emerging market default/restructuring episodes. The corresponding estimate is shown alongside the country and episode date. The red and green bars denote the advanced and emerging market economies, respectively.

Six of the 16 European countries defaulting on War Debt to the United States in the 1930s (Austria, Belgium, France, Greece, Italy and United Kingdom) listed in Table 1a are shown in Figure 1. The remaining 10 default cases are excluded owing to data limitations. While the amounts of debt owed at the time of the default announcement on June 15, 1934 are as shown in Table 1a, no nominal GDP data is available at this time.[22] The haircut associated with the abrogation of the gold the United States in conjunction with the 41 percent devaluation of the dollar in early 1934 (Table 1b) is also included in Figure 1. The average debt relief/GDP for this group of seven is 13.7 percent.

The 35 middle-high income emerging market episodes listed in Table 3 yield an average debt relief estimate of 15.7 percent, about two percentage points higher than the advanced economy group. The range of variation across the emerging markets is much higher than for the 1930 episodes, ranging from a high of around 56 percent for Bulgaria to nil. [23] Seven debt restructuring episodes where debt relief amounted to less than one percent of GDP are not shown in Figure 1 but are included in the average cited above and reported in Table 3 and Figure 1. The episodes are Algeria 1991-1996, Croatia 1992-1996, Dominican Republic 2005, Gabon 1986-1994, Romania 1981-1986, Slovenia 1992-1996, Turkey 1978-1982.

[22] See, for example, *New York Times*, June 15, 1934.
[23] In the case of Bulgaria, the haircut is about 56 percent (Cruces and Trebesch, 2013) and the share of affected debt to GDP is almost 100 percent (columns 3 and 4, Table 3).

While our emphasis in this paper is confined to the middle-to high income emerging market restructuring episodes listed in Table 3, we also calculate comparable debt relief estimates for middle to low income emerging markets included in the Cruces and Trebesch (2013) study. On the whole, debt relief estimates for the poorer countries run lower despite higher haircuts. The share of affected debt is smaller both in absolute dollar amounts and relative to domestic GDP, as private lending is limited and official sources and aid play a more prominent role.

The main conclusions drawn from this exercise in that restructurings averaging 14-16 percent of GDP were not trivial in helping governments resolve past debt overhangs and that, in effect, (for the reasons discussed in Section II) these figures may underestimate the true magnitude of debt relief provided by the War Debt default. In addition, the generalized default on War Debt was not limited to debt owed the United States (which are the only ones we systematically quantify here). There was, of course, the notorious reparation payments made by Germany but more broadly many of the governments that borrowed from the United States also had run up World War I debt with the United Kingdom and with France; Greece, for instance owed a comparable amount of War Debt to the United Kingdom. Other countries, apart from those listed in Table 1a had War Debts to the UK. Australia's World War I debt to the United Kingdom was officially taken off their books in 1947, but those debts had not been serviced since the early 1930s.[24]

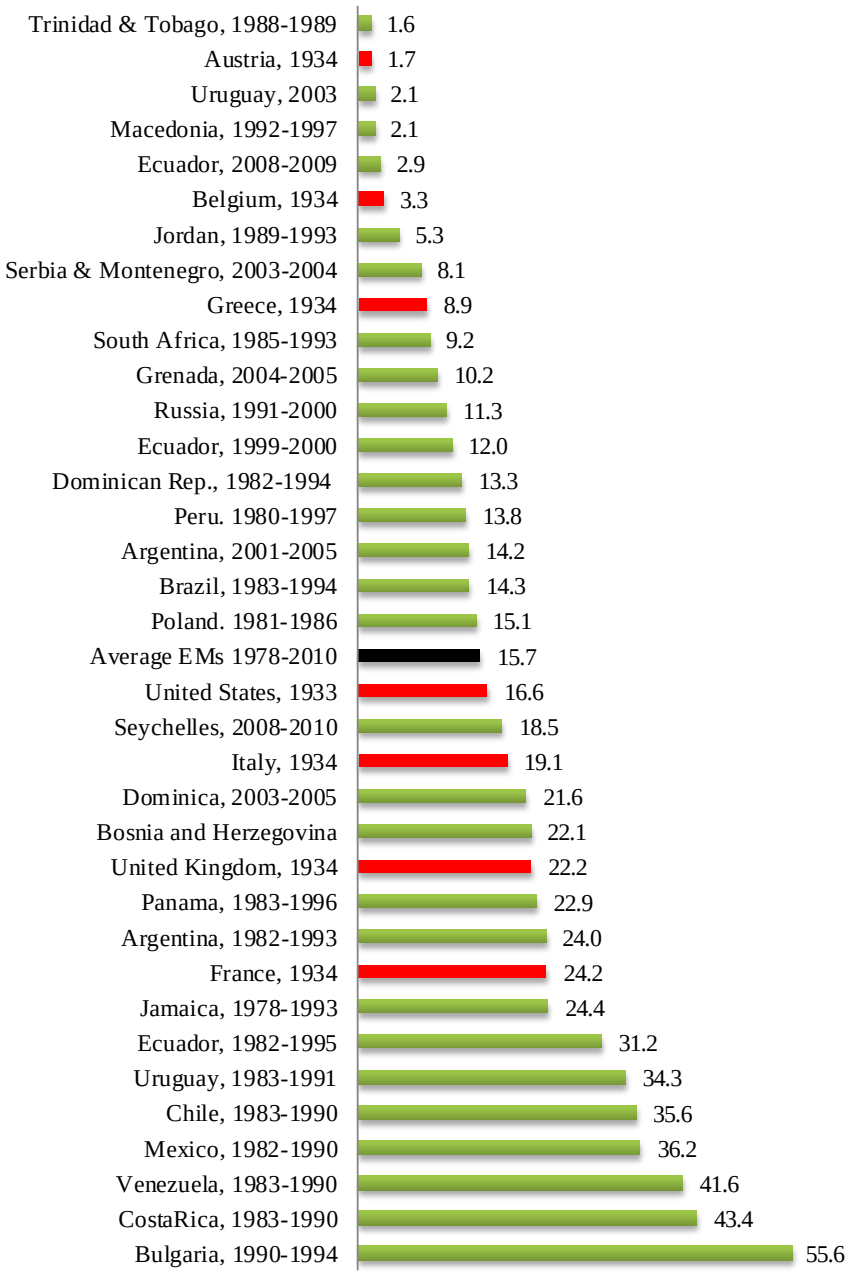
Furthermore, the orders of magnitude of the advanced economy debt write downs relative to the size of the economy are not dissimilar from the magnitudes seen in the modern vintage EM defaults and restructurings. Of course, our analysis only offers a first pass at quantifying and comparing seemingly disparate credit events. Our emphasis here on debt reduction via restructuring and default is not meant to suggest that other forms of debt reduction were not quantitatively important as well. Fiscal retrenchment,

[24] See United Nations (1948) pg. 16; using nominal GDP and the prevailing exchange rate for 1934, the amount of debt written off amounted to about 12 percent of Australia's GDP.

structural reform, financial repression, and (in the case of domestic currency denominated debt) inflation often co-existed in these episodes of debt write-offs.

Taking together Tables 1a (memorandum item) and 1b, it is also evident the magnitude of the US haircut from devaluations and the abrogation of the gold clause relative to GDP is about 16-17 percent, a comparable order of magnitude to the amount it cost the US to forgive European debts. In the end, it appears as a transfer of resources from US holders of domestic debt to the European sovereigns.

Figure1. Default, Restructuring, and Debt Relief: World War I Debt to US, 1934, Middle-to-High Income Emerging Markets, 1978-2010, United States, 1934 (*Debt relief as a percent of GDP)*



Notes: Estimates of debt relief correspond to "Method 2". Seven debt restructuring episodes where debt relief amounted to less than one percent of GDP are not shown in Figure 1 but are included in the reported average. The episodes are Algeria 1991-1996, Croatia 1992-1996, Dominican Republic 2005, Gabon 1986-1994, Romania 1981-1986, Slovenia 1992-1996, Turkey 1978-1982.

Sources: Cruces and Trebesch (2013), Reinhart and Rogoff (2009), Table 1, Appendix Table 1, sources cited therein and authors' calculations.

IV. Default and Restructuring Comparisons: Before and After, North and South

This section takes the "north-south" comparison of the sovereign default and restructuring experience further by examining the evolution of income levels and growth, credit ratings and market access, debt servicing burdens, and the level and composition of debt around this hybrid cross-country experience of sovereign default and restructuring.

1. Income levels and growth

Our starting point is to examine the performance of per capita GDP (levels and growth rates) episode by episode in and around the date of restructuring that anchors the exercise, denoted in all figures and tables by T. Our dating of "T" with its limitations was discussed in Section II. Here we define the window (years before and after T) used in our analysis. The emphasis is primarily on what happens at the time (T) and in the aftermath of debt relief, here defined as the "final" or decisive restructuring.

For a few emerging markets, the final restructuring may have been the only one in a short-lived credit event that lasted two years or less, as was the case for Uruguay in 2003. More often than not, however, the final exit from default status came after a multi-year stint. The longest cumulative default spells were for Peru and Jamaica and lasted 18 and 16 years, respectively. In a significant number of cases, there were several restructurings before "the restructuring to end all restructurings" materialized (see Appendix Table 1). As Cruces and Trebesch (2013) document in their authoritative study of sovereign debt restructurings during the 1970s through 2010, Poland had a total of seven restructurings before their "final" one in 1994; Jamaica had six before reaching closure on that particular 16-year episode; Brazil had a total of six tries, and so on. The average duration of the full default spells for the 35 EM episodes shown in Table 3 is 7.3 years.

By contrast, the default and payment irregularities on World War I debt in the advanced economies are compressed in a shorter window from end-1931 until 1934 and importantly owe to the banking collapses post 1929 and the Depression. The exception is case of German Reparation Debt

which originates in the Treaty of Versailles in 1919, is declared in default for the first time in 1922 (Table 2), is restructured under the Dawes Plan in 1924, restructured again under the Young Plan in 1929, and ultimately defaulted on during 1932-1934. The settlement of non-World War I public and private debts was a much more drawn out process, stretching into the post World War II era: Austria and Germany were in default through 1952; Italy was in default 1940-1945; Greece and Hungary had even longer stints in default status through 1964 and 1967, respectively. [25]

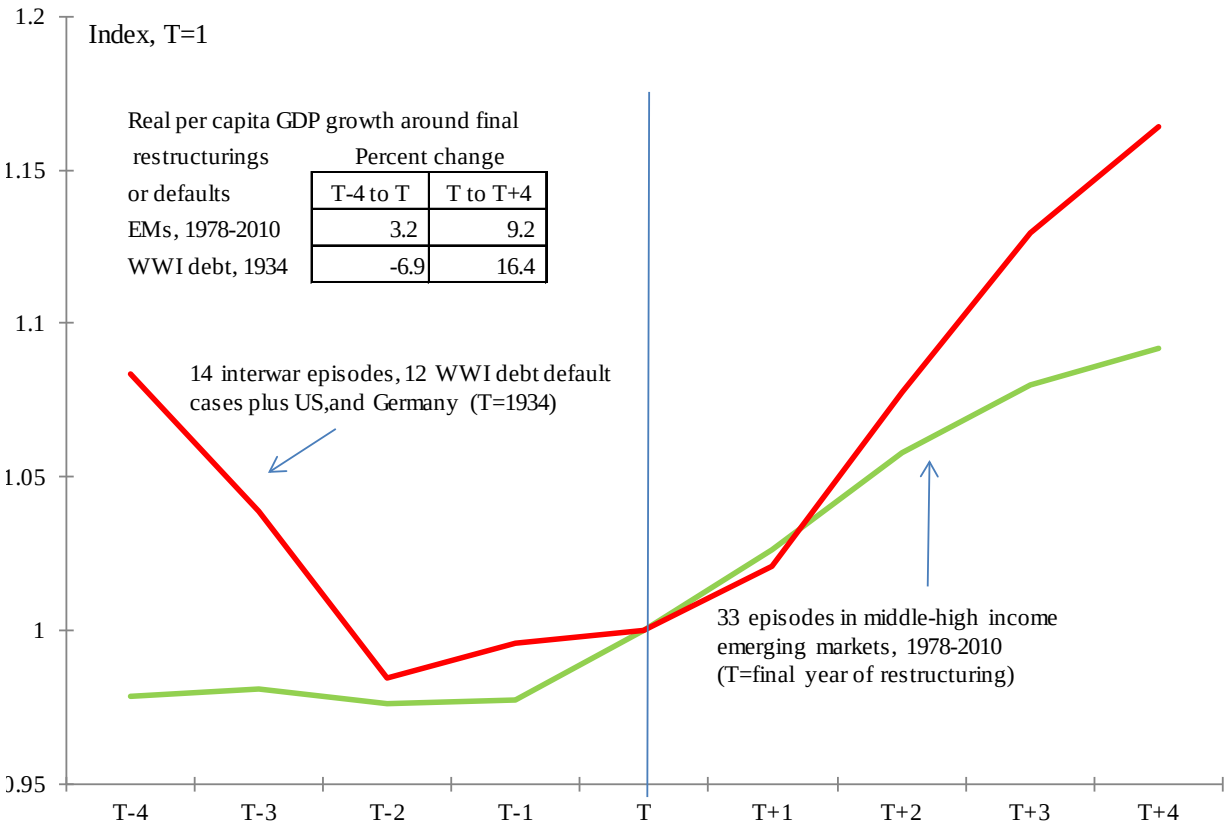
We focus on a four-year window around T; the first leg, T-4 to T can provide a sense of the run-up of credit events that bring some closure and debt relief. However, this four-year window does not allow us to say much (except for the very short default episodes) about the antecedents of a *"new"* default or restructuring episode. Thus, our analysis and results are not to be comingled and confused with the literature on early warnings of debt crises (see Reinhart, 2002, Manasse, Roubini,and Schimmelpfennig, 2003 and Manasse and Roubini, 2009), which attempt to characterize the run-up to the first wave of distress.[26] Our interest in this paper is aligned more closely with Gelos, Sahay, and Sandleris (2011), who study what factors determine access to international capital markets for a large sample of emerging markets, examine international capital flows following a default, an issue we take up later in this section. [27]

Figure 2 plots average real per capita GDP level (normalized to equal one at time T) around final restructurings (exit from default). The average covers 33 of the 35 middle-high income emerging markets (Table 3) for which we have real per capita GDP data.[28] The red line shows the comparable average for12 of the 16 defaulters the 1930s shown in Table 1a plus the United States and Germany. While the lines

[25] See Reinhart and Rogoff (2009).
[26] In Reinhart and Rogoff (2009) also, T is set as the first year of a default spell and hence asks a different question.
[27] Gelos et.a. (2011), however, date the beginning of the default spell not its conclusion.
[28] The data comes from Maddisonhttp://www.ggdc.net/maddison/ for pre-1950 and the Total Economy Database (TED) subsequently.

show the level of per capita GDP, from both the normalization to T=1 and the inset box, Figure 1 also summarizes the growth performance.

Figure 2. Real Per Capita GDP Around Final Restructurings (Exit from Default) in Middle-High Income Emerging Markets, 1978-2010 and Selected 1934 Sovereign Default Episodes (Mostly on World War I Debt to United States)
8-year window around credit event, level of real per capita GDP at T=1



Sources: IMF *World Economic Outlook*, Maddison Database, Reinhart and Rogoff, (2009 and 2013) Total Economy Database and authors' calculations.

For the 1930s average, 1932 marks the trough in per capita GDP with barely any change through 1934. After 1934 there is a sharp rebound (cumulative growth is 16% from T to T+4) following a prolonged collapse of 7 percent. Rebound notwithstanding, it takes six years to recoup the income level recorded in T-4 (as we will show, it takes even longer to surpass the prior economic peak in per capita

GDP, which usually predated T-4 and corresponds to 1930). The emerging market countries show a flat per capita GDP path while in the default spell (through T) but a substantial pick up thereafter.

In sum, while the magnitude of recovery in per capita GDP over the four years following a decisive restructuring or default ranges from a cumulative average increase of 9 to 16 percent for the two groups of emerging and advanced economies, the more salient feature of the exercise is finding that there is broad evidence of a marked pick-up in economic activity following debt write-off/debt relief episodes. Of the 47 combined advanced and emerging market episodes, 39 had positive growth over T to T+4. Of the remaining eight, six had a flat real per capita GDP profile (defined as less than or equal to a one percent change in either direction) and two out of 47 had negative cumulative growth.

It is beyond the scope of this paper to apportion to what extent the post-debt relief recovery owed to the restructuring per se and what role may have been played by other factors. In the case of the 1930s episodes, Eichengreen (1992) stressed the importance of stimulus provided by exits from the gold standard.[29] However, these exits from the golden fetters were spread over a five year period, from the early British and Greek exits in 1931 (Table 2) to the French exit five years later in 1936. The defaults and debt write downs were clustered much more closely in the trough 1932-1934. On the fiscal front, of course public works programs were also initiated in the T to T+4 span during the depression, but as with monetary policy there was considerable dispersion in their timing and magnitudes. For emerging markets, the usually sharp depreciations that accompany debt crises (see Reinhart, 2003) may have been a force behind these recoveries.

2. Capital market access and sovereign credit ratings

We next examine the evolution of credit ratings around the episodes of interest. In several influential models of sovereign default, the reputational damage done by a default lasts forever and access to international capital markets is irrevocably lost.[30] In reality, we know that governments who have

[29] See Reinhart and Reinhart (2009).
[30] See Bulow and Rogoff (1989) and Eaton and Gertzowitz (1981).

behaved badly (defaulted on their obligations) ultimately regain their ability to borrow again and, in scores of cases, default again---and again. An interesting question is what can be learned about market access from the behavior of sovereign credit ratings in the aftermath of conclusive a default or restructuring. We discuss the 1930s sample and the modern emerging market episodes in turn.

In the midst of an environment characterized by profound economic contraction, systemic global banking crisis, trade wars, record unemployment, and a rising incidence of private and sovereign defaults it is hardly surprising that sovereign credit ratings drifted steadily lower through most of the 1930s in Europe and elsewhere. Linking the contribution to this generalized downward trend to the default on War Debt of one government on another government is a far more complicated question. Table 4 presents the sovereign ratings for most of the countries that appear in Table 1a. It would be difficult to deduce from the evolution of ratings the fact that France and the UK defaulted on War Debt in amounts that exceeded 20 percent of their GDP in 1934. France and Britain retained their AAA status in the Fitch ratings; Moodys' notched the UK down to Aa (from Aaa) and France remained at Aa. Also puzzling is how Greece and Germany managed to retain a B rating from Moodys when both had defaulted on all debts in all creditors. The Moody's description of a C rating (Appendix Table 2a) read "Obligations rated C are the lowest rated and are typically in default, with little prospect for recovery." Perhaps there was optimism in their recovery of principal or interest.

Beyond the ratings themselves, the usual important question on capital market access after a default is somewhat moot in the context of the War Debt defaults of 1934 or, more generally the Depression. As Obstfeld and Taylor (1998) observe:[31]

All evidence points to the interwar period, and especially the Great Depression, as an era of weakest financial integration: capital flows were small, countries behaved like closed economies in the capital market, real and nominal price interest rate differentials expanded.

[31] See also Obstfeld and Taylor (2004) for a long view on international capital mobility which encompasses both of the sample periods covered in this paper.

Table 4. Interwar Defaults and Sovereign Credit Ratings: Fitch and Moody's, 1930-1939

Country	Default year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
					US Dollar Ratings Assigned by Moody's						
Austria	1932, 1934-1952	Aa	Aa	A	Baa	Baa	Ba	Ba	Ba	Ba	B
Belgium	*1934*	Aa	Aa	Aa	Aa	A	A	A	A	A	A
Bulgaria	1932, *1934* -1992	Baa	Baa	Ba	B	B	B	B	B	B	B
Czechoslovakia	*1934*, 1938-1946	A	A	Baa	Baa	Baa	Baa	Baa	Baa	Baa	
Estonia	*1934*	Ba	Ba	Ba	Ba	Ba	Baa	Baa	Baa	Baa	Baa
Finland	none	A	A	Baa	Baa	Baa	A	A	A	A	A
France	*1934*	Aa	Aa	Aa	Aa	Aa	Aa	Aa	A	A	A
Germany	1932, 1939-1952	Aa	Aa	Baa	Baa	Baa	B	B	B	B	B
Greece	1932, *1934* -1964	Baa	Baa	Baa	B	B	B	B	B	B	B
Hungary	1932, *1934* -1937, 1940-1967	A	A	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba
Italy	*1934*, 1940-1946	A	A	Baa	Baa	A	A	A	Baa	Baa	Baa
Lithuania	*1934*	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba
Poland	*1934*, 1936, 1940-1952	Baa	Baa	Baa	Baa	Baa	Baa	Baa	Ba	Ba	Ba
Romania	*1934*	B	Ba	Ba	Ba	B	B	B	B	B	B
United Kingdom	*1934*	Aaa	Aaa	Aaa	Aaa	Aa	Aa	Aa	Aa	Aa	Aa
Yugoslavia	1933, *1934*- 1950	Ba	Ba	Ba	B	B	B	B	Ba	Ba	Ba
					US Dollar Ratings Assigned by Fitch						
Austria	1932, *1934* -1952	AA	AA	A	BBB	BBB	B	B	B		
Belgium	*1934*	AA	AA	A	A	A	A	A	A	A	A
Bulgaria	1932, *1934*- 1992	BBB	BB	CCC	CCC	CC	CC	CC	C	C	C
Czechoslovakia	*1934* , 1938-1946	A	A	BBB	BBB	BBB	BBB	BBB	BBB		
Estonia	*1934*	BBB	BB	B	B	B	B	B	B	BB	BB
Finland	none	A	BBB	BB	BB	BBB	A	A	AA	A	A
France	*1934*	AAA	AAA	AAA	AAA	AAA	AAA	AAA	A	A	A
Germany	1932, 1939-1952	AAA	A	BB	BB	BB	CCC				
Greece	1932, *1934*- 1964	BBB	BBB	CCC	CC	CC	CC	CC	CC	CC	CC
Hungary	1932, *1934*- 1937, 1940-1967	A	A	CCC	CCC	CC	CC	CC			
Italy	*1934* , 1940-1946	A	BBB	BBB	BBB	BBB	BBB	B	B		
Poland	*1934*, 1936, 1940-1952	BBB	BBB	BB	BB	BB	BB	BB			
United Kingdom	1934	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Yugoslavia	1933, *1934* -1950	BB	BB	B	CC	CC	CC	CC	CC	CC	CC

Sources: Fitch (2013), Gaillard (2012), and Moody's (2013).

Turning to emerging markets, the *Institutional Investor* ratings (IIR), which are compiled twice a year, are based on information provided by economists and sovereign risk analysts at leading global banks and securities firms. The ratings grade each country on a scale from 0 to 100, with a rating of 100 given to those countries perceived as having the lowest chance of defaulting on their government debt obligations.[32] Hence a transformed variable, (100 - IIR) can be interpreted as a proxy for default risk.

[32] For details of the survey see http://www.institutionalinvestor.com/Research/4142/Overview.html. Although not critical to our analysis below, we interpret the ratings reported in each semiannual survey as capturing the near-term risk of default within one to two years.

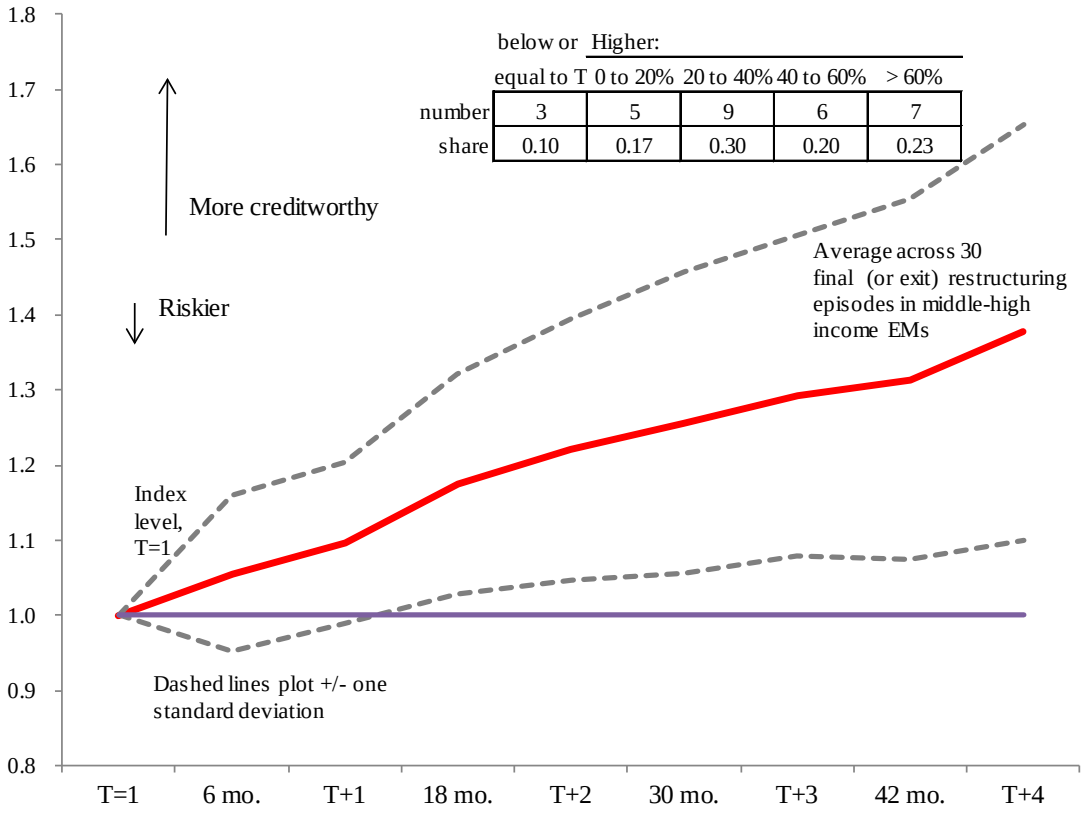
The first ratings were published in 1979, and hence provide coverage for the entire sample of emerging market restructurings and defaults (although some of the smaller countries were added to the IIR sample at a later date).In the most recent credit survey (March 2013) the average credit rating for 179 sovereign fell 0.6 point to 43.9; the US credit rating fell 1.1 point to 88.8 its lowest level in the 33-year history of the survey.

In Figure3, the September rating year T is normalized to 1 and the average (solid line) and plus/minus one standard deviation bounds (dashed line) are plotted for 30 of the 35 episodes for which there is full data.[33] The average increases in the IIR index are 22 percent after two years and 38 percent after four years. The box inset to Figure 3 gives the number and share of countries for different ranges of increases. For example, for 7 of the episodes (23 percent), the cumulative increase in the IIR from T to T+4 is in excess of 60 percent. This solid pattern of recovery is broadly consistent with the findings in Gelos, Sahay, and Sandleris (2011), who define market access, "as public or publicly guaranteed bond issuances or public or publicly guaranteed borrowing through a private syndicated bank loan that results in an increase in the country's indebtedness. On the question of how long it takes countries to regain market after an exit from defaults, they suggest that the median number of years it took countries to tap the markets after default fell from four years in the 1980's to zero in the 1990's. Thus, re-entry seems to typically occur within the four year window explored here. The single lowest reading at T+4 was 0.89 for Ecuador in the aftermath of the 1982-1995 episode (there are 3 of the 30 cases, including Ecuador where the rating was below what is was at the time of the restructuring). But this outcome was not because Ecuador remained shut out of capital markets since its "final" Brady Plan restructuring but rather because it was quick to re-leverage after the Brady restructuring and faced a *new* debt crisis in 1999-2000.[34]

[33] Bosnia and Herzegovina, Croatia, Dominica, Macedonia are not rated at all in the period surrounding the final restructuring while the coverage for Seychelles is incomplete..

[34] See Reinhart, Rogoff, and Savastano (2003) on this phenomenon and the subsection entitled *Did default or restructuring reduce the debt?* in this paper.

Figure 3. Institutional Investor Ratings in the Aftermath of "Final" Restructuring, Middle-High Income Emerging Market Episodes, 1979-2010



Sources: Institutional Investor, Reinhart and Rogoff (2009) and authors' calculations.
Notes: IIR Ratings are bounded by 0 (least creditworthy) to a perfect score of 100. The ratings are produced twice a year in March and September. We normalize by the September rating in the year of the final restructuring (i.e. the exit from a restructuring or default spell, that may involve more than one restructuring, see Cruces and Trebesch, 2013).

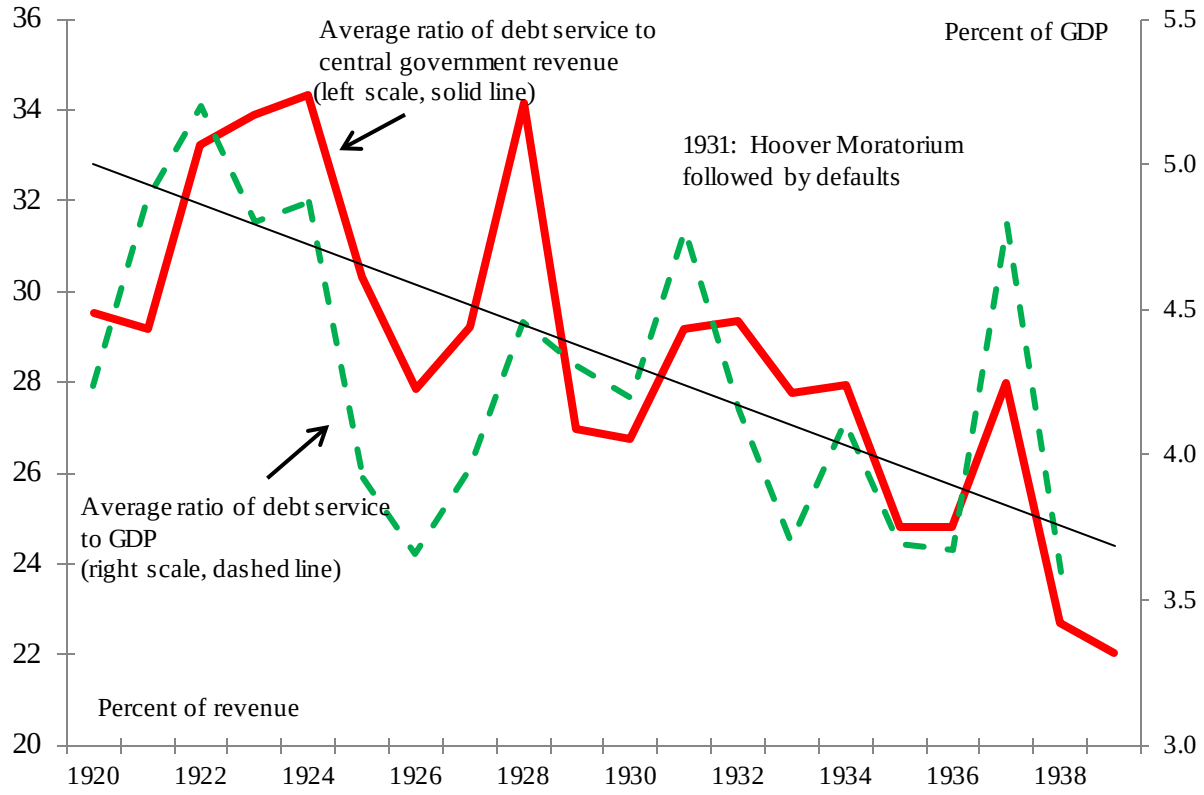
The panorama presented by the Institutional Investor Ratings is consistent with the return of international capital at the time of the final restructuring or in the four years following the final deal. In effect, sometimes the return of international capital flows returns in a volume that was sufficiently large (relative to the countries historical norm) that it would be considered a "capital inflow bonanza", as in Reinhart and Reinhart (2009). The dates of the bonanza episodes reported in that paper are available for 31 of the 35 episodes in this study; we found that 9 of 31 countries (29 percent) experienced bonanzas over T to T+4. An additional 2 countries the surge in inflows began at T-1, briging the share up to 39 percent.

3. Servicing the debt

Another dimension to consider in evaluating the aftermath of debt relief or write –downs is its impact on debt servicing burdens. To this end, we have compiled League of Nations data for the interwar years on central government total debt service (interest payments plus amortizations for both domestic and foreign public debt) for the advanced economies appearing in Table 1a, as well as for Germany and the United States. Figure 4 presents the ratios of total debt service to both GDP (the dashed line plotted against the right axis) and total central government revenue (solid line, left axis). [35] Between 1920 and 1931, both series display considerable volatility and no apparent trend. Beginning in 1931, which marks the start of the Hoover Moratorium on War Debt, until 1938 the series become less volatile and persistently trend lower. France, Greece, Italy and the United Kingdom post the most significant declines in debt servicing. While Figure 4 does not show the breakdown of total costs into interest payments and amortization, our appraisal of the underlying data clearly places the lion's share of the decline on significant reductions in amortization. The debt servicing data may indeed be more revealing in these 1930s episodes than the outstanding debt stocks (which we examine next). The reason for this, is that while some countries (Austria, for instance) immediately write the War Debt of their books in 1934. France having discontinued servicing War Debt in 1932 removes it from its books six years later in in 1938. Others, like Belgium and the United Kingdom keep World War I debt in their official debt figures until the end of World War II.

[35] Long time series for central government revenues are taken from Mitchell (1998 and 2003), which in most cases start in the 19th century (if not earlier).

Figure 4. Interwar Public Debt Service, 1920-1939: Austria, Belgium, France, Germany, Greece, Italy, United Kingdom and United States
(as a percent of central government revenue and as a percent of GDP)

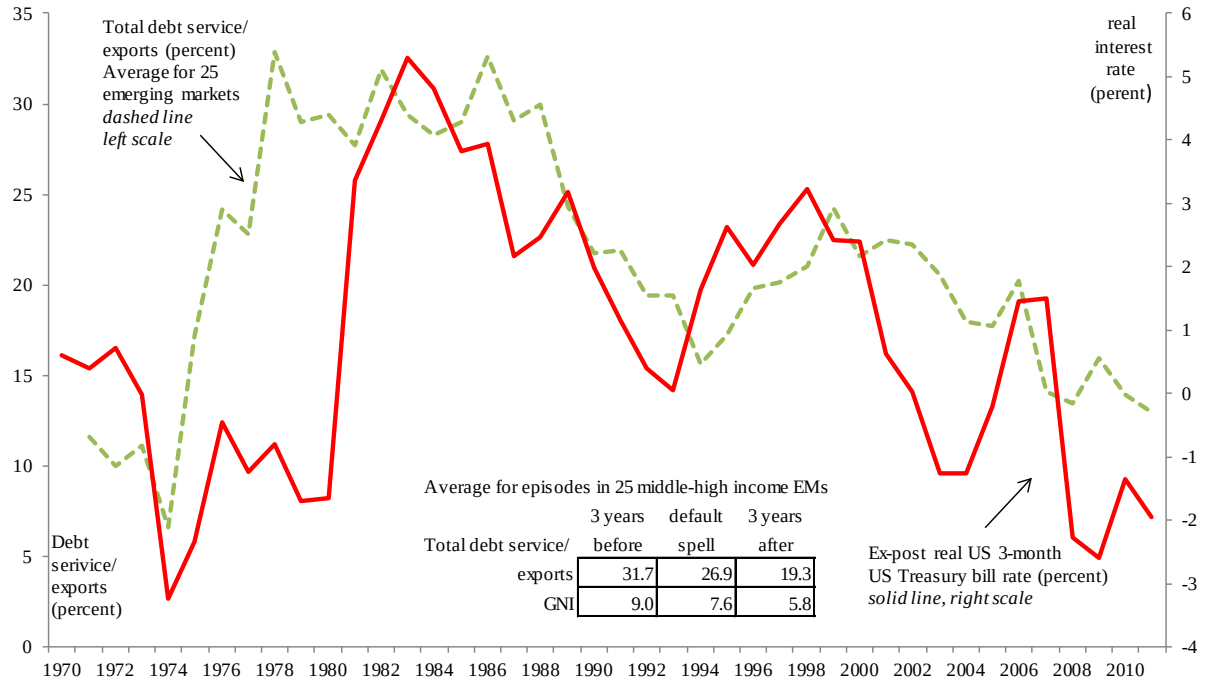


Sources: League of Nations, *Public Finances of Foreign Countries* (1936), Mitchell (1998 and 2003), United Nations (1948) based on the Yearbooks, nominal GDP cited in the Data Appendix, and authors' calculations.

Unlike the common (nearly so) default event in 1932-1934, the default spells, emerging market default restructuring episodes are dispersed throughout 1978-2010. In Figure 5, we plot for the 1970-2011 The average debt service on total external debt (public plus private external debt), which was at the center of the debt crises, especially in the 1980s. The chart shows debt servicing relative to gross national income (GNI) a measure commonly used by the World Bank in their analytical work of debt and relative to exports. The debt service/GNI measure is not plotted but summarized in the box inset, which break the debt service into three sub-periods: three years before the initial year of default, the entire default spell and three years follow T, the final restructuring or exit from default. The picture that emerges from both series (more pronounced in debt service-to-exports ratio, which drops from 37 percent to 19 percent) is one of a diminishing debt service burden relative to the pre-debt-crisis average. Debt servicing is

declining even before the "final restructuring" as in numerous cases (as discussed) there are multiple restructuring efforts in between the star and end of the default spell. Also, there are periods of debt standstills as well. However, this aggregate downward drift in debt servicing in emerging markets also importantly owes to external factors. Specifically, as shown in Figure 5 (solid line, right scale), after an abrupt spike in 1979 through mid-1982, there is a sustained and marked decline in real international interest rates through 2011 importantly driven by developments in US monetary policy. Even in the absence of haircuts, this beneficial trend would account for the observed reduction in debt servicing

Figure 5. External Debt Servicing, Default and Restructuring, and US Interest Rates: Middle-High Income Emerging Markets, 1970-2011



Sources: Cruces and Trebesch (2012) and Reinhart and Rogoff (2009) for the episodes, *International Debt Statistics*, World Bank for the debt servicing ratios and *International Financial Statistics*, International Monetary Fund.
Notes: The debt service ratios are the standard ones reported by the World Bank where GNI stands for gross national income. Six of the countries that are part of the sample as shown in Table 3, do not have sufficient data to compute the before-during-after restructuring comparisons. The missing countries are: Croatia, Grenada, Poland, Serbia and Montenegro, Slovenia, and Trinidad and Tobago.

5. Did default or restructuring reduce the debt?

Governments usually get to the stage of debt restructuring and or default during hard times when other policies and measures have been tried and proved inadequate, insufficient, unsustainable or a combination of these. A successful debt reduction package that marks an exit from a default regime apart from reducing the burden of debt servicing, restoring capital market access and stimulating growth would be expected to also to deliver some form of reduction in debt ratios that define whether the path is a sustainable one or not. In many of the episodes studied here part of the "success" also involved changing the composition of the debt. A common form of restructuring involves exchanges of short-term debt for longer maturities or exchanges of marketable debt for nonmarketable instruments that pose lower rollover risks. Analyzing to what extent these compositional change materialize is beyond the scope of this paper.

A compositional shift that was highly sought after in both the 1930s episodes and the modern EMs is to shift exposure away from external debt. To that end, for the US and European episodes of the 1930s we use the long time series on total, domestic, external central government debt assembled in Reinhart and Rogoff (2009) and (2011).[36] For the emerging markets, we study the evolution of total external debt, which aggregates public, publicly guaranteed, and private debts. As many a crisis episode has shown, private debts before the crises often morph into public debt after the crisis. [37]

Table 5 documents changes in the stock of total, external and domestic debt for the period 1930 to 1934 and 1934 to 1937. We also calculate (not included in the table) the debt change over the entire 1930-1937 period. The cumulative reductions in debt as percent of GDP for France, Greece, and Italy are 50, 36, 30 percentage points, respectively. Sharp declines in external debt (where War Debt figured prominently) primarily account for this fast deleveraging.

[36] If general government debt is used in the analysis it is so noted.
[37] See Diaz Alejandro (1985) for an early discussion of the contingent liabilities problem and Reinhart (2010) for documenting numerous historical examples..

Table 5. Did the Defaults Reduce the Debt? 1920-1939

Debt/ GDP ratio	Change 1930 to 1934	Change 1934 to 1937	Peak Year	Comments
		Austria		
Central government debt	19.9	-3.6	1935	Since 1934, the 1923 Reconstruction
External	11.2	3.0	1937	Loan is excluded from official
Domestic	8.7	-6.6	1934	figures.
		Belgium		
Central government debt	14.7	-7.7	1922	The December 1945 statement omits for
External	-2.2	-4.5	1926	the first time World War I debt. [1]
Domestic	17.0	-3.2	1922	
		France		
Central government debt	9.2	-59.0	1921	From 1932 to 1937, no **foreign** debt
External	6.4	-64.2	1925	numbers were published. Reported
Domestic	48.2	-25.2	1921	here are 1927-1931 and 1931-1938. [2]
		Germany		
Central government debt	11.9	7.0	1922	Recorded debt numbers significantly
External	-3.1	-1.1	1931	underestimate public indebtedness, as
Domestic	15.0	8.1	1937	off balance sheet funding balloons.[3]
		Greece		
Central government debt	-22.7	-13.7	1931	Total debt reaches 139% in 1931, while
External	-18.5	-10.4	1931	external debt exceeds 100%--by far the
Domestic	-4.2	-3.3	1922	highest external dependence in this group
		Italy		
General government debt	-7.9	-21.7	1920	External debt peaks at 85%
External	-44.2	-0.4	1920	the historic high (1861 onwards).
Domestic	36.3	-21.4	1934	Amortizations are significant. [4]
		United Kingdom		
Central government debt	10.6	15.3	1937	UK WWI loans to Allies are also
External	-0.2	-3.6	1923	being defaulted on. Since 1931 Australia
Domestic	10.8	18.9	1937	excludes interest on War debt. [1]
		United States		
Central government debt	23.2	-1.4	1939	All debt is domestic. The 1939 peak
External	0.0	0.0	n.a.	is 43.9%, lower than all
Domestic	23.2	-1.4	1939	others in this except Austria (which
				writes off WWI debts in 1934.

Sources: Reinhart and Rogoff (2009, 2011) and sources cited therein., United Nations (1948).

[1] United Nations (1948) page 24.

[2] From 1938 WWI debts are excluded from the official data, United Nations (1948).

[3] See discussion in Ritschl (2012).

[4] Francese and Pace (2008).

France in 1936 and Italy in 1935 (along with the Netherlands and Switzerland) exited comparatively late from the gold standard; Italy and France had very limited scope to finance a fiscal expansion through much of the Depression. Relative to the early exits from gold for Germany and the United Kingdom in 1931, debt buildups in the 19 to 26 percent of GDP were recorded in 1930-1937 for the UK, US and Germany. In five of the seven countries, total debt/GDP fell following the 1934 default

For the US the decline is marginal. France and Italy recorded the largest reductions, 59 and 22 percent, respectively. Germany and the United Kingdom recorded increases in total debt that were driven by increases in domestic debt.

Table 6, presents a summary of external debt/exports for emerging market episodes. In the nine year window we examine around the final restructuring episode, debt to exports falls, on average, by 74 percent. The larger decline occurring in T-4 to T. While this may appear counterintuitive, it is important to remember that by the time that last restructuring is agreed upon, there had often been one or more prior debt reduction efforts. Also, exits from default (T to T+4) are often accompanied or followed by new bouts of borrowing, as capital market re-entry (as evidenced by the sharp improvement in sovereign ratings following T).

Table 6. Did the Defaults Reduce the Debt? Emerging Markets, 1979-2010

Country	T = Final	Change in ratio during:			Maximum: 1970-2011	
	restructuring	T-4 to T	T to T+4	T-4 to T+4	year	level
Algeria	1996	n.a.	n.a.	n.a.	1988	319.8
Argentina	1993	-201.6	41.3	-160.3	1987	698.6
Argentina	2005	-160.9	-67.9	-228.8	.	.
Bosnia & Herzegovina	1997	n.a.	n.a.	n.a.	2009	178.6
Brazil	1994	-32.6	81.5	48.9	1984	436.3
Bulgaria	1994	32.2	-4.9	27.4	1995	280.1
Chile	1990	-208.5	-32.2	-240.6	1985	435.6
Costa Rica	1990	-142.0	-68.9	-210.9	1982	366.8
Dominica	2005	18.4	-38.2	-19.8	2003	254.8
Dominican Republic	1994	-149.9	-22.8	-172.6	1985	265.7
Dominican Republic	2005	8.4	35.8	44.2	.	.
Ecuador	1995	-101.3	33.6	-67.6	1989	427.3
Ecuador	2000	-36.0	-67.5	-103.5	.	.
Gabon	1994	15.8	42.1	57.9	1994	202.7
Grenada	2005	133.8	59.2	193.0	2004	330.5
Jamaica	1993	-54.7	9.0	-45.7	1985	334.1
Jordan	1993	-44.5	67.3	22.8	1991	373.8
Macedonia, FYR	1997	n.a.	n.a.	n.a.	2010	178.8
Mexico	1990	-155.9	-14.9	-170.7	1986	356.7
Panama	1996	-15.2	1.6	-13.6	1989	133.5
Peru	1997	-207.7	-23.2	-230.8	1988	534.2
Romania	1986	-13.9	-48.7	-62.6	2010	254.7
Russian Federation	2000	5.0	-23.5	-18.5	1999	203.4
Seychelles	2010	21.2	n.a.	n.a.	2009	164.8
South Africa	1993	0.0	-7.6	-7.6	2010	98.1
Turkey	1982	-277.9	52.9	-225.0	2001	536.5
Uruguay	1991	-81.7	-36.6	-118.3	2003	334.4
Uruguay	2003	148.4	-180.7	-32.3	.	.
Venezuela	1990	-150.7	36.8	-113.9	1984	305.2
Average, 29 episodes		-63.5	-7.1	-74.0		320.2

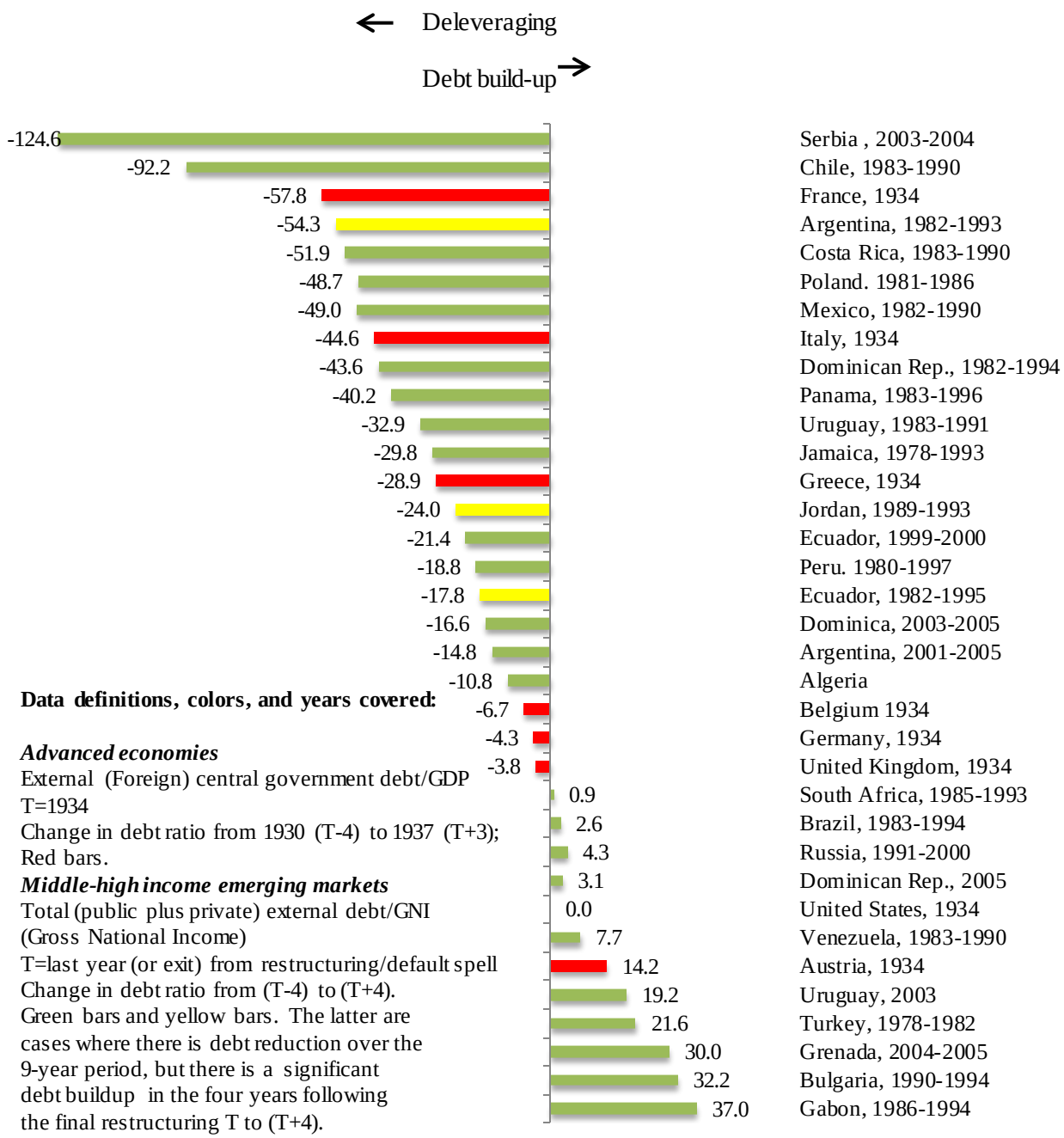
In Figure 6 we compare the advanced economy and emerging market experience over T-4 to T+4. For the emerging markets, we scale total external debt by gross national income (GNI). For the advanced economies, we plot external (foreign) central government debt/GDP. T=1934 for the interwar default episodes while T=last year (or exit) from restructuring/default spell for the emerging market entries.

The episodes are arranged from the largest deleveraging experiences to those cases, where debt/GDP (or GNI) is highest four years after the exit from default. Red bars correspond to the advanced economies; emerging markets are shown with green bars and (fewer) yellow bars. The latter are cases where there is debt reduction over the 9-year period, but there is a significant debt buildup in the four years following the final restructuring T to (T+4).

The first impression from Figure 6 is that there is a vast range in variation in the debt outcomes, ranging from a cumulative debt reduction of 125 percent of GNI to a debt build-up of 37 percent of GNI. Second, the number of countries which experienced deleveraging is considerably higher (27 episodes) than those ending up with a higher level of external debt (7 episodes).[38] Third, it is evident that the observations corresponding to the advanced economies are not clustered in a particular range and, indeed, their experience is distributed similarly to that of emerging markets. Finally, there are three yellow bars flagging countries where the deleveraging was done between T-4 and T and T to T+4 was a period of considerable debt build. In two of the three cases, Argentina and Ecuador, the swift post crisis releveraging ended in a new default within less than a decade.

[38] The US shows no change in external debt, as it does not have any external debt over this sample. Altogether this brings the total number of advanced and emerging market episodes to 35.

Figure 6. Default, Restructuring and External Debt: Advanced and Emerging Market Economies
(change in debt ratio from T-4 to T+4)



Sources: Reinhart and Rogoff (2009 and 2011), World Bank (2013), *International Debt Statistics*, Washington DC
http://data.worldbank.org/data-catalog/international-debt-statistics

V. Concluding Remarks

Elsewhere, we have documented that severe financial crises in advanced economies and emerging markets share many similarities in terms of the severity, the macroeconomic effects and their frequent connection with subsequent sovereign debt crises.[39] Here, we have documented that the resolution of debt overhangs in advanced and emerging market economies also have much in common even when they are separated by more than half a century. Advanced economies in the 1930s, like many modern emerging markets, also resorted to default and restructuring as part of their toolkit to deal with a massive debt overhang in economic hard times. The magnitudes of debt relief delivered from the debt write offs are of comparable magnitudes and, in most cases, quantitatively important (even by conservative estimates).

As to the aftermath of restructuring, the general picture that emerges is that, once the restructuring is completed decisively, the economic panorama tends to improve in terms of growth, debt servicing burdens, debt sustainability (higher growth lower debt), and international capital market access. Both the advanced economy and emerging market sample provide evidence in this regard. Of course, the critical modifier above is "*completed decisively*." Ex post it is straightforward to date that final decisive restructuring deal that ends the debt crisis spell. Ex-ante is another matter, as it is often difficult to ascertain (given that the debt sustainability calculus is crucially driven by assumptions of future growth and how quickly risk premia decline) whether a restructuring proposal will deliver that *decisive* outcome.

The defaults on World War I debt in the summer of 1934 were decisive in the full meaning that it was understood that those debts would not be repaid anytime in the foreseeable future. Many, if not most, of the emerging market episodes, however, had a high count of debt reduction efforts that were not decisive; 97 restructuring deals in 35 defaults spells (a ratio of almost three to one) roughly suggests that prior to a final restructuring there were two "insufficient" efforts. This process of trial and error is typically associated with longer default spells and protracted slumps, as the empirical evidence presented here shows. These observations are not meant to imply that the restructuring or default process is not

[39] Reinhart and Rogoff (2009).

fraught with a variety of risks including reputational issues; it is meant to suggest that the "punishment" is neither permanent nor even very persistent. In effect, exit from default has in a few cases been followed by a renewed surge in borrowing culminating in a new debt crisis within a decade of the exit of the previous crisis.

Our emphasis here on debt reduction via restructuring and default is not meant to suggest that other forms of debt reduction were not quantitatively important in dealing with challenging debt overhangs as well. Fiscal retrenchment, structural reform, financial repression, and (in the case of domestic currency denominated debt) inflation often co-existed in these episodes of debt write-offs. However, the magnitude of debt relief is usually sufficiently important to be integrated in an academic autopsy or an ongoing policy discussion on the topic of debt overhang resolution.

It is beyond the scope of this paper to apportion to what extent the post-restructuring (or default exit) improvement in the economy is attributable to debt relief per se and what role other factors may have played. It would seem that this is a fruitful area for further investigation including revisiting the interwar experience following the 1934 defaults and the recovery in six European economies and the US that we studied here. Eichengreen (1992) has stressed the importance of stimulus provided by exits from the gold standard. Yet, the exits from the gold were spread over a five year period, from the early British and Greek exits in 1931 to the French exit five years later in 1936. On the fiscal front, public works programs were initiated throughout much of the 1930s, but as with monetary policy, there was considerable dispersion in their timing and magnitudes. The defaults and debt write downs were clustered much more closely in 1932-1934 at the trough.

A parallel question for the emerging markets would involve sorting out to what extent the post restructuring recovery may be linked to the debt write-downs or to other factors—such as the sharp depreciations that accompany debt crises (Reinhart, 2003), as the latter may have been a force for restoring competitiveness and stimulating exports. In any case, controlling for the stimulus from debt relief seldom forms a part of the growth accounting following debt crisis episodes. Reinhart, Rogoff, and Savastano (2003) suggested that for emerging markets at least

restructurings played a prominent role in historical periods of debt reduction (or debt reversals) in emerging markets. We would now suggest that the preceding statement is also accurately depicts the experience of the advanced economies in the interwar years.

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Appendix Table 1. Middle-High Income External Debt Restructuring Episodes, 1978-2010

Country / Case	Month/ Year	Debt affected	Preferred haircut (C&T)	GDP in millions US$	GDP full episode year (Method 1)	Debt affected/ GDP	Full restructuring episode	Debt affected full episode	Debt affected/ GDP	Full episode haircut (C&T)	Full episode debt relief to GDP	Full episode debt relief to GDP	Full episode debt relief to GDP	Full episode debt relief to GDP
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Method 1	Method 2	Method 3	Method 4
Algeria	03 / 1992	1,457	0.087	49,217	1996	3.0	1991-1996	4,657	9.9	0.054	0.5	0.5	2.0	2.0
Algeria	07 / 1996	3,200	0.235	46,941		6.8								
Argentina	08 / 1985	9,900	0.303	88,193	1993	11.2	1982-1993	67,891	28.7	0.477	13.7	24.0	n.a.	n.a.
Argentina	08 / 1987	29,515	0.217	108,731		27.1								
Argentina	04 / 1993	28,476	0.325	236,520		12.0								
Argentina	04 / 2005	60,572	0.768	181,357	2005	33.4	2001-2005	60,572	33.4	0.425	14.2	14.2	n.a.	n.a.
Bosnia and Herz	12 / 1997	1,300	0.896	5,281	1998	24.6	1992-1997	1,300	24.6	0.896	22.1	22.1	n.a.	n.a.
Brazil	02 / 1983	4,452	-0.098	146,702	1994	3.0	1983-1994	130,493	23.9	0.375	9.0	14.3	6.7	8.3
Brazil	01 / 1984	4,846	0.017	145,992		3.3								
Brazil	09 / 1986	6,671	0.192	268,846		2.5								
Brazil	11 / 1988	62,100	0.184	326,902		19.0								
Brazil	11 / 1992	9,167	0.270	390,586		2.3								
Brazil	04 / 1994	43,257	0.293	546,487		7.9								
Bulgaria	06 / 1994	7,910	0.563	8,013	1994	98.7	1990-1994	7,910	98.7	0.563	55.6	55.6	55.6	55.6
Chile	11 / 1983	2,169	0.007	21,016	1990	10.3	1983-1990	21,731	64.8	0.379	24.6	35.6	17.7	23.3
Chile	01 / 1984	1,160	0.084	20,437		5.7								
Chile	04 / 1986	6,007	0.317	18,839		31.9								
Chile	06 / 1987	5,901	0.143	22,219		26.6								
Chile	12 / 1990	6,494	0.170	33,546		19.4								
Costa Rica	09 / 1983	609	0.394	3,147	1990	19.4	1983-1990	2,433	42.6	0.791	33.7	43.4	29.0	30.8
Costa Rica	05 / 1985	440	0.356	3,923		11.2								
Costa Rica	05 / 1990	1,384	0.719	5,710		24.2								
Croatia	07 / 1996	858	0.110	23,380	1996	3.7	1992-1996	858	3.7	0.11	0.4	0.4	0.4	0.7
Dominican Rep.	02 / 1986	823	0.499	7,883	1994	10.4	1982-1994	1,910	13.6	0.731	9.9	13.3	n.a.	n.a.
Dominican Rep.	08 / 1994	1,087	0.505	14,094		7.7								
Dominican Rep.	05 / 2005	1,100	0.047	33,533	2005	3.3	2005	1,280	3.8	0.016	0.1	0.1	n.a.	n.a.
Dominican Rep (	10 / 2005	180	0.113	33,533		0.5								
Dominica	09 / 2004	144	0.540	361	2005	39.9	2003-2005	144	39.9	0.54	21.6	21.6	21.6	21.6
Ecuador	10 / 1983	970	0.063	15,431	1995	6.3	1982-1995	12,714	54.3	0.512	27.8	31.2	n.a.	n.a.
Ecuador	08 / 1984	350	0.057	16,423		2.1								
Ecuador	12 / 1985	4,224	0.154	19,206		22.0								
Ecuador	02 / 1995	7,170	0.422	23,427		30.6								
Ecuador	08 / 2000	6,700	0.383	18,685	2000	35.9	1999-2000	6,700	35.9	0.334	12.0	12.0	n.a.	n.a.
Ecuador	06 / 2009	3,190	0.677	57,859	2009	5.5	2008-2009	3,190	5.5	0.528	2.9	2.9	n.a.	n.a.
Gabon	12 / 1987	39	0.079	3,535	1994	1.1	1986-1994	226	5.3	0.054	0.3	0.3	0.8	0.8
Gabon	05 / 1994	187	0.162	4,265		4.4								
Grenada	11 / 2005	210	0.339	695		30.2	2004-2005	210	30.2	0.339	10.2	10.2		
Jamaica	09 / 1978	63	0.022		1990		1978-1993	1,452	31.1	0.516	16.1	24.4	14.7	17.8
Jamaica	04 / 1979	149	0.035											
Jamaica	06 / 1981	89	0.152	2,817		3.2								
Jamaica	06 / 1984	165	0.181	2,119		7.8								
Jamaica	09 / 1985	369	0.317	1,993		18.5								
Jamaica	05 / 1987	285	0.328	2,672		10.7								
Jamaica	06 / 1990	332	0.440	4,663		7.1								
Jordan	12 / 1993	1,289	0.546	5,532	1993	23.3	1989-1993	1,289	23.3	0.227	5.3	5.3		
Macedonia, FYF	03 / 1997	229	0.346	3,735	1997	6.1	1992-1997	229	6.1	0.346	2.1	2.1	2.1	2.9
Mexico	08 / 1983	18,800	-0.002	172,160	1990	10.9	1982-1990	177,771	61.8	0.42	25.9	36.2	13.1	19.5
Mexico	03 / 1985	28,600	0.022	215,443		13.3								
Mexico	08 / 1985	20,100	0.054	215,443		9.3								
Mexico	03 / 1987	52,300	0.181	163,581		32.0								
Mexico	03 / 1988	3,671	0.563	200,119		1.8								
Mexico	02 / 1990	54,300	0.305	287,803		18.9								
Panama	10 / 1985	579	0.120	5,402	1996	10.7	1983-1996	4,967	53.3	0.389	20.7	22.9	16.9	19.8
Panama	08 / 1994	452	0.151	7,734		5.8								
Panama	05 / 1996	3,936	0.349	9,322		42.2								
Peru	01 / 1980	340	-0.046	20,649	1997	1.6	1980-1997	11,320	19.1	0.64	12.2	13.8	11.4	11.5
Peru	07 / 1983	380	0.063	19,291		2.0								
Peru	03 / 1997	10,600	0.639	59,214		17.9								

Appendix Table 1 (continued). Middle-High Income External Debt Restructuring Episodes, 1978-2010

Country / Case	Month/ Year	Debt affected	Preferred haircut (C&T)	GDP in millions US$	GDP full episode year (Method 1)	Debt affected/ GDP	Full restructuring episode	Debt affected full episode	Debt affected/ GDP	Full episode haircut (C&T)	Full episode debt relief to GDP	Full episode debt relief to GDP	Full episode debt relief to GDP	Full episode debt relief to GDP
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Method 1	Method 2	Method 3	Method 4
Poland	04 / 1982	1,957	0.406	65,187	1994	3.0	1981-1994	30,912	29.8	n.a.	n.a.	15.1	15.1	17.7
Poland	11 / 1982	2,225	0.629	65,187		3.4								
Poland	11 / 1983	1,192	0.525	75,406		1.6								
Poland	07 / 1984	1,390	0.269	75,507		1.8								
Poland	09 / 1986	1,970	0.375	73,677		2.7								
Poland	07 / 1988	8,441	0.244	68,612		12.3								
Poland	07 / 1989	206	0.120	66,895		0.3								
Poland	10 / 1994	13,531	0.490	103,683		13.1								
Romania	12 / 1982	1,598	0.329	54,819	1983	2.9	1981-1986	2,965	6.2	0.158	1.0	0.9	1.5	1.6
Romania	06 / 1983	567	0.317	47,915		1.2								
Romania	09 / 1986	800	0.123	51,765	1986	1.5								
Russia	12 / 1997	30,500	0.262	404,938	2000	7.5	1991-2000	68,683	26.4	0.495	13.1	11.3	9.6	11.1
Russia (GKOs, n	03 / 1999	4,933	0.460	195,907		2.5								
Russia (MinFin3	02 / 2000	1,307	0.515	259,716		0.5								
Russia (PRINs &	08 / 2000	31,943	0.508	259,716		12.3								
Serbia & Monte	07 / 2004	2,700	0.709	23,537	2004	11.5	2003-2004	2,700	11.5	0.709	8.1	8.1	8.1	8.4
Seychelles	02 / 2010	320	0.562	973	2010	32.9	2008-2010	320	32.9	0.562	18.5	18.5	18.5	18.7
Slovenia	06 / 1995	812	0.033	20,971	1995	3.9	1992-1996	812	3.9	0.033	0.1	0.1	0.1	0.5
South Africa	03 / 1987	10,900	0.085	85,792	1993	12.7	1985-1993	23,400	17.9	0.377	6.8	9.2	2.9	2.9
South Africa	10 / 1989	7,500	0.127	95,979		7.8								
South Africa	09 / 1993	5,000	0.220	130,448		3.8								
Trinidad & Toba	12 / 1989	446	0.155	4,323	1989	10.3	1988-1989	446	10.3	0.155	1.6	1.6	1.6	2.0
Turkey	06 / 1979	429	0.222		1982		1978-1982	5,067	5.8	0.316	1.8	0.9	1.1	1.5
Turkey	08 / 1979	2,269	0.195											
Turkey	08 / 1981	100	0.086	95,496		0.1								
Turkey	03 / 1982	2,269	0.170	86,766		2.6								
Uruguay	07 / 1983	575	0.007	5,609	1991	10.3	1983-1991	5,913	47.8	0.46	22.0	34.3	n.a.	n.a.
Uruguay	07 / 1986	1,958	0.243	6,470		30.3								
Uruguay	03 / 1988	1,770	0.203	8,375		21.1								
Uruguay	01 / 1991	1,610	0.263	12,376		13.0								
Uruguay	05 / 2003	3,127	0.098	12,046	2003	26.0	2003	3,127	26.0	0.079	2.1	2.1	n.a.	n.a.
Venezuela	02 / 1986	20,307	0.099	60,878	1990	33.4	1983-1990	60,230	124.5	0.387	48.2	41.6	19.6	27.9
Venezuela	09 / 1988	20,338	0.043	60,379		33.7								
Venezuela	12 / 1990	19,585	0.367	48,393		40.5								
Averages		**7,889.3**	**0.270**	**79,299**		**13.8**		**20,738**	**30.2**	**0.39**	**13.6**	**15.7**		

Sources: Individual episodes dates, debt affected, preferred haircut, full epidode haircut from Cruces and Trebesch; full episode haircut not previously published. GDP in US dollars from World Economic Outlook, April 2013; full restructuring episode from Reinhart and Rogoff (2009). Debt relief calculations from the authors.

Appendix Table 2a. Moody's Global Long-Term Rating Scale

Rating	Explanation
Aaa	Obligations rated Aaa are judged to be of the highest quality, subject to the lowest level of credit risk.
Aa	Obligations rated Aa are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated A are judged to be upper-medium grade and are subject to low credit risk.
Baa	Baa Obligations rated Baa are judged to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics.
Ba	Obligations rated Ba are judged to be speculative and are subject to substantial credit risk.
B	B Obligations rated B are considered speculative and are subject to high credit risk.
Caa	Obligations rated Caa are judged to be speculative of poor standing and are subject to very high credit risk.
Ca	Obligations rated Ca are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated C are the lowest rated and are typically in default, with little prospect for recovery of principal or interest.

Source: Moodys' (2013).

Note: Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category. Additionally, a "(hyb)" indicator is appended to all ratings of hybrid securities issued by banks, insurers, finance companies, and securities firms.*

* By their terms, hybrid securities allow for the omission of scheduled dividends, interest, or principal payments, which can potentially result in impairment if such an omission occurs. Hybrid securities may also be subject to contractually allowable write-downs of principal that could result in impairment.

Appendix Table 2b. Fitch's Ratings Symbols and Definitions

Rating	**Explanation**
AAA	**Highest credit quality.** AAA' ratings denote the lowest expectation of default risk. They are assigned only in cases of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.
AA	**Very high credit quality.** 'AA' ratings denote expectations of very low default risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.
A	**High credit quality.** 'A' ratings denote expectations of low default risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to adverse business or economic conditions than is the case for higher ratings.
BBB	**Good credit quality.** 'BBB' ratings indicate that expectations of default risk are currently low. The capacity for payment of financial commitments is considered adequate but adverse business or economic conditions are more likely to impair this capacity.
BB	**Speculative.** 'BB' ratings indicate an elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time; however, business or financial flexibility exists which supports the servicing of financial commitments. .
B	**Highly speculative.** 'B' ratings indicate that material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and economic environment.
CCC	**Substantial credit risk.** Default is a real possibility.
CC	**Very high levels of credit risk.** Default of some kind appears probable.
C	**Exceptionally high levels of credit risk.** Default is imminent or inevitable, or the issuer is in standstill. Conditions that are indicative of a 'C' category rating for an issuer include: a. the issuer has entered into a grace or cure period following non-payment of a material financial obligation; b. the issuer has entered into a temporary negotiated waiver or standstill agreement following a payment default on a material financial obligation; or c. Fitch Ratings otherwise believes a condition of 'RD' or 'D' to be imminent or inevitable, including through the formal announcement of a distressed debt exchange.
RD	**Restricted default.** 'RD' ratings indicate an issuer that in Fitch Ratings' opinion has experienced an uncured payment default on a bond, loan or other material financial obligation but which has not entered into bankruptcy filings, administration, receivership, liquidation or other formal winding-up procedure, and which has not otherwise ceased operating. This would include: a. the selective payment default on a specific class or currency of debt; b. the uncured expiry of any applicable grace period, cure period or default forbearance period following a payment default on a bank loan, capital markets security or other material financial obligation; c. the extension of multiple waivers or forbearance periods upon a payment default on one or more material financial obligations, either in series or in parallel; or d. execution of a distressed debt exchange on one or more material financial obligations.
D	**Default.** 'D' ratings indicate an issuer that in Fitch Ratings' opinion has entered into bankruptcy filings, administration, receivership, liquidation or other formal winding-up procedure, or which has otherwise ceased business. Default ratings are not assigned prospectively to entities or their obligations; within this context, non-payment on an instrument that contains a deferral feature or grace period will generally not be considered a default until after the expiration of the deferral or grace period, unless a default is otherwise driven by bankruptcy or other similar circumstance, or by a distressed debt exchange. "Imminent" default typically refers to the occasion where a payment default has been intimated by the issuer, and is all but inevitable. This may, for example, be where an issuer has missed a scheduled payment, but (as is typical) has a grace period during which it may cure the payment default. Another alternative would be where an issuer has formally announced a distressed debt exchange, but the date of the exchange still lies several days or weeks in the immediate future. In all cases, the assignment of a default rating reflects the agency's opinion as to the most appropriate rating category consistent with the rest of its universe of ratings, and may differ from the definition of default under the terms of an issuer's financial obligations or local commercial practice.

Source: Fitch Ratings (2013).

Note: The modifiers "+" or "-" may be appended to a rating to denote relative status within major rating categories. Such suffixes are not added to the 'AAA' Long-Term IDR category, or to Long-Term IDR categories below 'B'. http://www.bancaditalia.it/pubblicazioni/pubsto/quastoeco/QSE_18;internal&action=_setlanguage.action?LANGUAGE=en. For the most recent years data have been updated with the most recent Istat (National Statistical institute) releases.

Data Appendix

In addition to the sources listed in Box 2 and discussed in the main text, we list below any remaining sources.

Nominal GDP: Advanced Economies, 1920-1939

Country	Sources
Austria	Global Financial Data, 1924-1937
Belgium	BNB, Centre d'études économiques de la KUL, 1835-2005
Finland	Historical National Accounts Database (HNAD), 1860-2001http://www.rug.nl/research/ggdc/data/historical-national-accounts
France	Historical National Accounts Database (HNAD), 1815-1938 http://www.rug.nl/research/ggdc/data/historical-national-accounts
Germany	Historical National Accounts Database (HNAD), 1850-2006 http://www.rug.nl/research/ggdc/data/historical-national-accounts
Greece	Kostelenos (2003), 1830-1939
Italy	Francese and Pace (2006) 1861-2006
United Kingdom	MeasuringWorth, http://www.measuringworth.com/datasets/usgdp/result.php 1830-2011
United States	MeasuringWorth, http://www.measuringworth.com/datasets/usgdp/result.php 1790-2011
Other	
Exchange rates,	*Historical Statistics of the United States* and United Nations (1948); 1932-1934
WWI debts owed to United States	Bailey (1950), Loyd (1933), United Nations (1948), US Treasury (1920) and (1933).
WWI debts owed to France and UK	League of Nations (various issues), United Nations (1948)