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## Falling Real Interest Rates, Rising Debt: A Free Lunch?

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With real interest rates hovering near multi-decade lows, and even below today's slow growth rates, has higher government debt become a proverbial free lunch in many advanced countries?<sup>2</sup> It is certainly true that low borrowing rates help justify greater government spending on high social return investment and education projects, and should make governments more relaxed about countercyclical fiscal policy, the “free lunch” perspective is an illusion that ignores most governments' massive off-balance-sheet obligations, as well the possibility that borrowing rates could rise in a future economic crisis, even if they fell in the last one.

As Lawrence Kotlikoff (2019) has long emphasized (see also Auerbach, Gokhale and Kotlikoff, 1992)<sup>3</sup> standard measures of government in debt have in some sense become an accounting fiction in the modern post World War II welfare state. Every advanced economy government today spends more on publicly provided old age support and pensions alone than on interest payment, and would still be doing so even if real interest rates on government debt were two percent higher. And that does not take account of other social insurance programs, most notably old-age medical care. As Auerbach, Gokhale and Kotlikoff note, setting aside legal niceties, there is virtual isomorphism between pay-as-you-go social security systems, where governments “borrow” from the young and promise they will be “repaid” with interest when they themselves retire, and plain-vanilla debt, which the young might buy during their working years, again to receive payments after they retire.

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<sup>2</sup> See, for example De Long (2015), Domeij and Ellingsen (2018) and Blanchard (2019).

<sup>3</sup> The point that actuarial commitments to pensions, old-age medical care and social expenditures is an order of magnitude more than conventional debt was emphasized by a series of paper by Alan Auerbach and Lawrence Kotlikoff in the 1980s; for a discussion see Auerbach, Gokhale and Kotlikoff (1992).

The point is not that these old-age programs are “bankrupt,” though it true that virtually every country still needs to make significant tax and spending adjustments to bring them into line over the next decade (IMF, 2019). Nor are we claiming that these “soft” obligations carry the same legal force as market-traded government debt; they do not although woe is the democratically elected government that needs to cut pension on existing retirees. But just because pension promises (or promises to provide old-age health insurance) do not carry the same legal force as ordinary debt, does not mean they can be ignored in the government’s budget constraint. Nor importantly, can they be ignored in assessing the risk and costs of higher market-based debt.

Indeed, in many respects, old-age pension and health obligations are best thought of a large mass of “junior debt” which sit below the much smaller mass of market-traded debt, which may be thought of as “senior.” From this perspective, and given the huge tax base modern governments command, it should be little surprise that senior debt is considered quite safe. After all, if the government really prioritizes making payment to market lenders, the modern mega state will always be taking in ample tax revenues to honor senior debt, even in situations where the large economic picture is quite mixed. Market debt is safe because the underlying risks are borne almost entirely by the “junior” obligations, or at least so the market believes.

This is indeed a modern phenomenon. As Reinhart and Rogoff (2010) emphasize, in the period immediately after World War II, when conventional measures of public debt were high, today’s “junior” debts were low. Federal debt was the only game in town. Private, state and municipal debt had been ravaged by the Great Depression and the war. Publicly-provided pensions were in their infancy, as was the modern welfare state. Today, as highlighted by Reinhart, Reinhart and Rogoff (2012), there is a quadruple debt overhang of public, private,

pension and external debt, and these need to be analyzed integratively, including the risks. If, say, an extra trillion dollars of public debt does not seem to have any effect on interest rates for “senior” government debt, it may be because the costs are being borne elsewhere, for example in terms of a higher implicit risk premium on pension obligations (or higher risk premium on expected future taxes) which remain unseen because these debts are not traded.

Indeed, Kotlikoff (2019) estimates that unfunded liability of the US Social Security system alone is almost twice the size of the Federal debt, and that the entire fiscal gap of the US federal government is \$239 trillion. Policymakers in Europe, especially, are keenly attuned to the need to consider pension and debt sustainability integratively.<sup>4</sup> While Auerbach, Gokhale and Kotlikoff’s generational accounting methodology arguably overstates the parallels between what I am terming “senior” market debt and “junior” pension and social expenditure promises (the Auerbach-Kotlikoff methodology treats the two forms of obligations as equivalent), it certainly captures the notion that one needs to look at the effects of expanding debt on the entire balance sheet, not just on an accounting measure of debt.

Is there actually any risk to either taxpayers or “junior” pension claimants (or taxpayers) when government debt rises in a low interest rate environment? We consider a number of arguments for why real interest rates might be so low today, including tail risk, financial repression and the possibility of rising liquidity premia. The bottom line is that nothing ensures that today’s low rates are risk free. This point is underscored by Mauro and Zhou (2019), who note that across advanced economies over the past two centuries, interest-growth differentials

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<sup>4</sup> See OECD, 2019.

have been negative about the half the time, including in the run-up to situations where fiscal or financial crisis sent interest rates soaring instead of falling.

## II. The Worldwide Growth of Debt

The idea of taking advantage of low interest rates has hardly escaped public and private borrowers. Despite the fact that  $r - g$  has been negative – implying that in the absence of deficits, debt to income ratios would be falling, both public and private debt levels have been steadily rising for decades. Figure 1 show the rise in global debt as a percent of global GDP from 1970 to 2018, with 2018 public debt (general government) at 82% of GDP, private debt at 144% of GDP, and combined debt at 227% of global GDP. Figure 2 is for advanced economies only, with total public debt at 104% of GDP, private debt 163% and total debt 270%. There is, of course, a wide range of dispersion across countries.<sup>5</sup> At the end of 2019, net (gross) general government debt over GDP in Germany stood at 40.1% (58.6%) versus 153.9% (237.7%) in Japan, and 80.9% (106.2%) in the United States.<sup>i</sup>

Despite these seemingly high debt levels, carrying costs have been extremely low, with the average rate of interest on privately held (including foreign held) US Federal debt standing at 2.36% as of December 2019. German government borrowing rates were negative out to ten years as January 2020, with the 30-year rate under 0.1%. Government borrowing rates for the Japanese government were also negative out to ten years, with the 30-year borrowing rate standing at under 0.4%. In all three cases, even Japan, inflation was positive so that the real borrowing rates were even lower, and definitely lower than growth rates. Rising debt has

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<sup>5</sup> Although we will not take up the issue extensively here, obviously the maturity structure of debt of the consolidated government balance (incorporating, for example, central bank liabilities) is also a factor in how rapid an adjustment would be needed in the case of upward pressure on interest rates.

occurred alongside slowing rates of growth, with the International Monetary Fund reporting 2019 as the slowest year for global growth since the financial crisis.

Although government debt has grown steadily over the past five decades, private debt has risen much faster; see figure 3 based on Reinhart, Reinhart and Rogoff (2012).

### III. Broader measures of public sector obligations

Although attempting to calculate the actuarial cost of future taxes and payments on pensions and (more broadly) social expenditures involves a host of assumptions on growth and interest rates, it does not take a deep dive to present values calibrations to see that “junior debt” swamps senior market debt.

Figure 4 gives general government expenditures on pensions of all types (both for employees and social safety net programs) across the OECD countries. In Italy, for example, 2017 general government public expenditures on pensions constituted 16% of GDP; across the OECD, the average was 8.2%, with the United States 7.2%. For the US, interest payment on privately held federal government debt was under 1.5% of GDP in 2017 (*Economic Report of the President*, 2019); even in Italy with net public debt of 119% of GDP in 2017, net interest payments were under 2% of GDP.

Figure 5 charts the rise of overall social spending across OECD countries, where in 2018, the average exceeded 20% of GDP (of which the pensions illustrated in Figure 4 constitute the largest component). Obviously, these expenditures are offset by the large revenue capacity of today’s advanced economies, albeit with considerable actuarial shortfalls. Figure 6 gives International Monetary Fund estimates of the adjustments required in pension and health spending programs, as a percentage of GDP, an average over the years 2018-2030. For example,

Italy, already spending 16% of GDP, and having already made significant adjustments to its pension programs (Kotlikoff, 2015) will still have to engage in some combination of raising taxes or cut pension expenditures annually by 1.7% of GDP.

In order to go beyond comparing current flow payments, it is necessary to do some actuarial calculations, making assumptions on interest rates, future growth, government tax policy etc. (The results can be quite sensitive to the interest rate assumed, as low interest rates exacerbate the implications of distant future imbalances. A number of studies have nevertheless attempted such calculations. For the case of Germany, for example, the European Commission estimates the size of pension obligations is at least five times that of general government debt, which currently stands at 48% of GDP.<sup>6</sup>

IV: Is safe debt necessarily safe?

Reinhart and Rogoff (2009) and Qian, Reinhart and Rogoff (2011) emphasize that today's advanced economies appear to have "graduated" from sovereign default crises (albeit the line of where to define a country as "advanced" is not a sharp one; Greece of course defaulted during the European debt crisis. From the preceding discussion, it is clear why. Not only do advanced countries have other options of financial repression and inflation, but there is a vast array of social expenditures (or junior debt) across which "austerity" may be spread to avoid a technical default. Put differently, even though market-traded government debt has not exhibited a strong trend over the past two centuries, it is today much smaller relative to the tax base in most advanced economies. But if one includes "junior" debt obligations, then debt levels relative tax bases in many countries are at all-time peaks.

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<sup>6</sup> See ch.3 in Abbas, Pienkowski and Rogoff (2019).

It is important to note that negative  $r - g$  periods are nothing new. Table 1 (based on data in Mauro and Zhou, 2019) shows, across advanced economies,  $r - g < 0$  61% of all country years. For emerging markets, the share is 75%. Of course, there were many factors driving the negative interest rate growth differentials over history. Unanticipated inflation was important during war periods and in the 1970s, while financial repression was important in other periods. Inflation is certainly not an issue today, and the importance of financial repression is mixed at best, given that interest rates on private debt have, by and large, fallen almost as far as interest rates on government debt since the financial crisis. Figure 7 shows the spread between Baa rated corporate bonds and 10-year US Treasury bills. The spread became elevated during the peak of the 2008 financial crisis but is now roughly the same today as it was in the 1990s.

Mauro and Zhou (2019) find that a low level of  $r - g$  does not appear to be a good predictor of whether a country might see a spike in borrowing rates or debt crisis; at least not until just a few months in advance. The fact that market indicators are weak predictors of financial and debt crises until relatively shortly before a spike occurs is a well-known characteristic across a broad variety of crises; see Reinhart and Rogoff (2009) or Obstfeld and Rogoff (1996). A spike in interest rates need not imply a sovereign default, of course, it can also imply a rise in expected future inflation.

Does the large cushion of more easily defaultable “junior debt” necessarily imply that advanced economy debt is as “safe” as commonly assumed? Perhaps, but the thesis that advanced countries will always choose to adjust pension fund payment profiles (and invoke other forms of austerity) ahead of outright default on debt remains somewhat untested, since the massive expansion of the social welfare state is a relatively new phenomenon. It is true that during the European debt crisis, many countries in Europe (including the United Kingdom) engaged in



significant pension reform, notably the Netherlands. On the other hand, the French government is still struggling with raising the retirement age to 62, and as already noted, the Italian pension system is hardly under control; the Greek government, too, is paying out 16% of GDP in publicly provided pensions. Many state and municipal governments in the United States are weighed down by unsustainable pension system commitments, and evidence from the Puerto Rican and Detroit bankruptcies heavily call into question the view that bond holders are senior to pensioners.<sup>7</sup>

The potential risks to “safe debt” are also emphasized in Farhi and Maggiori (2017) who develop a Calvo-style multiple equilibrium model of a global dominant currency (or currencies). In their model, if the lead country’s debt passes a certain “safe” threshold, it moves into a multiple equilibria region subject to crises of confidence. Because the country (countries) issuing the “safe” global asset do not take into account the externalities that a debt crisis may impose on the rest of the world, they tend to over-accumulate debt, taking greater risks than they would if they had to internalize all the costs that a debt crisis in the center country would cause. The Farhi-Maggiori model does not consider the possibility of junior debt, but nevertheless the basic point stands. Given that today’s pension and social expenditure overhang is unprecedented, and therefore admits a new kind of financial/political/debt crises, it is difficult to assess the odds, but certainly naïve to ignore them.

Another relatively recent phenomenon is that the large share of advanced-economy debt that is held externally; Figure 8 shows how for the United States, before 1970 foreigners only

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<sup>7</sup> Mary William Walsh and Karl Russell, “\$129 Billion Puerto Rico Bankruptcy Could be Model for States,” *The New York Times*, September 27, 2019. <https://www.nytimes.com/2019/09/27/business/puerto-rico-bankruptcy-promesa.html>

held a couple percent of GDP worth of US debt. Today they hold roughly 33% of GDP worth. In a crunch, will Chinese debt holders be treated as senior to US pensioners?

## V. Low Interest Rates and Tail Risk

Implicit in the above discussion is the assumption that risk is an important consideration in government financial planning. If interest rates on US debt are low because debt has become more “money-like” and investors value liquidity services, then the case for amply saturating the market is very different than if interest rates are low because of tail risk. Although it is certainly the case that very short-term government debt does now carry a significant liquidity premium in most advanced economies (mainly because post-crisis regulation forces financial firms to hold much more of it), the fact that spreads with corporate debt have not significantly increased, and that the real interest rates are low across advanced economies, suggests that neither liquidity nor financial repression can be the main factor. Certainly, demographics and lower trend productivity growth are significant. However, the fact that global real interest rates dropped sharply after the financial crisis (see Figure 9, for example), and despite fluctuations have not recovered, suggests other explanations. One important possibility is that markets perceive a significant rise in tail risk and that this has produced a significant fall in short-term interest rates; Reinhart, Reinhart and Rogoff (2015), using a Barro-type model of disaster risk, show that in the baseline Barro model, a rise in market’s estimated probability of disaster risk (a crisis that leads to a consumption drop of 15 percent or more) from its historic average of 1.7% to 2.5% (triggered perhaps by the financial crisis), the expected short-term real interest rate can fall from 1% to -0.7%. This is, of course, a highly stylized model and many variations are possible, but the basic point seems quite consistent with Figure 9. Explanations such a labor force trends,

which can be forecast extremely well decades in advance, do not seem consistent with the precipitous lasting drop.

In such an event, government debt can provide insurance to private sector agents, but at what cost? If the government can rely on its borrowing costs falling in the event of a crisis (an assumption that seems strongly embedded in the literature arguing that higher debt is a free lunch), then it is perhaps reasonable to argue that the cost to the government of providing consumption insurance might not be high (though even here it would depend on the model and parameters). But it is folly to assume that the next rare disaster crisis—which could involve climate catastrophe, cyber war, conventional war, pandemic, or an overwhelming surge of populism that reshapes the economic landscape—will necessarily look like the last one. Hur, Kondon and Perri (2019) forcefully make the point that even though surges in advanced economy borrowing costs are rare, they become much more likely *conditional* on rare disaster occurring. That is, one cannot presume the costs of providing insurance are low just because in normal times, shocks often tend to make government borrowing costs go down (because of a flight to safety). Hur et. al. parameterize a model that illustrates this point.

Yared (2019) explores the trend rise in advanced country debts (focusing on market-traded debt) He argues that it is very difficult to rationalize the trend rise in debt with any standard normative arguments including dynamic inefficiency, tax smoothing or safe asset provision. Instead, political economy factors appear to have been much more important aging populations with finite horizons favor debt-finance of higher transfers, politicians who know they will only be temporarily in power have an incentive to exploit debt to maximize payments to their constituencies, rising polarization of political parties, etc. There is absolutely a

significant role for debt finance, but it is at best highly debatable if the normative arguments for higher debt levels are the dominant factors.

Importantly, deficit finance is hardly the only way for governments to increase aggregate demand. Increasing taxes on upper-income wealthy consumers while increasing transfers to low income earners is an example of a revenue-neutral approach to raising aggregate demand that does not involve higher borrowing (since low income consumers have a much higher propensity to consume.) Nor is deficit spending necessary to increase the footprint of the government, higher taxes are the most direct way to finance expenditures.

#### VI: Conclusions:

Government debt has an important role to play in smoothing business cycles, paying for lumpy investments, responding to crises of all types – not just financial crises but potentially climate disasters, cyber wars, and pandemics, to list a few. Another broad class of uses can involve boosting demand during a period of structural reforms that might raise growth in the medium to long run, but lower demand in the short run.

There is no debate that today's low interest rates strengthen the case for investing in infrastructure and education projects that yield high social return. There is also a stronger case for using deficit finance to fight recessions, although low interest rates do not solve the problem that fiscal policy is highly political, and therefore difficult to use in the same technocratic fashion as monetary policy.

However, low interest rates, even if below growth rates, do not make debt a free lunch. This paper has especially emphasized two points: First, the notion of debt that is commonly used in the literature is badly out of date in the 21<sup>st</sup> century. Over much of history, government debt

and the debt of publicly owned institutions (e.g. railroads) were the main form of debt. Modern old-age pension schemes did not exist, and the level of private debt was vastly smaller. Indeed, it is often stated that the US debt at the end of World War II, was a greater share of GDP (112%) than today. But this was an era where Social Security and government provided old-age pensions had barely started, while private and state debt was extremely low compared to today, and correspondingly the actuarial bailout risks were also low.

If a private firm increases its relatively small amount of senior debt, there may not be an effect on the senior debt interest rate, but the spread on junior debt might rise significantly. The same might be true for government debt, even if the costs borne by junior debt are hidden, because they are not marketable. Of course, unsustainable pension obligations are a relatively new phenomenon, and it remains to be seen whether countries actually do treat them as junior to market debt in a crunch. The fact that a large fraction of advanced economy debt is now held by foreigners certainly exacerbates the risk that pensions and other social expenditures will be subordinated to debt payments.

Second, today's low interest rates may partly reflect a strong private demand for insurance against tail risks. Even a modest rise in disaster risk can lead to a sharp drop in the risk-free interest rate. The costs to the government in providing insurance against tail risk by issuing higher debt, is not certain. If one could rely on the next crisis to look like the last one, then governments which have already borrowed a lot may indeed be able to count on being able to even more, and at an even lower interest rate. But it is dangerous to assume that the next crisis will look like the last one, and historical experience suggests that when disasters do strike, interest rates can also rise.

In world where deficits and fiscal policy remain extremely political variables, and the evidence is very strong that trend rises in debt across advanced economies have been driven by political economy factors. Debt has many good uses, but even at today's ultra-low interest rates, higher debt still has costs even if they might be hidden until the next crisis comes.



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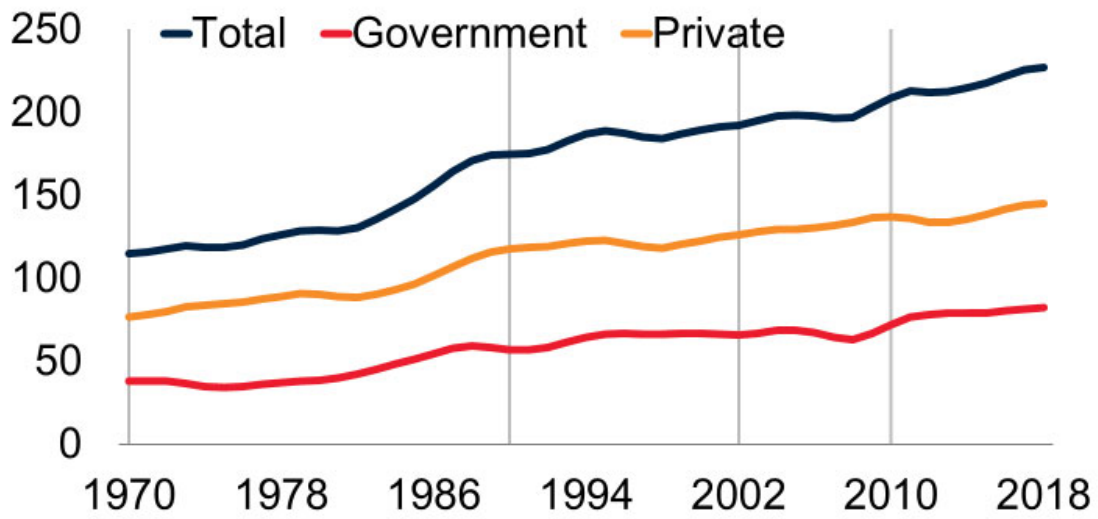


69-86, published earlier as “Debt Overhangs: Past and Present,” NBER Working paper 18015, April 2012.

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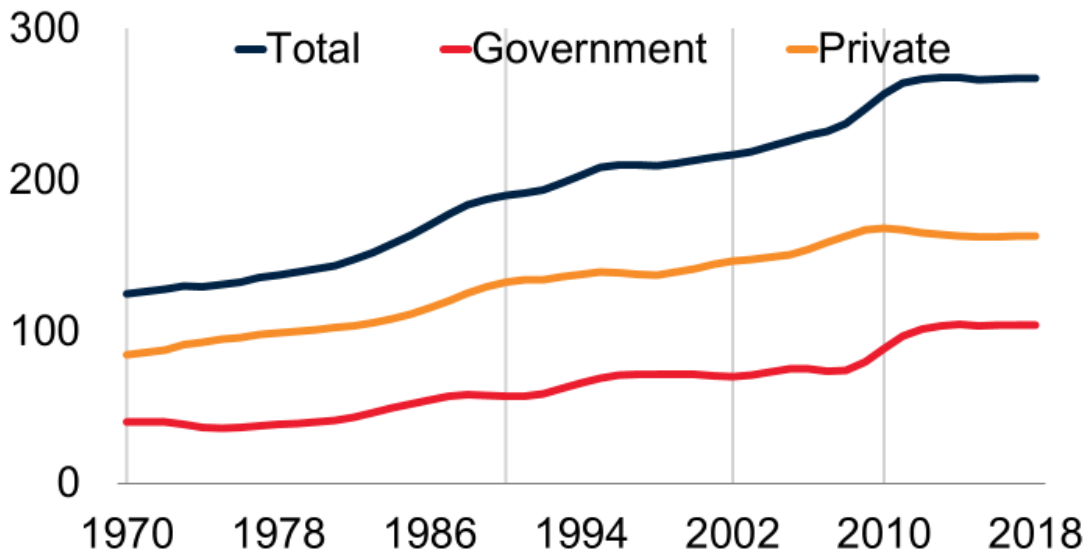
<sup>1</sup> International Monetary Fund Fiscal Monitor, October 2019.

Figure 1: GLOBAL DEBT (% of GDP)



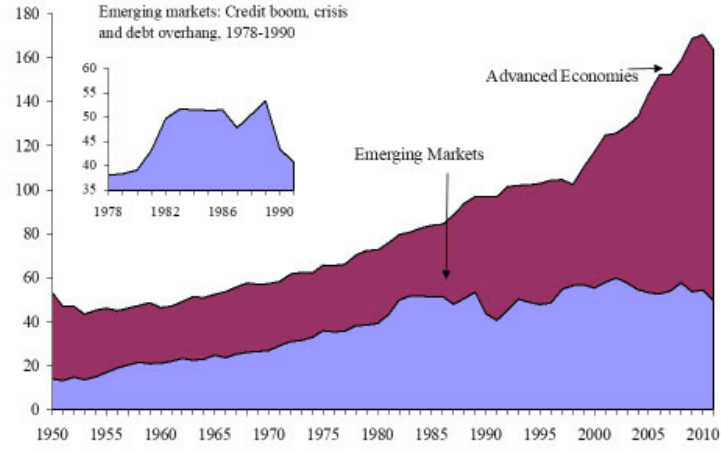
Kose et al., *Global Waves of Debt*, World Bank, December 2019, IMF debt database

Figure 2: ADVANCED ECONOMY DEBT (% of GDP)



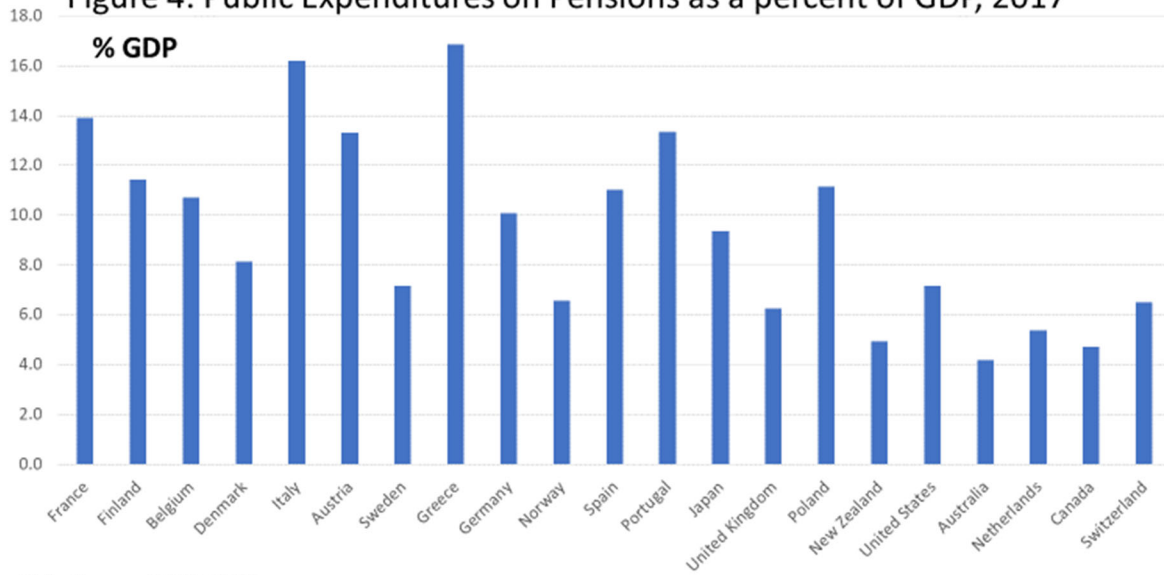
Kose et al., *Global Waves of Debt*, World Bank, December 2019, IMF debt database

Figure 3: Private Domestic Credit as a Percent of GDP:  
22 Advanced and 28 Emerging Market Economies, 1950-2011



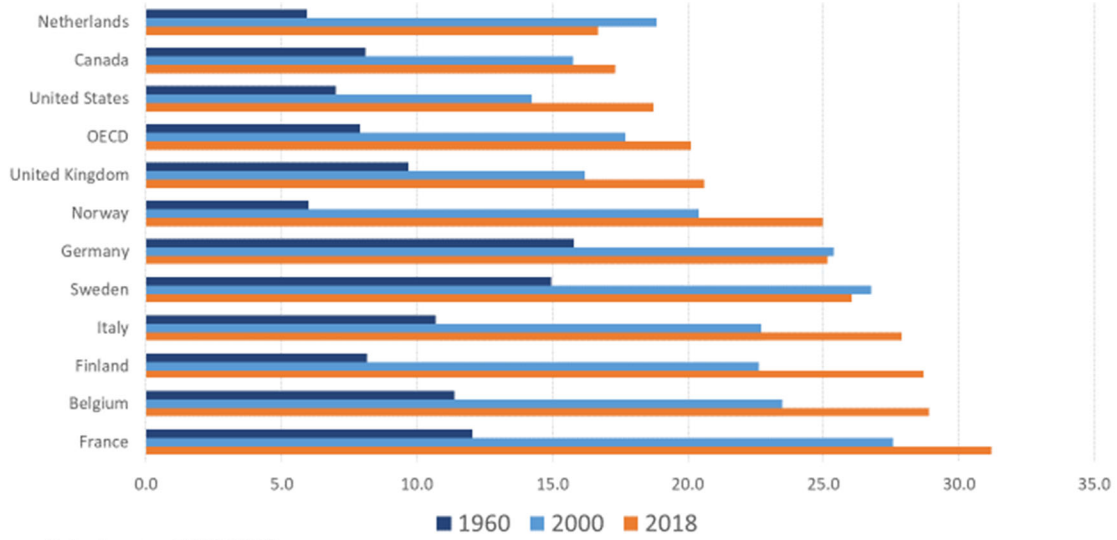
Source: Reinhart, Reinhart and Rogoff (2012)

Figure 4: Public Expenditures on Pensions as a percent of GDP, 2017



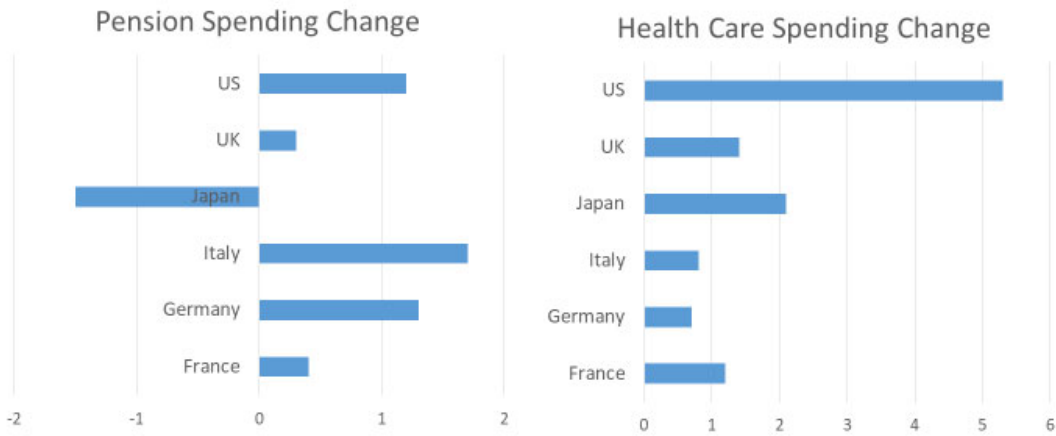
Data Source: OECD, 2019

Figure 5: Social expenditures as a percent of GDP, 1960, 2000 and 2018



Data Source: OECD 2019

Figure 6: Estimated annual % GDP change spending 2018-2030



Source: IMF Fiscal Monitor October 2019

Table 1: Negative  $r - g$  over two centuries

<b>ADVANCED ECONOMY AVERAGE</b>	<b>61% of all country/years <math>r-g &lt; 0</math></b>
United States	62%
United Kingdom	55%
Japan	71%
Germany	50%
<b>EMERGING ECONOMY AVERAGE</b>	<b>75% of all country/years <math>r-g &lt; 0</math></b>
China	100%
India	62%
Brazil	56%
Mexico	57%

Data source: Mauro and Zhou, IMF (2019)

Figure 7: Evidence of heightened financial repression in 2010s is weak

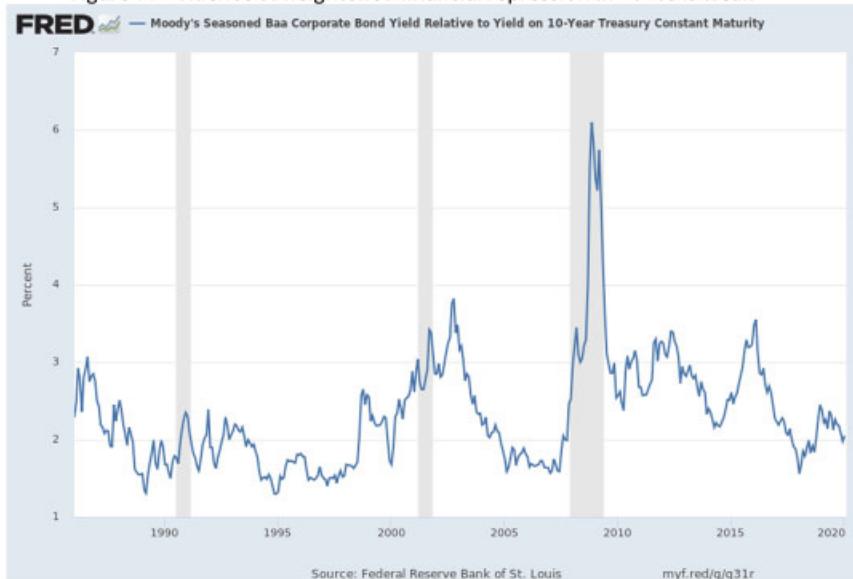


Figure 8: External holdings of US debt have risen sharply over five decades

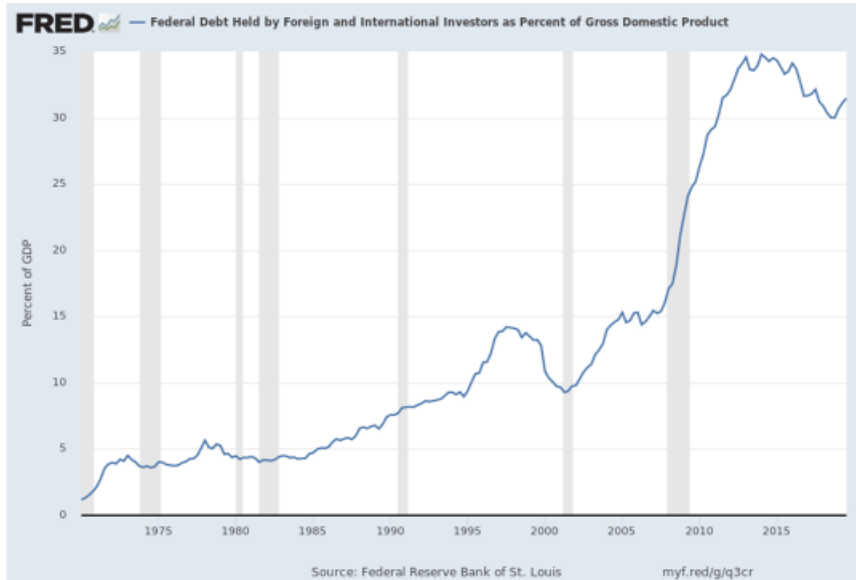


Figure 9: The Sharp Dropoff in Global Real Interest Rates Came with the Financial Crisis

