

Public Debt through the Ages¹

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1. Introduction

Sovereign debt is a Janus-faced asset class.² In the best of times it relaxes the domestic constraint on savings, smooths consumption, and finances investment. Investors see it as a safe haven, as a way of delivering “alpha,” and as a means of portfolio diversification. In the worst of times it is associated with debt overhangs, banking system collapses, exchange-rate crises and inflationary explosions. Investors see it lacking enforceability, prone to illiquidity, and subject to messy debt workouts.

In this chapter, we use history to analyze both aspects. Historical evidence provides insight into the seasons of darkness by increasing the sample size. This helps because defaults on sovereign debt are not as frequent as on, say, corporate bonds. History also has the potential to enrich our understanding of those features of sovereign debt that are associated with crisis resolution, since there are variations over history in the structure of debt contracts, their enforceability and the costs of default.

But a long-run perspective is equally useful for understanding the seasons of light. History illustrates how governments have used sovereign debt to shape economic and political development. It shows how they have used it to help build stable and lasting states, provide public goods, and complete infrastructure projects. Historical experience sheds light on how sovereign debt evolved into a safe asset, as governments have sought

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² In what follows, we focus on the debt of national (central, federal) governments and not those of state governments, local governments and parastatals except where the latter have been explicitly assumed by the national government, although this distinction is subject to both data and definitional problems, some of which are described below.

to render it more attractive to investors and, in the course of so doing, underpin the financial system.

History doesn't always unfold at the same pace, and the same is true of this chapter. In its first half (Sections 2-4) we review two millennia of debt history in an effort to recover the origins of sovereign borrowing. In the second half (Sections 5-7), we then focus on the most recent century of sovereign debt history, with its more immediate implications for contemporary policy makers.

2. Public Debt as State Building

Though it is challenging to pinpoint precisely when sovereign borrowing began, two criteria can help us identify when political entities first began making concerted use of marketable debt instruments. The first is the existence of the institutions necessary to issue public debt: durable towns, cities, states and nations with well-defined borders; contract laws recognizing polities as entities capable of borrowing; and ledgers for payment and repayment (i.e., accounting systems).³ A second criterion is market constraints: the immediate demand for credit by the polity must exceed tax revenues; and a sufficiently large number of individuals other than the sovereign must have wealth sufficient to lend substantial sums.

Although the written record points to instances of public borrowing satisfying these criteria as long as two thousand-plus years ago, recent scholarship points to 1000-1400 A.D. as when borrowing agreements with states were concluded with regularity and debt contracts entered into by sovereigns were increasingly standardized.⁴ Loans to

³ Removing the polity from the borrowing equation and replacing it with a single sovereign ruler (as was the case for many historical instances) simplifies the institutional requirements since the contract can be written between an individual and the sovereign's creditors.

⁴ One of the earliest recorded defaults concerns the public borrowing of the Greek city-states that formed the Attic Maritime Association, which had contracted loans from the Temple of Delos during the period 377-373 B.C. The Temple, which acted as a quasi-central bank to Greek city states, lost roughly 80 percent of its principal when two of 13 city-states completely defaulted and eight others did so partially. However, such instances appear exceptional until the second millennium A.D. A small treatise attributed to Aristotle collects a series of these anecdotes for the period up to the 4th century BC (Aristotle 1920). Roman politicians frequently found themselves in debt, but the Roman treasury sold no bonds or bills

territorial monarchs in Late Medieval Europe, such as those provided by Italian bankers to Edward III during the Hundred Years' War (1337-1443), were short in term and bore high interest rates.⁵ Only after 1500 were territorial states able to borrow long term. Small city-states, in contrast, appear to have been able to borrow at longer maturities already the in 13th and 14th centuries. Epstein (2000) and Stasavage (2011) argue that city-states were able to borrow long term because they were compact, merchant-dominated polities with representative institutions that monitored the sovereign.

An initial spurt of lending came from papal finances in the 1260s. Although nominally rich, the Roman Church was hampered by the geographic dispersion of its property and other income sources, such as Peter's pence.⁶ Engaged in a long conflict with the Holy Roman emperor, the Church needed a way of paying the troops of its Italian allies. The solution found by its Tuscan bankers was to anticipate income from Church property and religious dues. The Church encouraged banking firms to incorporate as joint stock companies as a way of stabilizing this early form of financial intermediation. These new banking firms had legal personalities independent of their investors. They had transferable shares. In time, this new corporate form enabled them to increase their capital base and expand their lending capacity by selling shares and attracting deposits from wealthy individuals (Padgett 2012). They used the resulting income to provide advances to the Church.

This papal model was then emulated by the city-states of the Italian Peninsula.⁷ Debt contracts took the form of annuities called "rentes" and "renten." These specified that lenders would receive a stream of interest payments over their lifetimes or in

(Frederiksen 1966), and neither Ottoman nor Chinese rulers made significant and sustained use of public borrowing (Drelichman and Voth, 2014, p.23).

⁵ This means high interest rates relative to the risk-free rate. Stasavage (2011) compares interest rates on these loans with the rate of return implied by land rents (his measure of the risk-free rate).

⁶ This was the annual tax of one penny from every English householder having land of a certain value paid to the papal see at Rome from Anglo-Saxon times until it was discontinued in 1534, following King Henry VIII's break with Rome.

⁷ Albeit from the unpromising start of "forced loans" raised to deal with military emergencies. Munro (2013) describes how this innovation spread to other European polities, starting with Catalonian cities in the early 14th century.

perpetuity, with the principal never being repaid. Perpetuities were more liquid because the stream of payments was not tied to the original lender.⁸ They formed the embryo of a permanent stock of public debt, since perpetual annuities could only be redeemed if the city raised sufficient revenue to repay the principal, which was the exception to the rule.⁹ (Life annuities, as noted, instead expired with the death of their original purchasers.) A further advantage of perpetual annuities was that they allowed lenders to circumvent the religious doctrine on usury; since perpetuities never had to be repaid, theologians regarded them as legitimate contracts under which one party purchased a stream of future income from the other.¹⁰

The marketability of perpetual annuities created the conditions for the emergence of secondary markets, first locally, then nationally and finally internationally.¹¹ Their negotiability transformed these securities into what was in effect a public (financial) good. Investors regarded these government debt instruments as safe, liquid and therefore usable for collateral in over-the-counter markets.¹² Although it is uncertain when sovereign debt was first used as collateral, by the end of the early modern period (the 16th through 18th centuries) it had become the dominant form of collateral for short-term credit in Europe.¹³ By expanding the collateral space, government annuities contributed to the development of financial markets, to the expansion of trade, and to the acceleration of growth.

⁸ Owing to this liquidity, they bore lower yields than lifetime annuities. Munro (2013) mentions that in the 1330s, Barcelona issued perpetual annuities with a yield of 7.2 percent and “two-lives” annuities for 14.3 percent.

⁹ Visitors to the Italian city of Perugia can admire a rare example of extinction of the public debt stock. In 1234, the commune paid up all its debt and had a stele erected on the cathedral’s façade to commemorate the event (Belforti 1843).

¹⁰ The final theological settlement of the issue was arrived at in the 15th century. It added additional conditions for the legitimacy of perpetual annuities; however, it turned out these were easier to circumvent than then initial prohibition against interest from *mutuum* (Munro 2013).

¹¹ Sovereign debt was initially marketed to foreigners by the County of Holland in the 16th century (Neal 2015).

¹² As is also often the case today.

¹³ For instance, de Luca (2008) documents how city bonds were preferred as pledges in collateralized loans (*censi consignativi*) in Milan in the late 16th century.

Most immediately, the acceptability of long-term government debt as collateral reduced required returns. By the end of the early modern period, politically independent city-states with control of their tax bases were able to issue long-term tradable debt at around 5 per cent (Pezzolo 2014), noticeably below prior rates. The liquidity and acceptability of these government bonds in turn put downward pressure on the rates on short-term loans secured by that collateral.¹⁴

The supply of loans from city-states and territorial monarchies was driven by the need to finance military campaigns and secure borders. Direct and indirect taxes on trade and consumption might suffice for maintaining borders in peacetime, but foreign military campaigns or the need to repel incursions by foreign troops could overwhelm existing revenue streams. The decline of feudal obligations for military service led sovereigns to create armies for hire, such as the condottieri of Venice, Florence and Genoa. With more than 500 European polities vying for power, war was frequent (Tilly 1992). Sovereign debt thus developed as a vital means of state survival (Stasavage 2011, p.29; Drelichman and Voth 2014, p.21). It enabled the state to finance expenditures of uncertain size and duration. Thus, as states evolved and developed, often in response to war, fiscal capacity did as well (Tilly 1992; Yun-Casalilla and O'Brien 2015).

From the 16th century, Europe's political geography coalesced into the nation states recognized at the Peace of Westphalia in 1648. In parallel, European states evolved from absolutist regimes to more limited government.¹⁵ Dincecco (2009, 2010, 2011) argues that greater centralization was conducive to growth of incomes and increased state revenue.¹⁶ He posits that centralized states, in contrast to absolutist and fragmented regimes, imposed limits on the powers of rulers, and that these states were more

¹⁴ This virtuous circle or complementarity between public and private credit continues all the way to today's financial architecture, where sovereign bonds provide the long-maturity benchmark asset for asset managers engaged in portfolio diversification and risk management.

¹⁵ More precisely, they evolved in this direction in some but not all cases.

¹⁶ This view is consistent with Alesina and Spolaore (2003), who argue that both extreme fragmentation and decentralization on the one hand and excessive consolidation and centralization of state power on the other are both likely to be inefficient; Europe in this period can be seen as moving away from extreme fragmentation but not (yet) to excessive centralization (although problems of fractionalization remained, as we recount below when describing the Dutch experience).

responsible fiscally and therefore able to offer lower sovereign yields. This shift in state structure coincided with the growing use of sovereign debt to fill fiscal gaps and with the emergence of secondary markets.¹⁷ From the mid-17th century, European states accumulated sovereign debts that look positively modern in terms of their shares of GDP, between 20 and 60 percent of national income (Drelichman and Voth, 2014, table 28, p.248).

This transition was not uniform, nor did it obviate the need for costly and sometimes unsuccessful experiments. Absolutist monarchs such as Philip II of Spain still funded their military campaigns by borrowing from syndicates of international bankers, the most important of whom were based in Genoa. Drelichman and Voth (2014) show how Genoese bankers were able to align the Spanish king's incentives by forming cartels that prevented competition from interlopers, à la Bulow and Rogoff (1989).

The subsequent development of these instruments occurred in states that were sufficiently credible to issue negotiable debt that was traded in impersonal markets (as opposed to among a small number of well-connected bankers). The Dutch provinces, in their long fight for independence from the Habsburg Monarchy, were first to scale up this model. The Dutch followed the Italian model but added an international twist, whereby the securities issued by the central government and cities were marketed beyond the frontiers of the state itself (Tracy 1985).

Despite its relative success, the Dutch model was hampered by fiscal fractionalization, as individual cities and provinces fought to retain control of their tax bases and to minimize their share of central government expenses. This tension arose at a time when the Dutch state was attempting to mobilize in its fight against first Louis XIV and then England (de Vries and van der Woude 1997). The English mobilized even more extensive financial resources once they overcame the limitations of Dutch finance by developing a broader tax base (the excise tax and a more efficient system of tax

¹⁷ These observations are consistent with empirical and theoretical work suggesting the existence of a positive relationship between financial development and a state's ability to tax (Besley and Persson 2009).

collection). Brewer (1989) shows that Great Britain was able to more than triple its tax take from the late Stuarts to the war of American independence, rendering it a formidable if not always triumphant military power.¹⁸

Reinforcing these developments was the decision to charter the Bank of England as banker to the government in 1694. The Bank provided a debt-for-equity swap, which relieved the state of its debt overhang. It evolved into fiscal agent of the state, managing the money supply and floating new debt. Monetary and fiscal policies were comingled in this new institution in ways that enabled the English government to fund itself at the lowest rates in Europe, by issuing 3 per cent annuities, while building up the single largest debt stock (Neal 1990).

3. From War Finance to Public Goods

Fiscal states thus evolved in response to the efforts of rulers to secure borders, expand territory, and survive. After 1650, larger, more centralized states increasingly possessed the fiscal machinery to raise revenue in uniform ways and had a veto player, such as a parliament, to discipline and monitor public expenditure (Dincecco, 2011, 2015).¹⁹ Consistent with models in which strong states spend more on public goods (Acemoglu 2005), sovereign borrowing progressively shifted away from war finance and toward the provision of public goods. Domestic public debt took the turn first, with the issuance of domestic-currency bonds to finance education and public works. As incomes rose, manufacturing developed and cities grew, demands arose for clean water, sewers and still more extensive public education. By the 19th century, sovereign debt was being used to finance everything from water and sewer works to railroad networks, ports, and canals.

¹⁸ This stood in contrast to the less elastic land taxes and more costly consumption taxes of Continental Europe. Then, of course, came William Pitt's introduction of the income tax at the end of the 18th century.

¹⁹ The seminal paper on a parliament's ability to monitor the spending of the monarch is North and Weingast (1989) who argue that the English monarch credibly pledged to pursue a sustainable fiscal policy after the Glorious Revolution. This paper spawned a voluminous literature providing further tests of the hypothesis for England (not all of which reach positive conclusions) as well as for other countries. See Dincecco (2015) for a list of references.

This shift toward public investment acquired additional momentum with the development of global capital markets; foreigners searching for yield beyond their borders found it in debt backed by infrastructure projects, first and foremost railways but other investments as well. Foreign assets rose from perhaps 7 percent of world GDP in 1870 to 20 percent in the first decade of the 20th century (Obstfeld and Taylor 2004, p. 55). Table 1 summarizes the scale of capital flows invested in sovereign debt and their geographic distribution in the four decades prior to World War I. The first three columns show new issues of external debt by all levels of government in 29 emerging market economies since 1880.²⁰ The data come from securities listed in the three principal capital markets: London, Paris, and Berlin.

Intra-European debt flows accounted for the largest share of new issues throughout, but other regions were prominent in certain periods. Latin America was responsible for almost half of all issues before the 1890 Baring Crisis, for example, after which the share of Asia rose, driven by borrowing by Japan and China.

The last three columns of Table 1 are from a United Nations report tallying sovereign debt stocks on the eve of World War I. This report encompassed both foreign and domestic debt stocks and covered a larger group of economies. The authors estimated the total stock of debt in 1914 to be in excess of \$40 billion US, \$13.5 billion of which was foreign debt. The distribution of debt does not change significantly as a result of this broader geographic coverage. But this presentation including also domestic debt highlights that Europe was the most heavily indebted continent. This observation is not surprising. European countries had greater fiscal capacity, while emerging nations

²⁰ They therefore provide comprehensive coverage only of the external debt of those nations. The number of countries varies, as we only consider independent nations. In the last period, we include three new sovereigns—Australia, New Zealand and the South African Union.

depended more on foreign finance and were less able to borrow in local currencies at home.

Table 1: Geographical Distribution of debt flows and stocks, 1880-1914

(Each column made up of percentages that sum to 100)

	Debt flows			Debt stocks		
	Foreign 1880-1889	Foreign 1890-1899	Foreign 1900-1913	Foreign 1913-14	Foreign 1913-14	Total 1913-14
Europe	36.8	48.5	37.4	47.3	48.9	73
North America	7.9	10.6	9.3	2.4	2.3	4.3
Latin America	47.8	12.3	21.3	9.2	9.8	5.1
Africa			0.4	7.8	7.4	2.6
Asia	7.5	28.6	25.9	26.1	24.9	9.6
Oceania			5.7	7.1	6.7	5.3
Total (USD m)	957.6	1284.5	4398.6	12729.1	13453.1	40171.8
# sovereigns	26	26	29	29	45	45

Sources: Bent and Esteves (2016) and United Nations (1946). Values in percentage unless otherwise noted.

Not all sovereign borrowing funded productive investment. A considerable fraction financed consumption, including government consumption (Feis 1930; Fishlow 1985; Mitchener and Weidenmier 2010), while other borrowing was for the traditional purpose of war finance. Following the Meiji Restoration, Japan floated its first government bonds in London, at 9 per cent in 1870 and 7 per cent in 1870 and 1873, to support the new regime's modernization agenda. (Whereas the first issue was used to finance railway construction, the second to pay off accumulated debts of the earlier feudal regime).²¹ In 1899, Japan issued bonds in London, New York, and Hamburg, in preparation for the impending Russo-Japanese war.²² Qing China, battling Russia on its Northern border and hostile U.S. and European powers along its coastline, borrowed for defense and to pay reparations. It floated an 8 percent sterling-denominated bond in 1875, a 6 percent issue in 1885, and a 4.5 percent issue in 1898 (this last at an issue price of only 90 percent of face value and secured by customs receipts). It issued domestic

²¹ These interest rates were even higher than those paid by marginal credits such as Egypt and Romania, reflecting ongoing civil conflict prior to the Meiji's final consolidation of power and the difficulties of building a functioning tax system.

²² These bonds bore an interest rate of 4 percent and ran an impressive 55 years to maturity, arguably reflecting the fact that Japan had gone onto the gold standard in the 1890s (Tomita 2005).

bonds in 1894 to finance the First Sino-Japanese War and in 1898 to help pay for the indemnity of the Treaty of Shimonoseki.²³ Not surprisingly, both issues lapsed into default once the Qing stepped down in 1912 (Ho and Li 2010).

More generally, foreign investment was extremely important for emerging-market economies in the second half of the 19th century.²⁴ Between a third and half of all domestic investment in Australia, Canada, Argentina, and Brazil was financed by capital imports (Fishlow 1985).²⁵ Edelstein (1982, p. 193) estimates that, in 1913, Great Britain kept 32 percent of its net national wealth overseas and had allocated 4 percent of its GDP to capital formation abroad every year on average for more than 40 years. But if London was the leading European financial center, it was not alone: other international financial centers included Paris, Hamburg, Berlin, Brussels, Amsterdam and Zurich. Together with England, France, Germany, Belgium, the Netherlands, and Switzerland accounted for 87 percent of overseas lending in the 1870-1913 period (Maddison 1995, p. 65).

At the beginning of the 19th century, wealthy households held the majority of sovereign bonds, but with financial development banks substantially increased their share (Ferguson 2006). This provided portfolio and geographical diversification for individual investors, who as small depositors invested indirectly in the market through financial intermediaries, as well as for the banks themselves, while enhancing the safe-asset function of sovereign debt.²⁶ By 1883, foreign government bonds accounted for 23 percent of all securities quoted on the London Stock Exchange (Michie 1999, p.89, table

²³ Following China's defeat.

²⁴ An enormous literature considers capital flows between 1825 and 1914. Classic monographs include Jenks (1927), Feis (1930), Cairncross (1953), Thomas (1954), Hall (1968), Woodruff (1966) and Edelstein (1982).

²⁵ A peculiarity of the pre-1914 international debt market was the importance of sub-sovereign borrowers, especially colonies. There was, however, a pecking order of colonial borrowers. Colonies with European settlers issued substantially more debt as share of their economy's output compared to territories whose populations had indigenous majorities (Accominotti et al. 2010, Davis and Huttenback 1986).

²⁶ The managed investment fund industry also emerged in this period, first in the U.K. in the late 1860s, and later in the U.S., offering the advantages of liquidity and diversification to the medium-sized retail investor (Chabot and Kurz 2012, Chambers and Esteves 2014).

3). They still accounted for 21 percent in 1913, far outstripping the share of domestic public debt (Tomz and Wright 2013, p.251).²⁷

Development of this global market coincided with innovations in the architecture of the principal financial centers. Starting with Amsterdam, but followed by London, Paris and Berlin, the microstructure of the securities market adapted to accommodate foreign bonds (Michie 2006). Large investment houses dominated underwriting and issuance, while specialized market makers provided secondary market liquidity (Michie 1999; Flandreau et al. 2010). Specialists issued financial handbooks with information on sovereign borrowers while the financial press provided coverage of the market.²⁸ Bondholder organizations in each European financial center acquired the double function of monitoring borrowers and coordinating restructuring negotiations.²⁹

Financial integration was reinforced by monetary convergence, as a succession of nations and colonies abandoned paper and bimetallic systems for the gold standard. Early empirical work suggested that gold-standard adoption, by eliminating monetary discretion, was repaid with lower borrowing costs (Bordo and Rockoff 1996). More recent research has shown that membership in the gold club did not eliminate currency risk for emerging market borrowers entirely (Mitchener and Weidenmier 2015), although it helped governments to relieve the “original sin” of only being able to sell their debt abroad when denominated in gold (Flandreau and Sussman 2005).

A consequence of this growing tendency of states in other regions to tap European capital markets was an increasing co-movement of business and financial cycles (Bordo and Haubrich 2010). This consequence manifested itself in the high correlation of sovereign spreads across countries, although that correlation was still lower than today (Mauro, Sussman and Yafeh 2002). It is uncertain whether this correlation heightened

²⁷ Domestic debt constituted 14 percent of all securities issued in London in 1913.

²⁸ Improvements in the circulation of information would not have been possible without breakthroughs in technology, in particular the telegraph and telephone (Michie 1987). On the role of the press, see Scheffers and Roberts (2014).

²⁹ The prototype of such organizations was the British Corporation of Foreign Bondholders, created in 1868 (Esteves 2013, Flandreau 2013).

the risk of contagious crises (Neal and Weidenmier 2003, Mitchener and Weidenmier 2008). But that debt crises occurred in waves (Reinhart and Rogoff 2009, Reinhart et al. 2016) is at least suggestive of the existence of contagion.³⁰

4. Debt Consolidation Before 1913

In this section, we describe three successful debt consolidation episodes before World War I: Great Britain after the Napoleonic Wars, the United States in the last third of the 19th century, and France in the decades leading up to 1913. While the colorful debt crises and defaults of the first era of globalization have been much discussed, less attention has been paid to these successful consolidation episodes following periods when public debts reached high levels. British public debt as a share of GDP was higher in the immediate aftermath of the Napoleonic Wars, for example, than Greek public debt in 2018. But in all three cases, high public debts were successfully reduced relative to GDP. They were reduced in different ways, however, than is typical of 20th and 21st century economies. In particular, there was no restructuring or renegotiation of official or privately-held debts. Nor was there financial repression, i.e. measures artificially depressing interest rates.

Our analysis follows Abbas et al. (2011, 2014a) in decomposing debt changes into the contributions of the primary budget balance, the growth-rate-interest rate differential, and the stock-flow adjustment (SFA). The primary budget surplus is sometimes referred to as fiscal effort, for self-evident reasons. The growth-rate-interest-rate differential captures endogenous debt dynamics, but it can also be thought of as capturing financial repression insofar as the real interest rate is successfully kept below the real rate of economic growth. The SFA captures valuation effects operating on foreign-currency-denominated debt, along with other “below-the-line” fiscal operations such as debt restructuring, defaults, assumption by the government of the debt of non-

³⁰ See Bordo and Murshid (2001) and Ba (2017) for further hints in this direction.

government entities, bank recapitalization costs, privatization receipts, and drawdowns and build-ups of government deposits.³¹

The British, French and U.S. governments accumulated these heavy debts as a result of extraordinary wartime expenses. The Napoleonic Wars, Franco-Prussian War and U.S. Civil War were the three most expensive military conflicts of the 19th century. Governments and banks were forced to suspend the convertibility of currency into gold (and, in the French case, into silver) while resorting to money creation; but in all three episodes, seigniorage accounted for a relatively small fraction of war finance. The majority of war expenditure was financed by taxation and public debt issuance. Consistent with theories of optimal tax smoothing (Barro 1987), debt accounted for the single largest share of wartime financing. Relative to the prewar status quo ante, taxes were higher during and after the war, but they were raised by just enough to service and pay down the debt.

Britain financed the Napoleonic Wars primarily by borrowing and, in their latter stages, by raising taxes. Once gold convertibility was suspended in 1797, it relied as well on the Bank of England as a purchaser of government securities. But the increase in the Bank's holdings was limited; these rose from £10 million in 1797 to £15 million in 1809. The bulk of new debt securities were successfully placed with private investors; the government signaled its commitment to maintaining the real value of its obligations by continuing to amortize debt (by maintaining the Sinking Fund established in 1786) and

³¹ In practice, the SFA term also captures statistical errors and discrepancies, since it is calculated as a residual. Interpretation of the SFA depends on its sign and on whether the decomposition exercise is undertaken for debt accumulation or debt reduction episodes. In a debt accumulation episode, a positive (negative) SFA increases (reduces) debt. In a debt consolidation episode, a negative SFA means that the debt fell by less (was consolidated by less) than the growth-interest differential and primary surplus would lead one to expect. Put differently, had the SFA been positive in a consolidation episode (implying that it contributed "positively" to the reduction), the decline in debt would have been larger than what was observed, assuming that the contributions of the primary balance and the growth-interest differential are the same. While large SFAs tend to be common during debt surges, they also occur in consolidation episodes (Abbas et al. 2011, Weber 2012). They reflect host of country-specific factors: domestic institutions (budget transparency), politics (elections), and economic cycles (recessions). The scale of such discrepancies depends on the extent of fiscal transparency in the budget process, among other factors (Alt et al. 2014).

indicating its intention of restoring gold convertibility at the prewar rate.³² In 1799, William Pitt the Younger then introduced the country's first income tax. This contributed fully 20 percent of total tax revenues by 1815. The price level, having risen by 90 percent between 1791 and 1813, was then pushed down to within 10 percent of prewar levels in 1821, when convertibility was restored.³³

Union government financing of the American Civil War was not dissimilar. The majority of wartime spending was financed by issuing bonds and raising taxes. Taxes accounted for only a small fraction of resources in 1861-2, but their share rose starting in 1863 with increases in tariffs, the imposition of additional excises, and the introduction of the first income tax in American history (Pollack 2014). By 1865 a quarter of federal revenues were accounted for by taxes, a slightly higher share than in early 19th century Britain. Bonds held by the banks and low-denomination notes held by the public rose from \$65 million to more than \$2 billion between 1861 and 1865. The most controversial element of war finance was issuance by the Treasury of greenbacks, currency notes not backed by gold, which accounted for 15 percent of wartime government spending. Associated with their emission was a rise in the price level by about 75 percent, slightly less than in Britain during the Napoleonic period. In the U.S., it took until 1878 for prices to be pushed back down to prewar levels and until 1879 for gold convertibility to be restored, a somewhat more extended readjustment than in Britain.³⁴

French government expenses in 1870-71 were financed half out of taxes; that the war was short limited the need to resort to debt finance.³⁵ In addition, the Bank of France provided direct advances to the government, collateralized by Treasury securities, and

³² Bordo and White (1991) cite the government's failure to refute criticism of the Bank of England by the authors of the 1810 Bullion Report as a clear indication of its intention to restore convertibility at the prewar rate.

³³ "Price level" refers to the Gayer, Rostow and Schwartz index of the prices of domestic and imported commodities.

³⁴ Prices here are the Warren and Pearson index for all commodities.

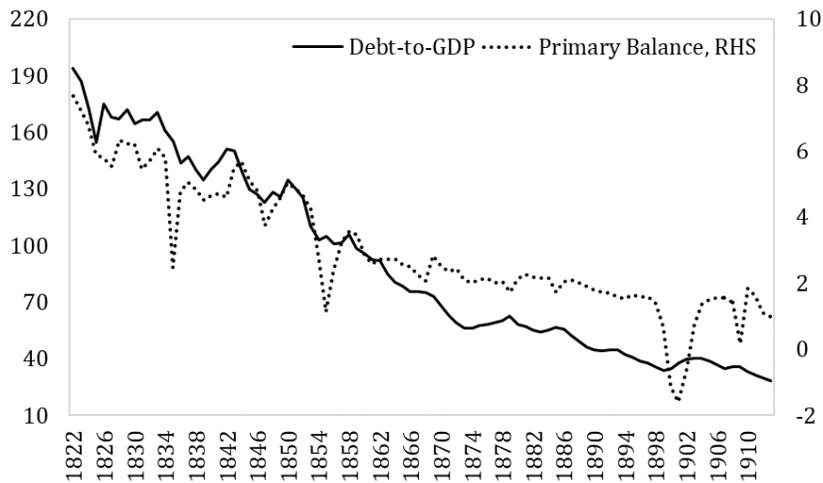
³⁵ Figures are from Hozier (1872), volume 2, p.429.

in 1871 to the Paris Commune, the Bank's Paris-based directors evidently fearing for their safety. The indemnity transferred to Germany was then financed by two large postwar bond issues. That the yield was just 6 percent, despite the fact that France was defeated and still occupied, testifies to confidence on the part of investors that the authorities would move to stabilize prices, restore convertibility and honor their obligations.

Table 2 illustrates how these high debts were reduced subsequently. The starting point in each case is the peak debt-to-GDP ratio. The magnitude, duration and speed of the subsequent debt reduction varied. The reduction in the British debt-GDP ratio was by far the largest, from 194 percent in 1822 to 28 percent nine decades later (see Figure 1). The French public-debt-GDP ratio fell from 96 percent in 1896 to 51 percent in 1913, after which consolidation was terminated by the outbreak of war. This case ranks second in size but first in pace.³⁶

U.S. (federal or union) government debt was not as high at the end of the Civil War, and the subsequent consolidation was more leisurely; however, the process is notable for having reduced the debt-GDP ratio to virtually zero by World War I.

Figure 1. Public debt and Primary Balance in the United Kingdom (In percent of GDP)



³⁶ Pace is important for these decompositions. For example, while Table 2 shows that the excess of the interest rate over the growth rate was larger for France than the U.S., the contribution of the $g-I$ differential to overall debt reduction was smaller, since there were fewer years for that differential to impact. See the discussion below.

Table 2. Decomposition of Large Pre-1914 Debt Reductions

Country	Period	Debt/ GDP ratio		Decomposition (in %)					Average real GDP growth	Average effective real interest rate	Average inflation rate
		Starting	Ending	Primary Balance	Growth-interest differential (g-i)	g	-i	Stock-flow adjustment			
UK	1822-19	194.1	28.3	180.5	-95.6	88.4	-184	15.1	1.9	3.5	-0.1
USA	1867-19	30.1	3.2	151.1	-46.3	48.2	-95	-4.8	4.2	4.3	-0.9
France	1896-19	95.6	51.1	100.4	-1.9	96.3	-98	1.6	2.6	2.9	0.5

Sources: for the US, Carter (2006); for France: Flandreau and Zumer (2004); for the UK the Bank of England's database 'A millennium of macroeconomic data: <https://www.bankofengland.co.uk/-/media/boe/files/statistics/research-datasets/a-millennium-of-macroeconomic-data-for-the-uk.xlsx>

In contrast to the post-World War II debt reductions described in Section 7, the growth-rate-interest-rate differential did not contribute to the decline of debt burdens in these 19th century episodes. In fact, the contribution of this differential was negative in all three cases. It was least in France after 1896, since it operated over the shortest span and because prices, having trended gently downward for much of the 19th century, turned upward in the mid-1890s, reflecting gold discoveries in the Klondike and Western Australia that reduced real interest rates (Eichengreen 1982).

Relatively high coupon rates on debts placed during the wars combined with moderate growth rates and low inflation to produce the negative growth-interest-rate differential. Growth rates were modest during the First Industrial Revolution, since the productivity increase associated with mechanization was limited to a narrow subset of economic sectors (Crafts and Harley 1992). In the French case, economic historians point to a low rate of natural increase as a further factor in the slow aggregate rate of growth (Crouzet 2003). Only the United States, a country of immigration and pioneer in the adoption of modern mass-production methods, displayed what modern observers would characterize as an impressive rate of economic growth during its consolidation period. And even in this case, the real GDP growth rate did not exceed the real interest rate.

Governments for their part did little to bottle up savings at home or to otherwise use regulation and legislation in an effort to artificially depress yields. The British

government did not discourage foreign investment by residents, who famously allocated as much as 40 percent of their savings to overseas government securities and other foreign instruments, as noted above. French foreign investment may have been less extensive, but it was actively encouraged by officials as an alliance-building-and-solidifying device (Feis 1930). In the U.S., the National Banking Act of 1863 required federally-chartered banks to hold government bonds as backing for notes, but note issuance was profitable even subject to this proviso.

The negative contribution of the interest-rate-growth-rate differential had to be compensated for by large and persistent primary surpluses. Great Britain achieved the impressive feat of maintaining an average primary surplus of 1.6 percent of GDP for nearly a century (the only deficit evident in Figure 1 is at the time of the Boer War). One of the political legacies of Peel and Gladstone was a fiscal theory or philosophy of “sound finance” emphasizing the virtues of budget surpluses, low taxes and minimal government expenditure (Campbell 2004). This philosophy was integral to the Victorian economic strategy of free trade, peace, retrenchment and a balanced budget, in which trade promoted peace, which in turn permitted military expenditures to be limited. By making for budget surpluses, further reductions in tariffs and taxes then became feasible (Maloney 1998). This outcome reflected the balance of interests in Parliament, where creditors remained generously represented even after the two Reform Acts of 1832 and 1837, and potential demands for greater spending on welfare relief from the disenfranchised masses were kept in check. In exchange, the self-taxing class of income-tax-paying electors relieved the non-electors from the burden of taxation (Daughton 2001). And to complete the edifice, a number of budgetary reform starting in the 1820s gave Parliament effective control over expenditure, and allowed it to apply the resulting surpluses to the reduction of the debt stock.³⁷

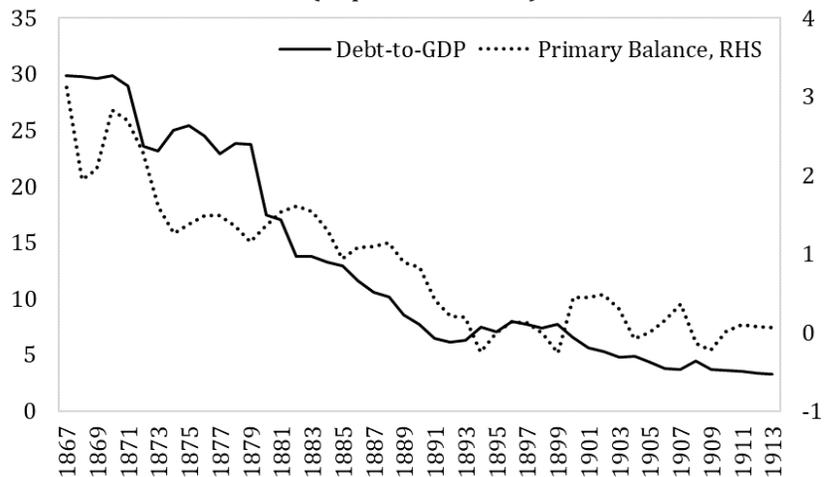
³⁷ This political equilibrium reached its limits with the increasing organization of unskilled trade unions, whose members could not afford to pay for self-help welfare and the costs of rearmament since the 1890s.

In the U.S., primary surpluses were consistently achieved despite the presence of universal (white male) suffrage (Figure 2). Creditor interests were strongly represented in Congress, especially prior to the Progressive Era reaction against the “Money Trust.” The tariff, advanced and defended by the Republican Party, provided an elastic supply of government revenues in this period of expanding trade. On the spending side, Southern states and others opposed an expansive role for the federal government, while entitlements limited to Civil War pensions contained pressure for public spending.³⁸

In France, debt reduction was entirely accounted for by primary surpluses. Those surpluses exceeded British levels, reaching

2.5 percent of GDP on average, albeit over a shorter period.³⁹ Consolidation was delayed for two decades following conclusion of the war and payment of the 5 billion franc indemnity to the German Empire (roughly a quarter of one year’s French GDP), as French governments first sought to rebuild the economy and then to counter German economic and military might, investing in roads, railways, and schools. From the turn of the century, growing tensions with Germany (and the first Moroccan crisis in 1905) then created pressure for military spending. But even this did not stand in the way of primary surpluses (see Figure 3), governing elites seeing debt reduction as desirable for putting

Figure 2. Public debt and Primary Balance in the United States (In percent of GDP)



³⁸ A less unequal income distribution than in the UK could also have reduced the pressure for redistribution taxation, as the median voter’s income was closer to that of the rich (Lindert 1994).

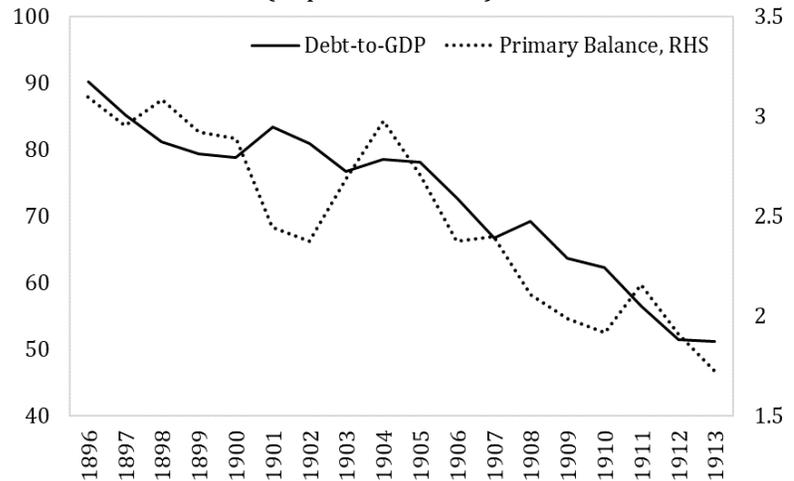
³⁹ The primary surplus ratio and annual percentage point reduction in the debt ratio were the same because the initial debt ratio was 100 percent. Analysis of modern data (by e.g. Eichengreen and Panizza 2016) suggests that this is just about the political limit of the primary surpluses that can be sustained over periods of this length. By comparison, the pace of debt reduction was 1.8 percent per annum for Britain and 0.8 percent for the United States.

the country in a stronger financial position in the event of a full-blown conflict with that country (Dyson 2014, p.203).

Another missing element in the decomposition of these 19th century debt reductions is the SFA. None of these three governments engaged in involuntary restructuring despite the inheritance of heavy debt.

Only in Britain was the SFA responsible for a nonnegligible share of debt reduction. Its 15 percent share is due to the conversion of the stock of perpetual debt (Consols) from 3 to 2.5 percent bonds undertaken by the

Figure 3. Public debt and Primary Balance in France
(In percent of GDP)



Chancellor of the Exchequer George Goschen in 1888.⁴⁰ Interest rates having fallen over time, these bonds were trading above par. Goschen could offer (threaten) to repay the principal at par if they were not converted into new 2.5 percent bonds. The majority were so converted, and the remainder were paid off out of excess Treasury balances. The important point is that the consequent reduction in debt held by the public was voluntary.

5. Evolution of Public Debt since 1900

We turn now to the evolution of public debt since the early 20th century. We consider the G-20 economies together with a set of low-income countries. We classify

⁴⁰ In addition to Consols, there were relatively small amounts of fixed-term 3 percent debt (“Reduced Threes” and “New Threes”).

countries as advanced, emerging, or low income (LICs) using the IMF *World Economic Outlook* categorization.⁴¹

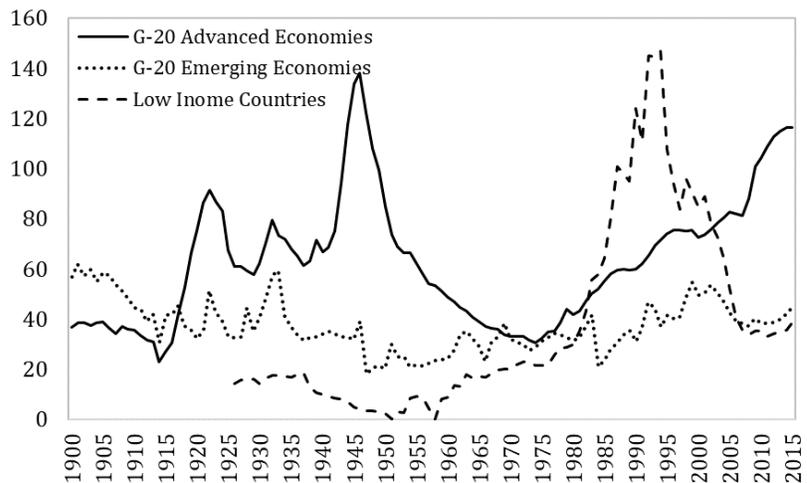
Figure 4 is an overview of the evolution of public debt from 1900 to 2015. Prominent there are episodes when wars, recessions and crises produced sharp increases in debt. In the advanced economies, these events include the surges linked to the two world wars, the

Great Depression, the Great Accumulation (the mid-1970s through mid-2000s), and the recession that followed the Global Financial Crisis. In emerging economies, spikes in the debt ratio occurred in the 1930s and in the 1970s through the 1990s. In the low-income countries, the major surge

is in the 1980s and 1990s. Most of these major debt-accumulation episodes were followed by reversals or consolidations of some magnitude, although the Great Accumulation in the advanced economies is an exception, up to this point at least.

Advanced Countries. Debt-to-GDP ratios in the advanced economies averaged 63 percent over the 115-year period.⁴² They declined between 1900 and 1914, reflecting broadly balanced budgets (despite rising military spending) and economic growth (with interruptions, such as at the time of the 1907 financial crisis).⁴³ In 1914 advanced-

Figure 4. Public Debt-to-GDP Ratio
(PPGDP-weighted Averages)



Sources: Abbas et al. 2014a, and latest update of the IMF's Historical Public Debt Database (HPDD). For advanced economies, data up to 2009 are from Abbas et al. 2011, and from 2010 through 2015 are from the latest version of the HPDD. For all other countries data are from the latest version of the HPDD.

⁴¹ For advanced and emerging economies, the data start in 1900; for LICs they start in 1926 with coverage expanding in the 1950s and again in the 1970s.

⁴² Averages are PPP GDP-weighted except where noted otherwise.

⁴³ Recall the discussion of French fiscal restraint and consolidation in this period in Section 4.

country debt fell to 23 percent of GDP, the 115-year low, as a result of these dynamics. World War I, the Great Depression and World War II then created new demands for public spending and depressed revenues relative to trend. Together they drove debt up to about 140 percent of GDP in 1946, the highest level in the last 11 decades.

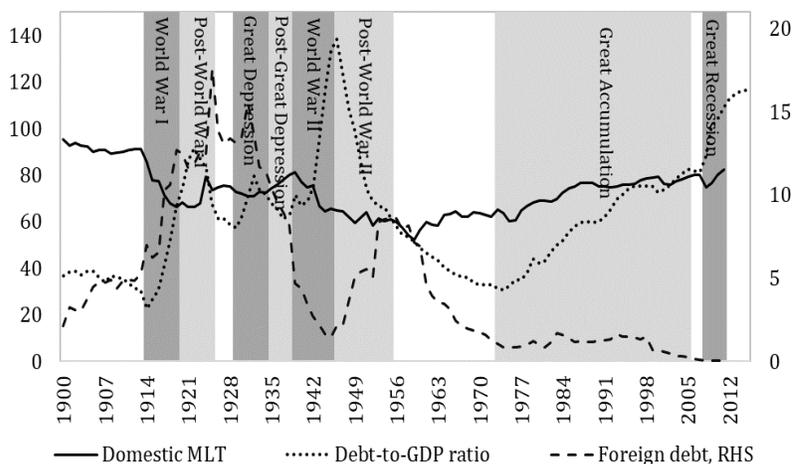
A period of consolidation extending into the 1970s then followed.⁴⁴ Already by 1960, the halfway point of this interlude, advanced-country debt ratios fell to about 50 percent of GDP on the back of strong growth and limited budget deficits, with help from inflation and low interest rates. The subsequent rise in advanced-country debt ratios from the mid-1970s through the 1980s coincided with slower productivity and output growth, expanding welfare states and higher interest rates. This gradual, sustained rise in debt ratios persisted through the Global Financial Crisis, which gave the trend a further upward fillip.

Domestic-currency-denominated medium-to-long-term (MLT) debt comprised close to three-quarters of total advanced-country debt (Figure 5).

Evidently, inability to issue long-dated debt instruments in local currency was not an issue in advanced economies to the same extent as in emerging economies (on the latter, see below).

There were, however, exceptions. Advanced-country governments compensated for the greater perceived riskiness of their debts in less favorable times, such as during wars, crises and recessions, by shortening maturities. Thus, the MLT share fell during

Figure 5. G-20 Advanced Economies' Debt Structure
(Shares in percent of total, debt ratio in percent)



Source: Abbas et al. (2014b).

Notes: G20 advanced economies included are Australia, Canada, France, Germany, Italy, Japan, the UK and the US.

⁴⁴ We analyze this episode further in Section 7 below.

World War I, when the authorities sought to meet extraordinary military spending needs using short-term debt. It fell again in the Great Depression and more pronouncedly during World War II. The shortening of maturities continued after World War II, as inflation eroded investor appetite for long-dated securities. The MLT share then started rising again in the 1980s, coincident with inflation stabilization and financial development, and specifically with the growth of investor groups, such as pension funds, mutual funds and insurance companies, with long-term liabilities and hence strong demand for long-term assets.

Although the share of foreign-currency-denominated debt of G-20 advanced economies was small on average (roughly 5 percent of the total), several countries saw that share rise sharply at some point in the 11 decades considered here.⁴⁵ In Japan and Italy, for example, shares of foreign-currency-denominated debt averaged close to 50 percent in 1915-1918 and 1919-1926, respectively. As noted above, Japan borrowed abroad, in sterling, marks and dollars, to finance its war with Russia, while Italy tapped foreign markets once domestic stability was restored, after a fashion, by Mussolini's assumption of power (Meyer 1970). In fact, this rise in the foreign-currency share of advanced-country debt following World War I was more general, reflecting the extension of dollar-denominated loans by the United States to its European allies to finance relief and reconstruction. The subsequent decline in the foreign-currency share during the Great Depression reflected the relief received by the advanced economies on their war-related debts from the U.S. and the U.K. in 1934 (Reinhart and Trebesch 2014).⁴⁶

A final spike in the share of foreign-currency-denominated debt is visible in the immediate post-World War II period. This reflects the rise in the share of foreign-currency debt in Germany in 1953-56, when the Federal Republic negotiated the 1953 London Agreement under which it assumed a share of the predecessor government's

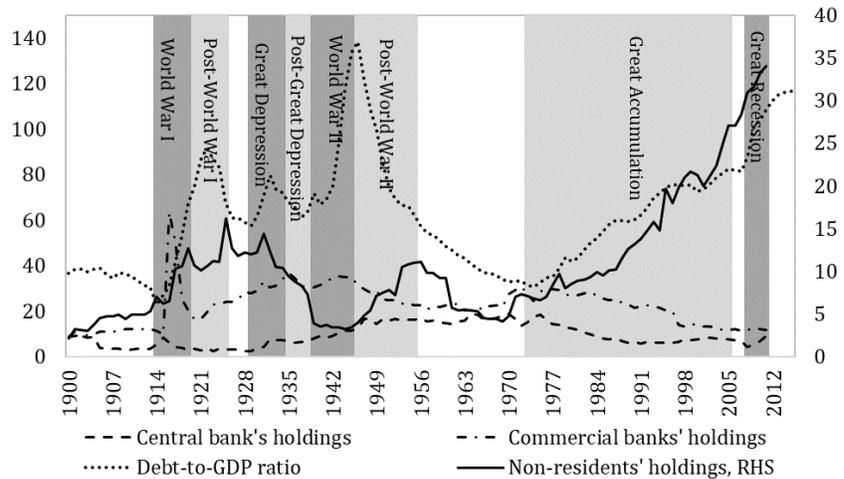
⁴⁵ This general trend is consistent with the "original sin" premise that foreign currency indebtedness and the associated risks have not been major issues in advanced economies.

⁴⁶ War debts were the dominant type of indebtedness for many advanced countries in the 1920s. That decade saw some preliminary rescheduling agreements that postponed the repayment of war-related debts but without a reduction in the notional debt burden.

debts.⁴⁷ From there, the share of advanced country debt denominated in foreign currency declined steadily toward its near negligible levels today.⁴⁸

The shares of advanced country sovereign debt held by central and commercial banks rose in periods of stress, when individual investors drew back and governments leaned on the central bank and commercial banks to take up the slack. This tendency is evident during the two world wars, the Great Depression, and the productivity slowdown of the 1970s (Figure 6).

Figure 6. G-20 Advanced Economies' Debt Structure
(Shares in percent of total, debt ratio in percent)



Source: Abbas et al. (2014b).

Notes: G20 advanced economies included are Australia, Canada, France, Germany, Italy, Japan, the UK and the US.

The share of advanced-country own sovereign debt held by national central banks has been small on average, at roughly 10 percent.⁴⁹ This share rose in the early 1930s, however, indicative of the financial difficulties of the Great Depression, and then through World War II and in the immediate postwar period, when central bank purchases were part of the inflation-based financial repression through which debt ratios were reduced. The central bank share then trended downward with the development of a broader institutional investor base for government bonds starting in the 1970s, as noted above.

⁴⁷ See Guinnane (2004). West Germany assumed some of the debt of the German Reich; there now being two Germanys, the West's lower GDP partly explains the rise in the ratio. During this period, the share of foreign currency debt in Germany rose to more than 40 percent in 1953 and peaked at 45 percent in 1956 (Abbas et al. 2014b).

⁴⁸ A few exceptions like the Roosa bonds denominated in Swiss francs that the U.S. government marketed in the 1960s notwithstanding.

⁴⁹ This refers to debt held by the domestic central bank, not also by foreign central banks that may hold some foreign treasury securities as international reserves.

The recent uptick in central bank holdings reflects the policy response to the global financial crisis, including quantitative easing and related security-purchase programs such as the European Central Bank's SMP.

Commercial banks' holdings were more than twice as large as those of central banks over the 115-year period. They were also more volatile. The commercial bank share of advanced-country debt shot up during World War I before declining sharply before the war's conclusion.⁵⁰ Reflecting chronic funding difficulties, it then rose from the early 1920s through World War II, before falling through the late 1960s. The banks' share turned up again starting in the early 1970s, before declining once more from the mid-1980s due to portfolio diversification facilitated by capital account liberalization and the regulatory changes (the 1988 Basel Accord, which encouraged investment in government securities from other OECD countries by attaching zero risk weights to those bonds).⁵¹ The recent decline also coincided with a rise in non-resident holdings during the Great Accumulation period and with the growth of nonbank investment funds.

Emerging Markets. Public debts have been lower in G-20 emerging economies than G-20 advanced countries, averaging 37 as opposed to 63 percent of GDP (refer back to Figure 4 above). That said, emerging market debts have displayed higher volatility than those of the advanced countries.

Debt accumulation episodes in G-20 emerging economies included the 1920-1930s and 1970s-1980s (both centered in Latin America) and the 1990s (centered in East Asia but also elsewhere). U.S. commercial banks gained a foothold in Latin America when European banks withdrew during World War I and once the Federal Reserve Act authorized them to branch abroad. As a result of a strong U.S. current account balance and the low interest rates maintained by the Federal Reserve System to aid the Bank of

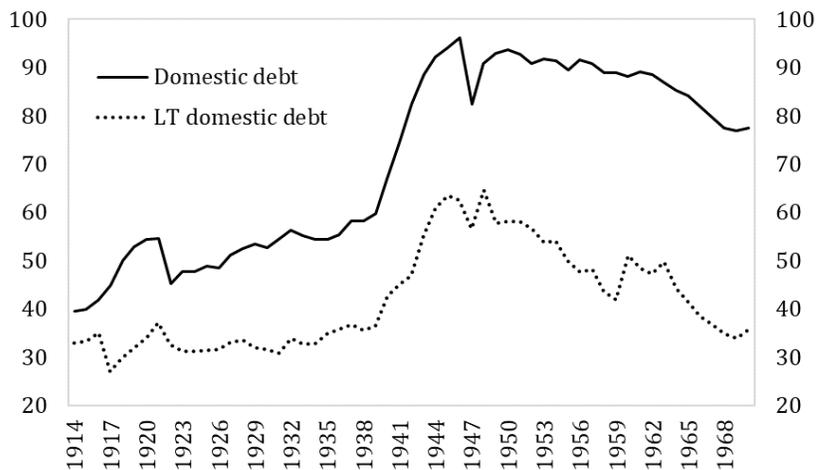
⁵⁰ The commercial bank share began falling already during the war when the U.S. government marketed Liberty Bonds to the nonbank sector and intergovernmental loans rose as a share of total war finance. This intergovernmental lending is also reflected in the rise in foreign-currency-denominated debt evident in Figure 5.

⁵¹ This diversification shows up in our data as an increase in foreign holdings and a decline in commercial bank holdings of own-government bonds.

England's efforts to return to and remain on the gold standard, U.S. banks were attracted by the high rates on offer in Latin America.⁵² Latin American governments cashed in on the resulting bonanza. Argentine public debt rose from 56 percent of GDP in 1925 to 118 percent in 1932, due first to extensive foreign borrowing in the boom and then to the collapse of GDP in the Depression. Brazilian public debt rose from 21 percent of GDP in 1929 to 52 percent in 1933, Mexican public debt from 18 percent of GDP in 1925 to 38 percent in 1932 for the same reasons. Debt ratios then fell from their early-1930s peak as defaulted debts were restructured, GDP recovered, and budgets remained broadly balanced.⁵³ The debt-GDP ratio of this group reached its trough in 1947, at 18 percent, following the wartime period of inflation.

Additional debt was then accumulated via intergovernmental and domestic borrowing (Figure 7), and in the 1970s through foreign-currency borrowing from money-center banks with petrodollars to invest. This process was interrupted in the 1980s by debt crises triggered by sharply higher interest rates and weaker commodity prices (Feldstein 2002 and World Bank 2005). Lending resumed after the Brady Plan was launched in 1989, allowing for the restructuring and securitizing of commercial

Figure 7. Debt Structure in Select G-20 Emerging Economies (Shares in percent of total debt, PPPGDP-weighted averages)



Source: Reinhart and Rogoff (2009).

Notes: Domestic debt refers to debt issued internally. Long term debt defined as debt with maturity of more than one year. Data on domestic debt cover select G-20 emerging economies, including Argentina, Brazil, China, India, Indonesia, Mexico, Russia, and South Africa. Data on long-term domestic debt cover only Argentina, Brazil, China, India, Mexico, and South Africa. Year coverage varies by country and is more limited for long-term domestic debt.

⁵² Latin American countries floated bonds on the London market as well in the 1920s, but New York was far and away the larger lender.

⁵³ Fiscal policy in emerging markets in this period is analyzed by Twombly (1983). Two accounts of defaults and restructuring in Latin America in the 1930s are Eichengreen and Portes (1986) and Reinhart and Sbrancia (2015).

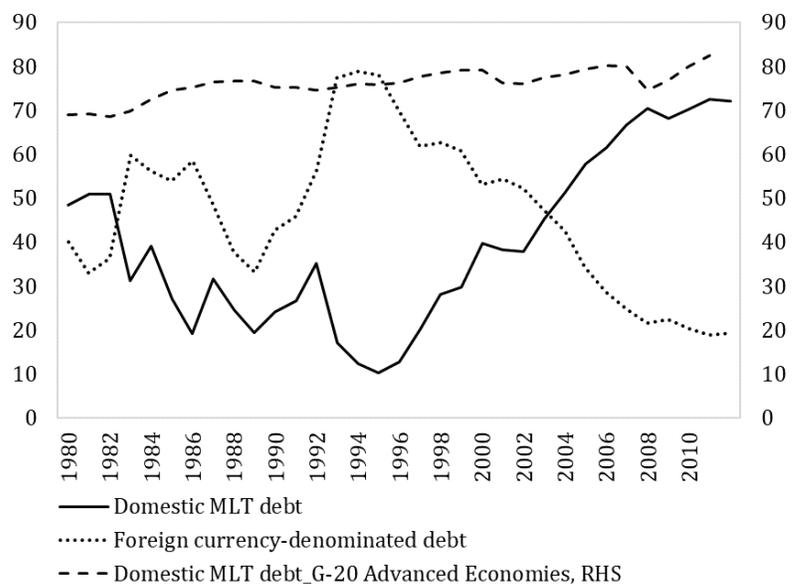
bank debts and giving the bond market a liquid base on which to build. Seven-plus years of crisis had to be endured prior to this resolution, however, during which the high-income countries denied the need for principal reduction, hoping against hope that their banks could rebuild their capital cushions prior to commencing the write-down process.

But with the Brady Plan finally in place, capital flows to emerging economies accelerated. The consequences, as always, were mixed. A substantial fraction of these new flows financed chronic current account deficits. Those deficits were associated with the maintenance of pegged exchange rates, which encouraged both lenders and borrowers to discount the risks of foreign currency denominated and indexed debt.

While accounts of public debt in emerging markets typically emphasize this external aspect, Figure 7 is a reminder that domestic debt in fact comprised a large share of total government debt in G-20 emerging economies.⁵⁴ The success of emerging economies in placing domestic debt came at some cost in terms of maturity. Figure 8, covering a more recent

period, confirms that domestic MLT debt comprised a smaller share of total debt in G-20 emerging economies than G-20 advanced countries (40 percent versus 76 percent in

Figure 8. G-20 Emerging Economies' Debt Structure (PPPGDP-weighted averages, shares in percent of total)



Sources: Guscina and Jeanne (2006) and authors' calculations.

Notes: G-20 emerging countries included are Argentina, Brazil, China, India, Indonesia, Mexico, Russia, and Turkey. G-20 advanced economies included are Australia, Canada, France, Germany, Italy, Japan, the UK and the US.

⁵⁴ A point also emphasized by Reinhart and Rogoff (2011).

1980-2012). On a number of occasions in this period, governments straining to finance current account deficits and roll over maturing debts shortened the maturity of new placements, Mexico's notorious *tesobonos* being perhaps the most prominent case in point.

The share of MLT debt rose after the mid-1990s, reaching close to three-quarters of the debt stock in recent years. This has led some to declare the death of "original sin." Still, the share of debt denominated in foreign currencies remains larger than in the advanced G-20 countries, averaging 46 percent of the total in the 1980-2012 period, compared to close to zero in the advanced economies. That said, after soaring as high as 80 percent in the mid-1990s, the foreign-currency share has been declining since.

Overall, the composition of emerging economies' debt has been riskier, in the sense of a higher combined share of short-term and foreign currency debt. Despite movement in recent years toward a more favorable debt structure, this conclusion still holds.

Low-Income Countries.⁵⁵ Public debt in low-income countries averaged 38 percent of GDP between 1926 and 2015 but rose as high as 147 percent in the 1990s. The upturn started already in the 1970s, as Figure 4 shows. Governments, some newly established, undertook externally-financed public projects with the aim of strengthening their economies and offsetting the 1970s growth slowdown. However, much of this external borrowing was ultimately used to finance current expenditure and only to a lesser extent to develop industry or invest in infrastructure (Krumm 1985 and Greene 1989), echoing the 19th century experience of serial defaulters.

⁵⁵ The full list of low-income countries (based on IMF World Economic Outlook classification) is Afghanistan, Bangladesh, Benin, Bhutan, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Republic of Congo, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Haiti, Honduras, Kenya, Kyrgyz Republic, Lao P.D.R., Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Moldova, Mongolia, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Papua New Guinea, Rwanda, Senegal, Sierra Leone, Solomon Islands, Sudan, São Tomé e Príncipe, Tajikistan, Tanzania, Togo, Uganda, Uzbekistan, Vietnam, Yemen, Zambia, and Zimbabwe. As noted above, coverage in Figure 4 and elsewhere expands over time, and includes a growing number of countries following their independence.

The hope, as always, was that economies would grow and that favorable export performance would allow debt service obligations to be met. These optimistic expectations were shaped by prevailing macroeconomic conditions: the first oil-price shock in the early 1970s was accompanied by a commodity price boom that cushioned the impact on oil importers and limited the rise in their external indebtedness.⁵⁶ In the event, these hopes for strong export growth on the back of favorable commodity prices were disappointed (Figure 9).

In addition, the global banking system recycled the oil exporters' surpluses not just to emerging markets (as noted above) but also to LICs. The Euromarket became a source of finance for LICs that had not borrowed abroad on a significant scale before (Senegal, Togo, Kenya, Zambia, and Liberia, for instance). Evidently, favorable views of

Figure 9. External Public Debt and Exports for Oil Importing LICs (In percent of GDP)

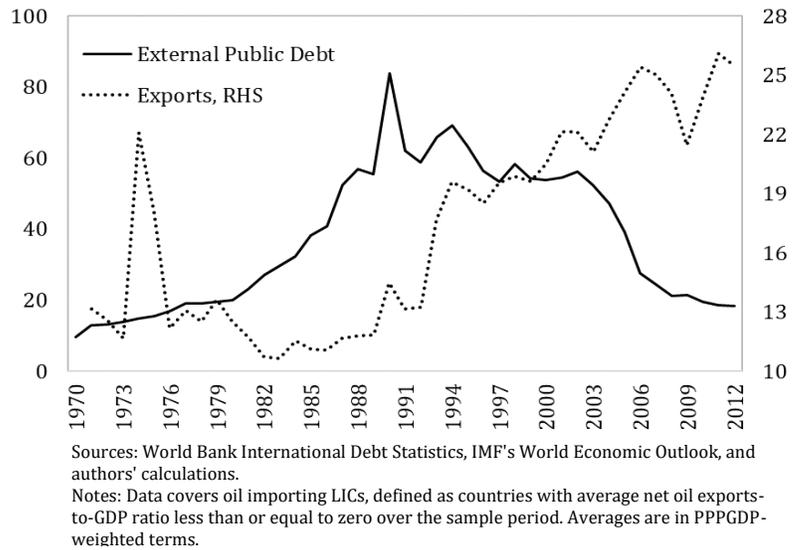
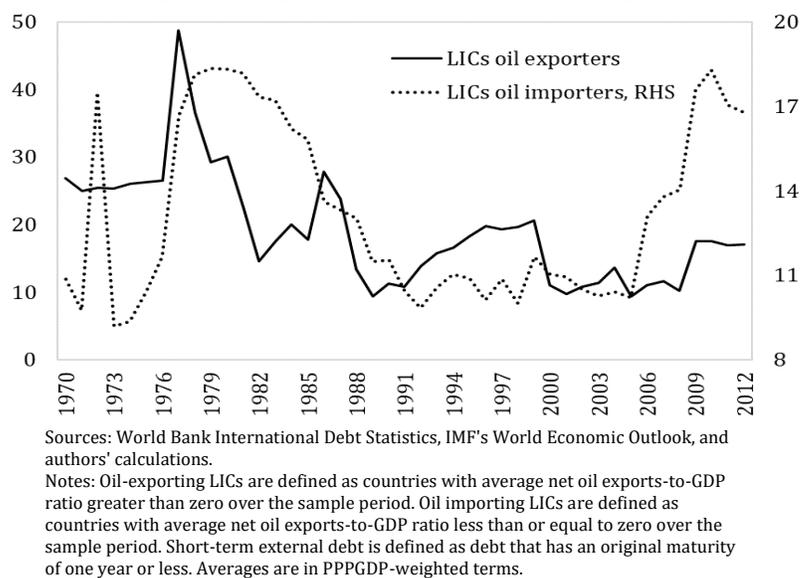


Figure 10. Short-term External Debt in LICs (Shares in percent of total external debt)



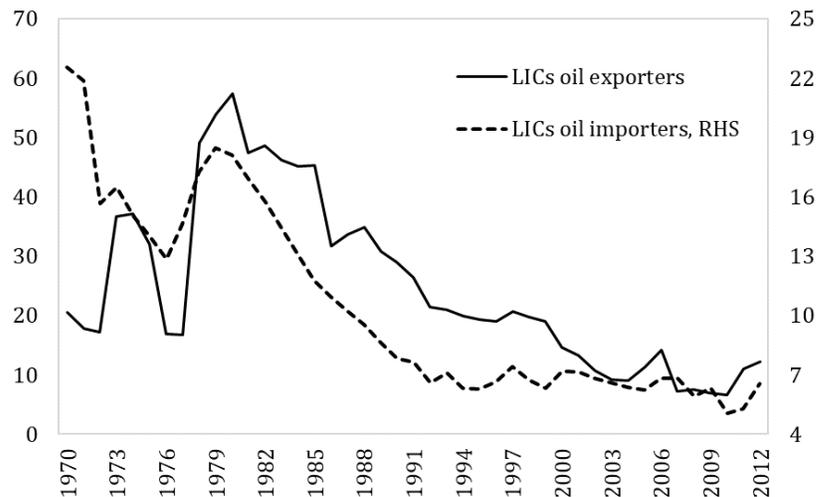
⁵⁶ There were sizeable price increases in cocoa (1973-75), coffee (1976-77), tea (1977), groundnuts (1974), sugar (1974-75), sisal (1973-75), phosphate (1974-75) and uranium (1975-79). Mineral producers, such as Zambia (copper) and Mauritania (iron) faced low international prices during much of the 1970s. But because of expectations that prices would return to historical levels, these countries were able to borrow externally and maintain public expenditure programs.

export-sector performance similarly informed Eurobank lending in this period (Dommen 1989). A growing share of the lending was of short duration (Figure 10) until the Euromarkets retrenched in the early 1980s.⁵⁷

When the developing-country debt crisis erupted in the early 1980s, both oil exporters and importers were among the casualties. Increasingly, these countries became dependent on official external finance, as private investors trimmed their exposures (Figure 11). Unlike the first oil shock, when strong commodity prices offset the balance of payments difficulties of oil importers, the second shock at the end of the 1970s was not accompanied by such offsets. With export earnings stagnant and import prices significantly higher, these countries found it increasingly difficult to meet their debt service obligations, resulting in widespread arrears and reschedulings.⁵⁸

The rise in global interest rates in the 1980s exacerbated the situation, especially for oil exporting LICs and countries that had borrowed commercially at variable interest rates (Figure 12), such as Liberia, Malawi, Niger, Senegal, and Zambia. A number of these

Figure 11. Private Holders of Public External Debt in LICs (Shares in percent of total external public debt)



Sources: World Bank International Debt Statistics, IMF's World Economic Outlook, and authors' calculations.

Notes: Oil-exporting LICs are defined as countries with average net oil exports-to-GDP ratio greater than zero over the sample period. Oil importing LICs are defined as countries with average net oil exports-to-GDP ratio less than or equal to zero over the sample period. Public and publicly guaranteed debt from private creditors include bonds that are either publicly issued or privately placed; commercial bank loans from private banks and other private financial institutions; and other private credits from manufacturers, exporters, and other suppliers of goods, and bank credits covered by a guarantee of an export credit agency. Averages are in PPPGDP-weighted terms.

⁵⁷ Export credit agencies in the creditor countries also played an enabling role, particularly in Sub-Saharan Africa, providing financing on commercial terms while simultaneously advancing their own governments' export-promotion interests (Daseking and Powell, 1999).

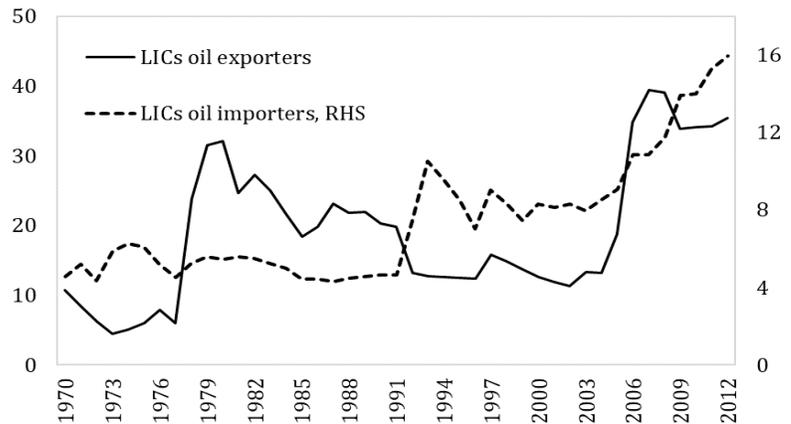
⁵⁸ Most multilateral reschedulings were negotiated through the Paris Club. Between 1980 and 1984, there were 32 reschedulings within this framework for 13 countries (Krumm 1989). There were also several restructurings of commercial bank debt within the London Club. Between 1979 and mid-1984, 19 such restructurings took place for 11 countries.

countries responded not by reducing public spending but instead by borrowing more heavily. Much of this new borrowing did not translate into remunerative investment (Varma 2006). Commercial borrowing was used to finance investments that were either non-productive (e.g., administrative buildings), or economically unviable (e.g., luxury hotels). Public

infrastructure projects, such as hydroelectric projects, airports, and highways, were often financed externally at terms much shorter than the profile of returns. Civil strife was another factor exacerbating debt burdens, for example in Nicaragua and Uganda and to a lesser extent the Democratic Republic of the Congo and Niger (Brooks et al., 1998). Although loans from multilaterals provided support for adjustment programs, this only left the subject countries more heavily indebted (Easterly 2002; Brooks et al. 1998; Daseking and Powell 1999).⁵⁹ As a result, debt levels rose steadily from the early 1970s, reaching unsustainably high levels by the mid-1990s (Figure 9).

In response, the World Bank and IMF launched the HIPC Initiative to provide comprehensive debt relief to the world's poorest heavily-indebted countries.⁶⁰ Organized

Figure 12. Variable Rate External Debt in LICs
(Shares in percent of total external debt)



Sources: World Bank International Debt Statistics, IMF's World Economic Outlook, and authors' calculations.

Notes: Oil-exporting LICs are defined as countries with average net oil exports-to-GDP ratio greater than zero over the sample period. Oil importing LICs are defined as countries with average net oil exports-to-GDP ratio less than or equal to zero over the sample period. Variable interest rate is long-term external debt with interest rates that float with movements in a key market rate; for example, the London interbank offered rate (LIBOR) or the U.S. prime rate. Averages are in PPPGDP-weighted terms.

⁵⁹ In particular, the IMF's Compensatory Financing Facility came into heavy use during late-1970s and early 1980s.

⁶⁰ There had been earlier, more limited initiatives along these lines, as described by Easterly (2002). The limited success of these earlier programs in part reflected the revealed preference of debtors for high debt, which may simply lead to new borrowing to replace old cancelled debts; the granting of progressively more favorable terms for debt relief which may have perverse incentive effects, as countries borrow in anticipation of debt forgiveness and delay policy reforms waiting for the best deal (Easterly, 2002).

in 1996, the initiative was further expanded in 1999 to allow for faster, deeper, and broader debt relief. It was supplemented in 2005 by the Multilateral Debt Relief Initiative (MDRI).⁶¹ Of the 39 countries eligible or potentially eligible for HIPC Initiative assistance, 36 (of which 30 are in Africa) have received the full amount of debt-relief for which they were eligible through HIPC and the MDRI.⁶²

The HIPC Initiative succeeded in providing significant debt relief, although the international community was criticized for making relief contingent on overly ambitious reform targets. According to Easterly (2002) and Gautam (2003), the overall success of the initiative was attributable to two factors: (i) that relief was conditional on establishing a track record of sound policies, thus avoiding incentives to over-borrow and delay necessary reforms; and (ii) that the initiative was comprehensive, i.e., it was a once-and-for-all program in which all creditors, including multilaterals, participated.

6. Two Debt Accumulation Episodes

In this section we hone in on the Great Depression and the Great Recession, the two peacetime periods of rapid debt accumulation in the advanced economies. Our discussion follows the debt decomposition approach in Abbas et al. (2011, 2014a) described earlier.⁶³

⁶¹ This was intended to accelerate progress toward the United Nations Millennium Development Goals. The MDRI allows for 100 percent relief on eligible debts by three multilateral institutions—the IMF, the World Bank, and the African Development Fund—for countries completing the HIPC Initiative process. In 2007, the Inter-American Development Bank also decided to provide additional (“beyond HIPC”) debt relief to the five HIPCs in the Western Hemisphere.

⁶² The 36 countries that have received debt relief under the HIPC initiative include Afghanistan, Central African Republic, Ethiopia, Haiti, Mauritania, Senegal, Benin, Chad, The Gambia, Honduras, Mozambique, Sierra Leone, Bolivia, Comoros, Ghana, Liberia, Nicaragua, Tanzania, Burkina Faso, Republic of Congo, Guinea, Madagascar, Niger, Togo, Burundi, Democratic Republic of Congo, Guinea-Bissau, Malawi, Rwanda, Uganda, Cameroon, Cote d’Ivoire, Guyana, Mali, São Tomé, and Zambia. Three “pre-decision” countries that are potentially eligible for HIPCs assistance are Eritrea, Somalia, and Sudan. As of end-August 2016, the total amount of debt relief under the HIPC and MDRI reached \$US 126.6 billion (of which \$US 76.4 billion were under the HIPC initiative). The top five recipients of debt relief under the HIPC and MDRI initiatives are: Democratic Republic of Congo (\$US 16.3 billion), Ghana (\$US 7.4 billion), Tanzania (\$US 6.8 billion), Zambia (\$US 6.6 billion), and Ethiopia (\$US 6.5 billion).

⁶³ The precise years for which the debt decomposition is conducted for each individual country varies so as to best capture trough-to-peak (peak-to-trough) in its buildup (consolidation) episode. We focus on

Although there are parallels between the two episodes, there were also well-known differences in the policy responses and hence in the dynamics of debt accumulation. Output and employment losses were much larger during the Depression: real GDP in G-20 advanced economies declined by 4 percent peak-to-trough during the Great Recession but by fully 19 percent in the Depression. Median unemployment rose to a staggering 25 percent at the height of the Depression but remained in the single digits during the Great Recession.

Despite the more severe impact on the real economy, the increase in the debt-to-GDP ratio was less in the Great Depression than the Great Recession (24 versus 40 percentage points of GDP). The explanation for the conjuncture of higher output and employment losses with a smaller deterioration in public finances lies in the nature of the policy response and in “the initial conditions,” i.e., the level of public debt at the onset of the crisis. About two-thirds of the increase in the advanced-country debt ratio during the Great Recession was accounted for by the cumulative increase in the primary deficit, reflecting revenue losses and expansionary fiscal policies (Table 3). The growth-rate-interest-rate differential, in contrast, accounted for only about a quarter of overall debt accumulation.

Table 3. Decomposition of Large Debt Increases in Select G-20 Advanced Economies during the Great Depression and the Great Recession

(Contribution to debt increase, percent as share of total)

	Primary balance	Interest-growth differential	Stock-flow adjustment
Great Depression (1928-33)	-9	108	1
Great Recession (2007-13)	67	25	8

Source: Abbas et al. (2014a) and authors' calculations.

Notes: Countries included are Australia, Canada, France, Germany, Italy, Japan, the UK, and the US. PPPGDP-weighted averages, cumulative over the episode years.

sustained changes in debt ratios rather than temporary reversals that were small relative to duration and size of the episode identified.

In the U.S., a stimulus package enacted in early 2008 targeted tax cuts at low- and middle-income families (Auerbach et al. 2010). This was followed by tax relief for first-time homebuyers and by the American Recovery and Reinvestment Act (ARRA) of February 2009, which authorized nearly \$US800 billions of stimulus. The largest countercyclical fiscal action in the U.S. history, the ARRA had important implications for the debt ratio. Australia, Canada, Germany, Japan and the U.K. also enacted large fiscal stimulus packages by late 2008. Early measures generally took the form tax cuts, while increases in spending, such as extensions and expansions of unemployment benefits, were deployed subsequently. Public investments entailed longer lags, reflecting project evaluation and procurement procedures, although bringing forward pre-planned capital expenditures mitigated this delay in some cases, such as France and the U.K. (IMF 2013).⁶⁴

By comparison, there was little discretionary countercyclical fiscal action in the 1930s. Where the primary balance accounted for two-thirds of all debt accumulation in 2007-13, its contribution was negative in 1928-33, when primary balances were, on average, in surplus. In the U.S., the Revenue Act of 1932 increased tax rates with the goal of balancing the federal budget. The New Deal, initiated in early 1933, included new programs aimed at generating recovery but represented only a modest and temporary countercyclical fiscal expansion (Brown 1956, Romer 1992).

The U.K., like the U.S., did not use fiscal expansion to a noticeable extent early in its recovery (Middleton 1984). France raised taxes to defend the gold standard in the first half of the decade but then ran substantial budget deficits only after 1936.⁶⁵ Fiscal policy was used extensively only in Germany and Japan. The German budget deficit as a percent

⁶⁴ On the monetary policy front, central banks (in the U.S., the U.K. and Japan, followed eventually by the Euro Area) reduced interest rates (for instance, in the U.S., the zero lower bound was reached by end-2008). After cutting rates, they implemented a range of unconventional monetary policies aimed at restoring the functioning of financial markets and intermediation, and providing further monetary stimulus at the zero lower bound. Forward guidance and quantitative easing in the form of government bond purchases were used to lower long-term interest rates. Negative interest rates on bank deposits at central banks have also been deployed in some countries. Through these channels, and by helping to secure recovery, these policies helped to narrow and reverse the interest rate-growth rate differential.

⁶⁵ The expansionary effect of these deficits, however, was counteracted by a legislated reduction in the French workweek—a change that raised costs and depressed production (Cohen-Setton et al. 2017).

of GDP increased little early in the recovery (Thomas 1934) but grew substantially after 1934 as a result of public works and rearmament. In Japan, government spending, particularly military spending, rose sharply between 1932 and 1934, resulting in substantial budget deficits (Almunia et al. 2010). This fiscal stimulus, combined with monetary expansion and an undervalued yen, returned the Japanese economy to full employment relatively quickly.

Another more modest difference is the role of SFA, which, as explained in Section 4, captures the effects of debt restructuring, government operations in support of the financial system and the like. The SFA contributed more to the increase in the debt ratio in the Great Recession. This reflected extensive financial sector support in several advanced economies (costs of bank recapitalization, the absorption of bank liabilities, and loans to support the housing sector which were not recorded as current spending or captured in the primary balance and therefore show up as contributions of the SFA to debt dynamics). Governments intervened in distressed financial systems in the 1930s as well but relied more on approaches that did not increase levels of sovereign debt.⁶⁶

As a result, the Great Depression debt surge was fully accounted for by the growth rate-interest rate differential, reflecting the large negative shock to output and employment. Eventually, currency devaluations enabled central banks to cut policy rates and then stabilize and raise prices, which translated into a reduction in real interest rates. These policies, along with relatively low initial debt levels at the outset, contained the impact of the interest-rate component on debt dynamics. They help explain why the

⁶⁶ In many cases, support for the financial sector was provided by the central bank or in the form of government guarantees and not reported as an increase in government spending, government financing or public debt. For example, German banks were kept afloat by central bank liquidity provision and government guarantees, financial injections that never showed up on the government's balance sheet. In the case of the U.S. Reconstruction Finance Corporation (RFC), the majority of public finance for bank recapitalization was provided directly by the Treasury, which gave the RFC \$500 million of capital and then additional loans, and which sold bonds to the public to fund the RFC. Treasury funding totaled \$50 billion over the RFC's approximately 25-year lifetime (thus averaging \$2 billion a year); by comparison, U.S. GDP in 1939 was on the order of \$100 billion. The RFC was also authorized to sell bonds to the public (\$3 billion in total), operations unlikely to be captured by the SFA.

increase in debt ratios, in percentage point terms, was smaller than in the Great Recession.⁶⁷

Debt maturities and the composition of debt holders also evolved differently in the two episodes (Table 4). During the Great Depression, there was an increase in the share of domestic short-term debt, as governments were forced to accept less favorable conditions (shorter maturities) on new issues.⁶⁸ This shift was especially evident at the onset of the Depression.⁶⁹ The period also saw a fall in the share of non-resident holdings, consistent with the decline in trade and capital flows, the imposition of capital and exchange controls, and defaults on external obligations. It saw commercial bank holdings of government securities increase, as investors substituted away from other riskier investments.⁷⁰

Table 4. Shifts in Select G-20 Advanced Economies' Debt Composition during the Great Depression and the Great Recession

(Shares in percent of total debt, PPPGDP-weighted averages)

Great Depression	1928	1933	Change	Cumulative annual change (1931-33)
Short-term debt	8	15	7	1
Central bank holdings	2	7	5	3
Commercial banks' holdings	28	30	3	2
Non-resident holdings	12	11	-2	-2
Great Recession	2007	2011	Change	Cumulative annual change (2009-11)
Short-term debt	20	17	-2	-8
Central bank holdings	7	9	2	5
Commercial banks' holdings	11	12	1	0
Non-resident holdings	28	34	6	3

Sources: Abbas et al. (2014b) and authors' calculations.

Countries included are: Australia, Canada, France, Germany, Italy, Japan, the U.K., and the U.S.

⁶⁷ Advanced-country debt was much higher in 2007 than at the start of the Great Depression (84 versus 57 percent of GDP). For the same output and unemployment shock, the snowball effects on public debt were therefore larger starting in 2008.

⁶⁸ Bordo et al. (2003) also point to the shortening of maturity in several advanced economies during the Great Depression.

⁶⁹ Compare the last two columns of Table 4.

On the increase in commercial bank holdings see League of Nations (1934), Appendix III.

During the Great Recession, in contrast, there was a shift away from short-duration debt, reflecting central bank purchases of MLT debt.⁷¹ Central bank holdings of government debt in fact increased in both episodes, though Table 4 shows that such holdings rose more rapidly after 2009 than after 1931, as major advanced-country central banks ramped up their quantitative easing.⁷² Starting in 2008, demand by commercial banks was sustained by continuing to attach zero risk weights and zero capital charges to sovereign obligations from OECD countries (whatever the underlying creditworthiness of the sovereign in question and whatever the other demerits of the policy). Demand by non-residents, for U.S. government debt in particular, picked up despite low yields, reflecting flight to safety and the so-called safe-asset shortage. Non-resident holdings had climbed in the run-up to the global financial crisis, on the back of financial innovation and globalization. These changes enabled countries to finance their deficits by issuing MLT debt to both domestic and non-resident holders while gradually reducing reliance on central banks.

7. Two Debt Consolidation Episodes

Some debt-accumulation episodes have been followed by periods when high debts were successfully consolidated and reduced. In section 4, we discussed three cases of countries that successfully reduced their debts in the pre-1914 era. Here, we turn to two prominent consolidation episodes in the advanced countries following the two 20th century world wars. It turns out that very different approaches were pursued in the two periods.

Advanced Country Debt Consolidation after World War I. In the interwar period, advanced-country debt reductions were achieved partly through immediate postwar hyperinflations, partly through 1930s restructurings of external obligations, and

⁷¹ There was however a move towards shorter maturity and foreign currency debt issuance in some more troubled Eurozone countries, Cyprus, Greece, Ireland and Portugal for example (De Broeck and Guscina 2011).

⁷² In the case of the Great Depression, the increase in central bank holdings is driven by the well-known case of Japan (see above).

partly through primary surpluses. Balanced budgets were the norm in the second half of the 1920s; net of interest payments, those budgets delivered primary surpluses that helped to reduce debt-to-GDP ratios (Table 5). However, the SFA worked against consolidation. This term was driven by France, which had significant dollar denominated debt in the early 1920s.⁷³ Depreciation of the franc increased the burden of those dollar-denominated debts, which shows up as a negative SFA (and an increase in the debt ratio) in a period of consolidation (when debt is being reduced).

Table 5. Decomposition of Large Post-WWI and Post-WWII Debt Reductions in Select G-20 Advanced Economies

(Contribution to reduction, percent as share in total)

	Primary balance	Growth-interest differential	Stock-flow adjustment
Post-WWI (1921-29)	64	53	-16
Post-WWII (1945-75)	46	75	-21

Sources: Abbas et al. (2014a) and authors' calculations.

For post WWI, the countries (episodes) included are: Canada (1922-28); France (1921-26), the UK (1923-29), the US (1921-29). For post-WWII, countries (episodes) included are: Australia (1946-63), Canada (1945-57), France (1949-69), the UK (1946-75), and the US (1946-74). PPPGDP-weighted averages, cumulative over the episode years.

Initial rescheduling agreements for bilateral government credits in the early 1920s postponed repayments to the U.S. and the U.K., but without reducing the nominal debt burden.⁷⁴ These maturity extensions, evident in Table 6, were facilitated by the fact that a substantial fraction of this debt was held by foreigners, in particular by the foreign official sector, reflecting inter-government obligations incurred during the war. The share of foreign-currency-denominated debt remained relatively high. It increased further in the immediate post-World War I period, as foreign loans from the U.S. to its

⁷³ The sizable dollar denominated debt was incurred as a result of the four liberty loans the U.S. extended to France during World War I. In the early 1920s, the share of foreign-denominated debt rose significantly in France (from 24.5 percent in 1921 to about 40 percent in 1925) and stabilized at that level through the early 1940s.

⁷⁴ Select war debt reprofiling occurred later (e.g. Austrian debt to the U.S. in 1930 and Romanian debt to the U.K. in 1937), but since these are not G-20 countries these reprofilings are not reflected in our calculations.

European allies were used to fund relief and reconstruction. The high share of foreign-currency denominated debt meant that it was not easily inflated away.⁷⁵

Table 6. : Shifts in Select G-20 Advanced Economies' Debt Composition in the Post-WWI Period and in the 1930s

(Shares in percent of total, PPPGDP-weighted averages)

Post-WWI	1922	1929	Change	Cumulative annual change (1922-25)
MLT domestic debt	66	73	6	7
Foreign currency debt	12	13	1	6
The 1930s	1932	1939	Change	Cumulative annual change (1932-35)
Short-term debt	15	14	-1	2
Foreign currency debt	14	5	-9	-5

Sources: Abbas et al. (2014b) and authors' calculations.

Countries included are: Australia, Canada, France, Germany, Italy, Japan, the U.K., and the U.S.

Ultimately, the overhang was removed in the 1930s by large-scale war-debt reduction, which also delivered a fall in the share of foreign-denominated debt (Table 6). The 1931 Hoover Moratorium allowed 15 European countries to suspend their war-debt payments to the U.S., and at the 1932 Lausanne Conference the U.K.'s wartime allies were permitted to temporarily suspend their payments. These suspensions were recognized as permanent in 1934. The resulting debt reduction was substantial: war debt relief accounted for 36, 43, and 52 percent of 1934 GDP for France, Greece and Italy respectively (Reinhart and Trebesch 2014). In Germany's case, additional external public debt contracted in the second half of the 1920s was written down unilaterally in 1933-34, when the National Socialist regime was no longer deterred by ensuing damage to its commercial and diplomatic relations (Ritschl 2013).

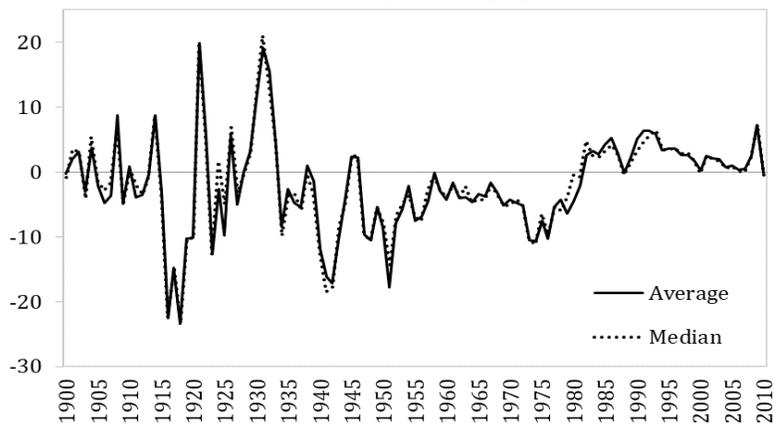
⁷⁵ Note that Table 5 (and Figure 4 above) do not include reparations obligations from Germany as public debt; doing so would greatly alter (and dominate) the analysis.

Advanced Country Debt Consolidation after World War II. Post-World War II debt consolidation, from the mid-1940s through the mid-1970s, was the most dramatic such episode in the 20th century. G-20 advanced country debt reached about 140 percent of GDP in 1946, as noted above, before falling to 30 percent by 1974. Three quarters of this reduction was accounted for by the growth-rate-interest-rate differential, with primary surpluses playing a smaller role (Table 5 above).⁷⁶ The favorable differential reflected rapid economic growth (owing to reconstruction of the international economy, strong investment, and successful catch up – see Eichengreen 1996). Also important were negative real interest rates

(Figure 13) supported by restrictive domestic financial regulation, widespread capital controls and persistent inflation. Regulatory restrictions in this period included interest rate ceilings and reserve requirements on banks, prudential floors on pension fund assets to be held as

government securities, caps on bank deposit rates, and restrictions on cross-border foreign exchange transactions.⁷⁷ Exchange and capital controls were widely applied in the 1930s and stayed in place after World War II. The international bond market, demoralized by earlier defaults, was largely quiescent (as it remained until the 1990s as described above). With this loss of access to international capital markets, governments shifted toward domestic funding. Central bank holdings of government paper were high in this period, and to the extent that their accumulation represented monetization of

Figure 13. Interest-Growth Differential in Select G-20 Advanced Economies (Difference in percentage points)



Source: Abbas et al. (2014a).

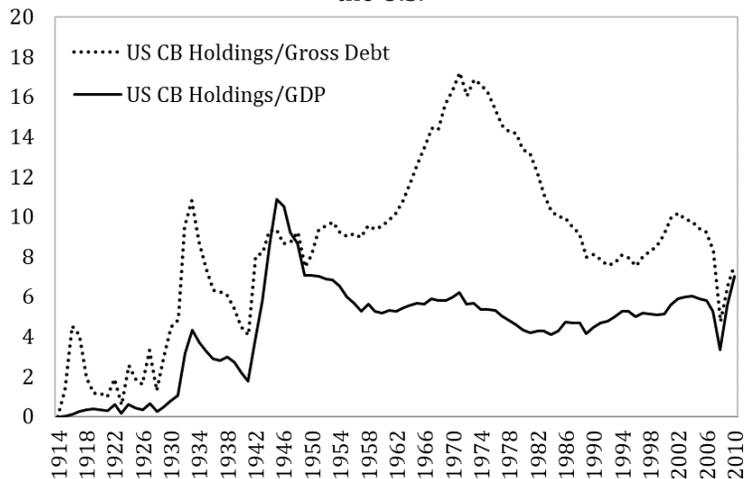
Notes: G-20 advanced countries included are Australia, Canada, France, Germany, Italy, the UK and the US.

⁷⁶ The contribution of the primary surplus varied across countries: it contributed half of the reduction in debt in the U.S. during 1946-74, for example, but only a quarter in the U.K. over the same period.

⁷⁷ Before World War II there was a gradual shift towards heavier regulation in response to the financial crises of 1929-32. The legacy of these crises made it easier to package those policies as “prudential.”

fiscal deficits, they facilitated inflation. In the U.S., for example, the central-bank share of government debt reached a record 17 percent of gross debt in the early 1970s (Figure 14). The accumulation of government debt by the Fed in the pre-1951 Accord period is well known (see e.g. Eichengreen and Garber 1991): the central bank accumulated public debt as needed to maintain the Treasury-dictated ceiling on interest rates. That the share of gross debt on the central bank's balance sheet again rose strongly in the 1960s is perhaps less widely appreciated.

Figure 14. Central Bank Holdings of Government Debt in the U.S.



Source: Abbas et al. (2014a).

The roles of inflation and central bank financing in these post-World War II consolidations differed across countries. Japan, for example, experienced high inflation from 1946 through 1949.⁷⁸ (The 12-month change in retail prices in Tokyo peaked at more than 700 per cent in late 1946). The UK is a contrasting case; the roles of inflation and central bank financing were less, and the rate of debt reduction was only half as fast as in Japan. But faster debt reduction in Japan, achieved through inflation, came at the expense of significant maturity shortening, reflecting declining investor appetite for long-dated securities (Table 7).

⁷⁸ The Dodge Line Stabilization took place in mid-1949, but even then, it took an additional six months for inflation to come down to single-digit levels.

Table 7. Shifts in Debt Composition in Select Advanced Countries in the Post World War II Consolidation period

Country (Episode years)	Debt Reduction relative to intital debt level	No. of years	Average debt reduction per year	Average inflation	MLT domestic Debt	CB Holdings
	(percent)	(years)	(percentage points of GDP)	(percent)	Change in shares to total debt (percent)	
UK (1946-80)	85	35	6	7	21	6
Japan (1946-64)	98	19	11	42	-33	40

Sources: Abbas et al. (2014) and authors' calculations.

As in the post-World War I consolidation period, the SFA slowed debt reduction after World War II. But in contrast to the aftermath of World War I, when the negative contribution of the SFA was limited to France, the one country where foreign currency debt in conjunction with a depreciating exchange rate combined to produce a large SFA, in the post-WWII period a large contribution of the SFA was common across G-20 advanced economies. Nationalizations, subsidies for loss-making public enterprises and other below-the-line operations contributed to these negative SFA terms (and thereby to increases in debt, partially offsetting the effects of primary surpluses and a favorable growth-interest-rate differential in this period of consolidation).⁷⁹

Implications for Debt Consolidation Today. Countries have pursued two broad approaches to debt reduction. The orthodox approach relies on growth, primary surpluses, and the privatization of government assets. In turn this allows the preservation of long debt duration and non-resident holdings. Heterodox approaches include restructuring debt contracts, generating high inflation, taxing wealth and repressing private finance. This generally comes at a cost in terms of discouraging foreigners from holding the government's obligations and investors from holding long-duration debt.

⁷⁹ The inflation and growth slowdown of the early 1970s may have added further to this effect, insofar as pressure for increased spending was accommodated but governments sought to hide it from voters and the bond market.

Financial repression is unlikely to be as effective in achieving debt reduction or liquidation today as after World War II. Repression then relied on tight domestic financial regulation, capital controls, and limited investment opportunities for banks and households. Today a much larger share of advanced-country debt is held by non-residents and a lower share by banking systems, making it more difficult to maintain a captive investor base that accepts sovereign debt offering sub-market returns. In addition, regulatory measures compelling banks to hold domestic government debt and then attempting to inflate it away could threaten financial stability in the intensely competitive low-growth environment of the 21st century.⁸⁰

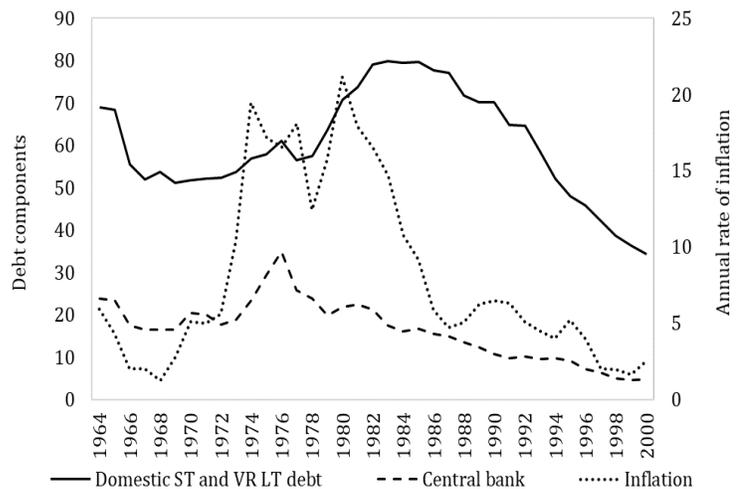
The value attached to price stability by independent central banks and retail investors in government bonds in turn limits the political viability of surprise inflation under current circumstances. Higher inflation would also entail indirect costs, in the form of a persistent departure from less risky long-duration debt. Governments would effectively be trading off lower short-run debt-servicing costs for higher costs and heightened volatility in the future. We saw this in the case of Japan in the previous subsection.

This tendency is also illustrated by Italy after 1970. As its experience shows, once a sovereign has adopted this approach, moving back to long-term debt denominated in domestic currency and with a fixed interest rate may take considerably longer than the time needed simply to bring down inflation. In the early 1970s, a spike in Italian inflation coincided with a sharp increase in the share of the Bank of Italy's holdings of sovereign debt, which peaked in 1976 (Figure 15). Unhappiness over this inflation led in 1981 to the "divorce" between the government and the central bank (the equivalent of the Accord in the United States), when the Bank of Italy gained full autonomy to decide whether or

⁸⁰ Further, higher bank holdings of own sovereign debt can increase exposure to negative feedback loop between the sovereign and banks, as was demonstrated recently in the Euro Area sovereign debt crisis.

not to purchase Treasury bills not taken up by brokers at auctions. The share of debt held by the central bank declined in the second half of the 1970s, but it took until the 1980s for inflation to come down. And it took even longer for the combined share of domestic short-term debt and variable rate long-term debt to begin to fall.

Figure 15. Italy: Debt Composition in the 1970s Through Euro Adoption



Source: Abbas et al. (2014b).

Thus, not only might financial repression be difficult to implement under present circumstances, but its negative side-effects are apt to be persistent.

8. Conclusion

Public debt has a long history, not all of it happy. For hundreds if not thousands of years, sovereigns have borrowed to secure borders to fight foreign military campaigns. The 19th century was a transitional period when governments, while still borrowing to prosecute wars, increasingly issued debt to build roads, railways, and ports and to invest in education. The 20th century again saw sharp increases in debt burdens as a result of major wars but also as a result of recessions, banking panics and financial crises, and of the public-policy responses to these events. The end of the last century also saw, for the first time, a secular increase in public-debt-to-GDP ratios in a variety of countries in conjunction not with wars or crises but in response to a growing range of popular demands on governments for pensions, health care, and other often unfunded social services.

Governments have managed the resulting debts with varying degrees of success. That is to say, default, debasement and restructuring also have a long history. In the

18th and 19th centuries, some governments went to extraordinary lengths to faithfully service and repay heavy debts incurred as a result of expensive wars (recall the examples of Britain, the U.S. and France in Section 4). Britain ran primary surpluses for the better part of a century. The United States did so for five decades. In part this behavior reflected the enfranchisement and growing political influence of creditors. In part it reflected the fact that the franchise was not yet universal and that contemporary perceptions of the role of government were different from today, conditions that limited popular pressure for public programs, entitlements and transfer payments. In part it reflected a recognition on the part of those in decision-making positions that the maintenance of debt-service payments, even when costly and difficult, could deliver lower borrowing costs in normal times and aid with the mobilization of resources in the military and economic crises not infrequently faced by 18th and 19th century governments. Not least it reflected good luck – that Great Britain was not confronted with an equally costly war between 1815 and 1914 or the United States between 1865 and 1917, and that there was no economic slump as deep and long as the Great Depression of the 1930s. Governments that followed this path found themselves able to issue debt at favorable interest rates, long maturities, and in their own currencies (Bordo, Meissner and Redish 2005).

Not all governments were able to implement this good equilibrium. Countries trapped in the bad equilibrium defaulted and restructured their external debts, often repeatedly. Inflation and financial repression were used to reduce domestic claims on the public sector. Episodes like that in the third quarter of the 20th century, when high advanced-country debts were successfully brought down through a combination of rapid economic growth and budgetary discipline, were exceptions to this rule.

We started with the observation that public debt is a Janus-faced asset class. History amply fleshes out this portrait.

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