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Laurence Boone, Joachim Fels, Òscar Jordà,
Moritz Schularick and Alan M. Taylor

DEBT: THE EYE OF THE STORM

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The opinions and views expressed here are our own and do not necessarily represent the views of the institutions we are affiliated with, and, in particular, the Federal Reserve Banks of New York and San Francisco, the Federal Reserve System, the OECD and PIMCO.

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Foreword

The Geneva Reports on the World Economy are published annually by CEPR and ICMB and have been providing innovative analysis on important topical issues facing the global economy since 1999.

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The Covid-19 pandemic precipitated a rapid accumulation of debt worldwide, as governments took drastic measures to tackle the public health crisis and to mitigate the ensuing economic dislocation. Coming at a time when global debt was already at historically high levels, concerns exist that the situation could become unmanageable and serve as a prelude to economic, financial, social and political instability.

While addressing these growing concerns over the levels of debt in the world today, the 24th Geneva Report offers expert analysis on what it portends. Encouraged by the relative economic calm two years into the pandemic, and the strength of structural factors to keep debt servicing costs low and manageable, the principal message is that whilst there exist serious areas of vulnerability, as well as significant uncertainties, there are several reasons to be optimistic.

The authors focus on several major themes, covering public, household, corporate and China's debt. In their view, current debt levels should be framed within a longer trend of debt accumulation, as debt levels were already elevated before the pandemic, driven largely by a surge in gross saving and the growth of financial wealth that has occurred in recent decades. Indeed, looking at the asset side of balance sheets, the report shows that, relative to their income, households may never have been wealthier. Furthermore, while debt has risen, the yield on debt has fallen. This fall in yields in both advanced and emerging market economies at a time when debt was surging suggests that the urge of creditors to save has far outpaced any shifts in borrowers' desire to issue more debt. The report convincingly argues that if the overall macro backdrop of the past two decades continues, interest rates and debt-servicing costs can be expected to stay low while asset prices will stay high, suggesting that higher levels of debt could well be manageable.

Crucially, the authors explain that the pandemic was not accompanied by a boom in household debt in advanced economies, as experienced during the Global Financial Crisis, which would have been significantly more problematic for financial fragility. Fears over the debt position of the corporate sector, and specifically the zombification of firms, are seen to be partially overblown – primarily because there exist effective tools to deal with over-indebted corporations in the form of bankruptcy laws and debt-reorganisation institutions. The largest risks identified in the report are concentrated in emerging economies, where households and corporate entities have leveraged up substantially, while China's transition from financial boom to bust is seen as a particular risk factor that needs careful consideration going forward.

For policymakers, the careful management of public debt is emphasised as crucial, particularly with the substantial burdens of public spending anticipated by governments in the years to come. Countries will need to maintain the necessary fiscal space to manage future shocks, while at the same time financing the transition to greener economies, together with the pension and health demands of ageing populations. As long as interest rates stay low and growth returns to a healthy pace, the authors describe possible scenarios in which these new demands on public spending can be met while stabilising the public debt-to-GDP trajectory.

Overall, the picture that this report paints is one of cautious and perhaps unexpected optimism. Debt should not be ignored; however, as the report demonstrates, neither should it be feared.

This report was produced following the Geneva Conference on the World Economy held in October 2021. CEPR and ICMB are very grateful to the authors and several discussants for their efforts in preparing material for this report, as well as to the conference attendees for their insightful comments. We also thank Laurence Procter for her continued efficient organisation of the Geneva conference series, to Antoine Cornevin and Rémi Viné for recording and summarising the discussions and to Anil Shamdasani for his excellent handling of its production.

CEPR, which takes no institutional positions on economic policy matters, is delighted to provide a platform for an exchange of views on this important topic.

Tessa Ogden

Chief Executive Officer, CEPR

Ugo Panizza

Director, ICMB

February 2022

Introduction

We are now emerging from a crisis that will go down as an historic global disruption of modern times. The Covid-19 pandemic is a massive virological and epidemiological event, yet it is also, like previous major pandemics, an equally massive shock to the economic order.

The pandemic's consequences have been mitigated by policy responses not seen before. Rapid interventions and vaccines are being applied at scale on the public health front. And monetary easing, fiscal support and debt accumulation have all served as a cushion on the economic side.

Our focus here is economic, and this Geneva Report on the World Economy is about the state of debt in the world today and what it portends. Even after a new surge in borrowing during the pandemic, everything still looks quite calm almost two years later.

Is debt just the eye of the storm? Will the smooth absorption of unprecedented debt issuance endure, or will the strain of this global shock eventually make its presence felt here too? Where are the weak spots? Our report has several major themes and an overall tone of optimism, while noting some key areas of concern as well as massive uncertainties.

Taking a longer view, debt was already elevated before the pandemic. Public and private sector debt in advanced economies and emerging market economies had surged to unprecedented highs in the past four decades, before rising further in the pandemic. However, that long-term trend played out against a backdrop of abundant funding from three main sources – the savings gluts of the old, the rich and the rest of the world – and a context of weak investment.

Declining real interest rates in both advanced and emerging market economies over the same period suggest that the urge of creditors to acquire more debt has far outpaced any shifts in borrowers' desire to issue more debt. Our view is that a low real natural rate, r^* , is a structural feature of the global macroeconomy, one largely beyond the control of policymakers, and given the fundamentals it is likely here to stay for a considerable time.

Reassuringly, household debt in advanced economies, which was the main culprit in the global financial crisis, declined post-crisis and has not increased significantly in the pandemic. While house prices are surging, this is not a credit-fuelled boom and thus is unlikely to be a major source of systemic risk. However, corporate and household debt in emerging market economies has risen strongly over the past decade. Household debt in emerging market economies now stands at levels seen in advanced economies in the early 2000s. This bears watching as household debt booms predict financial crises and recessions that are deeper and longer.

Public debt in advanced economies has surged due to the pandemic, but borrowing costs are close to an all-time low (and, in addition, $r < g$). Central banks have also helped funding conditions in the short run. While there are plenty of challenges for fiscal policy in the coming years (e.g., ageing, inequality, digitalisation, the green transition), the situation in advanced economies appears manageable and future fiscal strains due to pandemic costs are small compared to other structural pressures, such as ageing and climate change.

That said, the euro area may face some of the same challenges as a decade ago in managing sovereign stresses within the current architecture of the monetary union. And, of course, emerging market economies may be faced with much tighter sovereign debt limits, while having to confront a pandemic shock that could take longer to abate.

Contrary to some popular narratives, neither the surge in government debt *per se*, nor its monetisation, necessarily herald an era of significantly higher inflation. In many countries, policymaking institutions are strong. Despite short-run inflation pressures, longer-term forward inflation expectations remain anchored (so far), slack in labour markets is ample, and accelerated digitalisation and automation should keep wage pressures in check. Also, the increase in savings mentioned above, which has been helping to absorb debt, is holding back inflation pressure due to debt.

That said, the pandemic and the policy responses have increased both longer-term inflation *and* deflation risks, which do bear watching as policy missteps could materialise here. Some inflation volatility has already erupted as demand-supply conditions fell out of sync, and this problem could recur, in either direction, as the world economy struggles to re-normalise. Against this backdrop, the exit path from current monetary policy accommodation could be bumpy. And, should deflation risk take, with monetary policy close to the zero lower bound (ZLB), fiscal policy might have to take a more active role again, at already high debt levels.

China has one of the highest total debt-to-GDP ratios of the major economies, and it has risen very fast in the last decade. This increases the vulnerability to a reversal in the credit cycle and a correction of asset prices. Fears about a major boom-to-bust credit cycle in China come and go, but can no longer be dismissed entirely given recent events.

However, most debt is held internally, capital controls keep high savings bottled up with no exit, most debt is within the public sector (broadly defined), and the central government has ample fiscal space and control levers to paper over the cracks. While individual firms, whole sectors or certain households may suffer from painful adjustments, any significant aggregate drag would be expected to elicit forceful offsetting policy stimulus. But even a transitory slowdown could have spillover effects on the rest of the world.

Lastly, we think corporate debt is an area to watch, in both advanced and emerging market economies, given the sharp increase in the last decade in many countries. But fears about a zombification of advanced economies are overblown if – a big ‘if’ – bankruptcy and restructuring is left to run smoothly. Firm debt overhang becomes much more of a macro tail risk when it lingers unresolved. How economies handle the legacy of the pandemic shock, and whether they encourage or delay the clean-up of damaged balance sheets, would make a big difference.

CHAPTER 1

The backdrop: Debt in the 21st century

5

The world economy today is characterised by a larger quantity of debt, relative to its level of income, than at any time in recorded history.

Even in the decade since the global financial crisis, and after a short respite, the trend in debt ratios has resumed and pushed on to higher levels. In the advanced economies, the average total debt of the household, business and government sectors has grown steadily and now exceeds 250% of GDP. In the emerging markets, the same average has risen more quickly in recent years and now stands at about 150% of GDP.

The world is therefore highly levered in terms of its overall debt-to-income ratio, a fact that increasingly worries many observers, including policymakers and market participants, as well as wider society. The economic dislocations caused by the Covid-19 pandemic have jolted debt ratios even higher, raising even more concerns about future debt burdens and their potential dangers, but in many respects this crisis has only served to accelerate pre-existing debt trends.

This backdrop motivates the 24th Geneva Report on the World Economy, with a focus on the unprecedented multi-decade surge in debt all around the world, its causes and its consequences. We ask how we got here, and also try to piece together what happens next and what risks lie in wait. This introduction sets the scene and surveys the main macroeconomic trends of the last few decades that have shaped the debt trajectory and brought us to this point.

Debt is a stock, not a flow, and it represents a gross position between different economic units, creditors/savers and debtors/borrowers. Today's glut of borrowing has, by definition, a counterpart in a glut of saving, and current totals mechanically reflect cumulated acts of balance sheet management by creditors and debtors over many years. Debtors sell debt to creditors, in exchange for credit. Demand and supply in turn shape the market price of debt – the real interest rate.

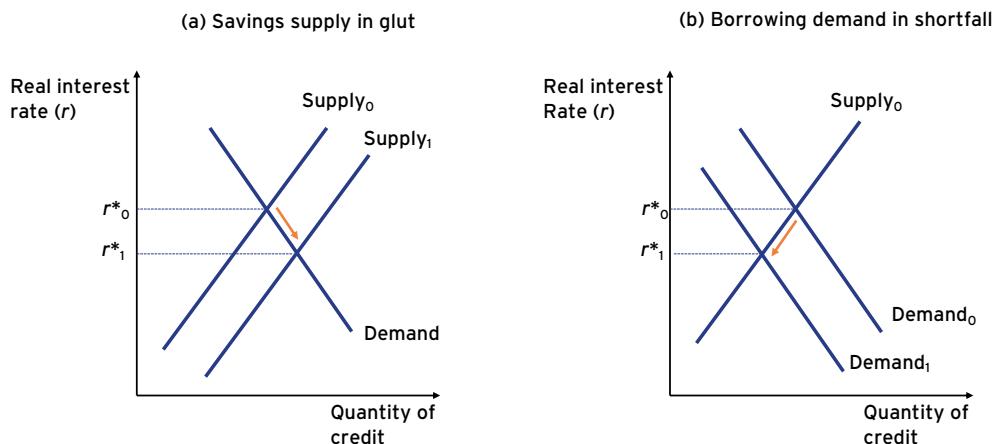
Beyond some short-run volatility, especially around times of crisis, the longer-run trends in quantities and prices are shaped by deeper, slow-moving, real macroeconomic fundamentals. To understand these secular changes, we must step back from current events, filter out high-frequency noise and look back over history in search of the underlying drivers.

In this opening chapter, Section 1.2 discusses past debt trends, tracing the evolution of debt quantities by household, business and government issuers over recent decades. Section 1.3 traces out the evolution of the cost of debt, looking at real interest rates over the same horizon. Next, in Section 1.4, we seek to disentangle the trends in who owes what to whom to see how patterns have shifted with the rise of the global savings glut. Ultimately, households directly or indirectly “own” all debt claims, since even corporate and government debts must be serviced out of foregone profits or extra taxes that represent foregone household income. A statistical exercise reveals shifting trends of wealth accumulation in a time of ageing, inequality and global imbalances. Section 1.5 provides a summary of the major trends in debt accumulation by category (public, business, household) since World War II as a prelude to the analysis of the current state that follows in subsequent chapters. This chapter thus frames the rest of the report, highlighting areas of potential fragility and crisis risk, as well as slower secular drivers where shifting trends could change the medium-term outlook.

1.1 SUPPLY AND DEMAND FOR CREDIT

The simplest supply and demand framework for a given credit market segment, whether local or global, is shown in Figure 1. The horizontal axis depicts the stock quantity of debt (or credit, depending on your perspective) outstanding, and the vertical axis its price, given by the real interest rate – that is, the equilibrium interest rate adjusted for inflation. Obviously, any given credit instrument reflects different types of borrowers (safe to risky), maturities (short to long) and other exposures to risk, so the equilibrium real interest rate r^* (inclusive of risk and term premia) will vary with these attributes.

FIGURE 1 THE SUPPLY AND DEMAND FOR CREDIT



The two panels show the change in equilibrium under two shocks. The first shows a shift outwards in the supply of credit or demand for debt ('savings glut'), and the second shows a shift inwards in the demand for credit or supply of debt ('borrowing shortfall'). The two shocks lead to common price responses but opposite quantity responses. Both lead to a lower equilibrium real interest rate r^* , but the former is with higher levels of credit, whereas the latter is with lower levels of credit. This pattern has provided the main diagnostic tool for economists in the debate over the secular debt super-cycle we have been living through.

As we discuss in the next two sections of this chapter, we will argue that the world of the last few decades strongly resembles the savings glut scenario in the left-hand panel. Credit quantities in most countries and all major categories have risen markedly to historically high levels, but real interest rates have fallen to historically low levels.

This is not to say that there were possibly no shifts in borrowing in this period, only that the dominant force at work has been an ever-expanding desire on the part of creditors to increase the supply of credit market funding. Or, in terms of debt rather than credit, inverting the supply-demand perspectives, we can say that the shift out in demand for debt holdings by creditors has far outstripped any shift in the supply of debt issuance by borrowers.

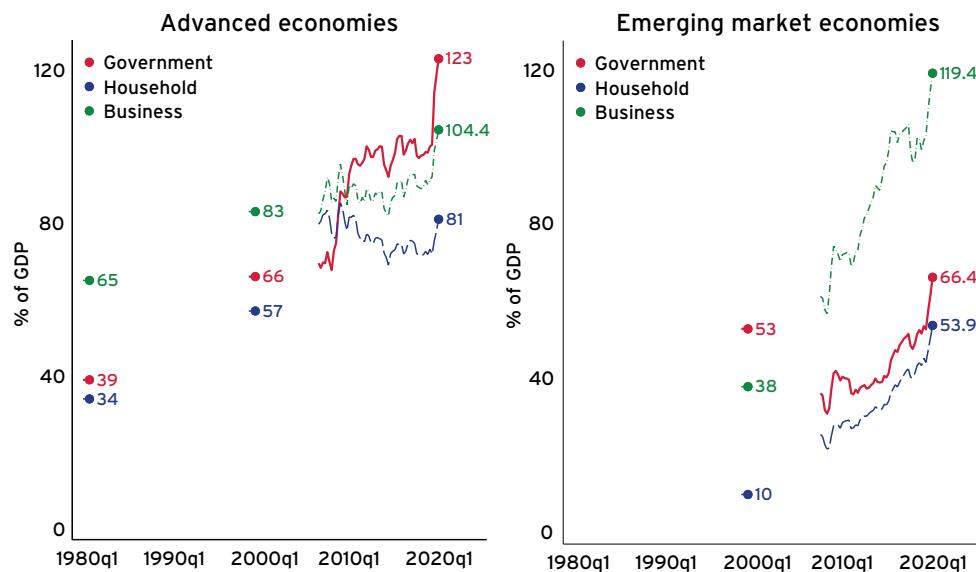
This opening chapter gives an overview of these trends, digs down to signpost some of the underlying driving forces and raises some flags about the potential dangers going forward to set the stage for the more detailed analysis in the rest of the report.

1.2 HOW DID WE GET HERE? THE RISE OF DEBT

The evolution of average debt levels relative to GDP in advanced and emerging market economies is shown in Figure 2 for several benchmark dates. Given the availability of data from the Bank for International Settlements (BIS), we can trace back about four decades to 1980 for advanced economies and two decades to 1999 for emerging market economies.

In advanced economies, debt ratios have about doubled in all categories over the last four decades, with household debt rising faster up to 2007 but on a flat trend after the global financial crisis. The debt trends have been steeper in emerging markets since 1999, led by strong growth in nonfinancial business and especially household debt, and with strong increases since 2007. Even so, average emerging market debt ratios are still quite a bit lower than advanced economy ratios at the present time. Many of these ratios are now even higher in reported 2020–21 data.

FIGURE 2 THE RISE OF AVERAGE DEBT LEVELS BY DEBT CATEGORY IN ADVANCED ECONOMIES AND EMERGING MARKET ECONOMIES (% OF GDP)



Sources: IMF Global Debt Database; BIS (after 2007).

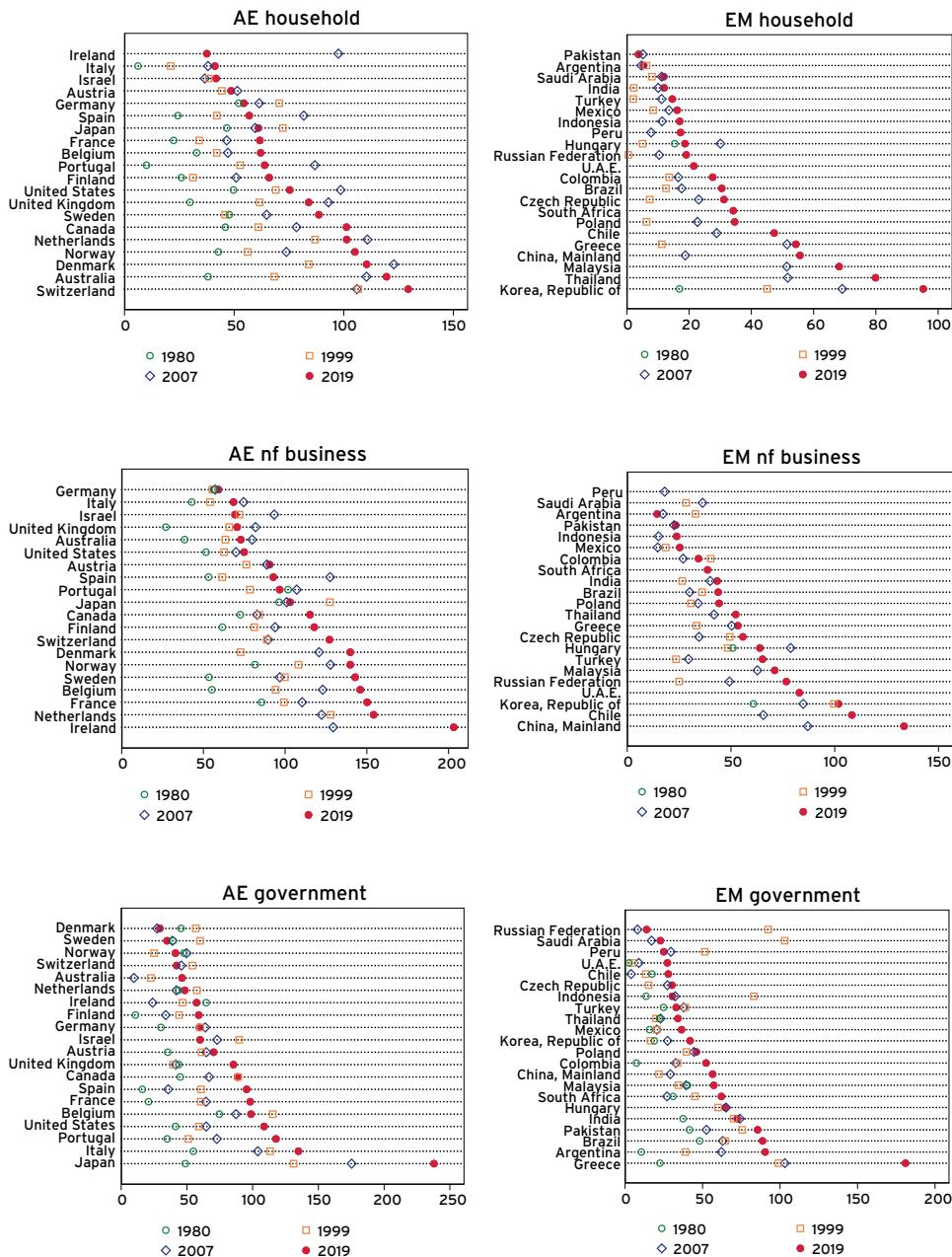
The overall picture, then, is one of a quite broad and even rise in levels across all three types of debtors and over a fairly long timespan, though of course these averages can (and do) mask substantial variation within the advanced and emerging market groups, both across time and between countries.

To get a more granular sense of changes at the country level, Figure 3 shows all the underlying debt levels by country on each benchmark date. These data confirm that the drift upwards in global debt levels has been a broad phenomenon. In most cases, countries reach peak debt ratios in 2019.

There have been some exceptions. For example, following well-known housing crises, household debt levels in Spain, Portugal, Ireland and the United States have seen a notable deleveraging since 2007, with the United Kingdom, Denmark and the Netherlands also showing a pull back. We also see that oil exporters such as Russia and Saudi Arabia have seen government debt decline from 1999.

Overall, however, the broad pattern of the last decade has been one of government debt increasing in most parts of the world, and a notable rise in private debt, both household and nonfinancial business, in many emerging market economies.

FIGURE 3 THE RISE OF AVERAGE DEBT LEVELS BY MAIN ISSUERS IN ADVANCED AND EMERGING MARKET ECONOMIES (% OF GDP)

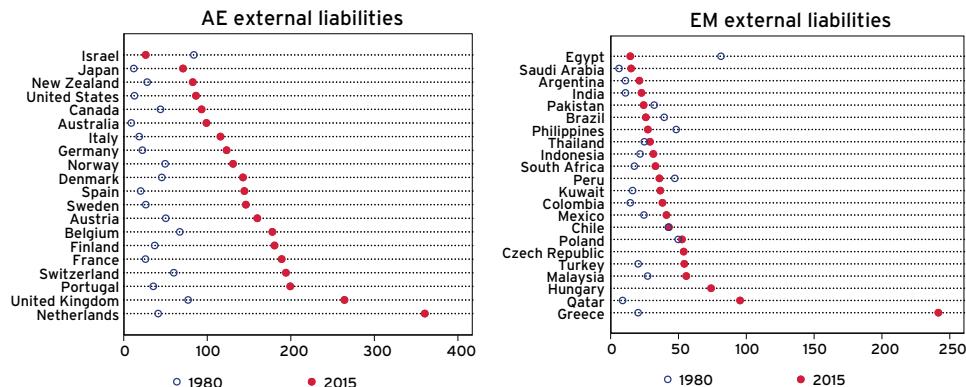


Source: BIS.

We also need to recognise the increasingly important cross-border aspect of the growing debts around the world. Figure 4 displays the evolution of the global sum of all external debt liabilities scaled by GDP.

Here, the upward time trend has been sharper too, especially in the advanced economies (one aspect of the wave of financial globalisation seen since the 1970s), although with some mild tapering off from the peak seen in 2007 following the global financial crisis. In 1970, cross-border debt claims represented much less than 100% of GDP in most advanced and emerging market economies. These ratios more than doubled in almost all advanced economies by 2015 and drifted up by almost as much in most emerging markets. Notable outliers include major financial centres such as the United Kingdom and the Netherlands, where not all liabilities are of resident end-debtors, and heavily debt-laden Greece, which is now classified as an emerging market. We can thus see that over time, the ever-larger debt stocks in the world have not just landed in the hands of other domestic creditors but have also increasingly been absorbed in the portfolios of overseas creditors, another trend which also now stands at an historically high level.

FIGURE 4 THE RISE OF AVERAGE AGGREGATE CROSS-BORDER DEBT LEVELS IN ADVANCED AND EMERGING MARKET ECONOMIES (% OF GDP)



Source: BIS.

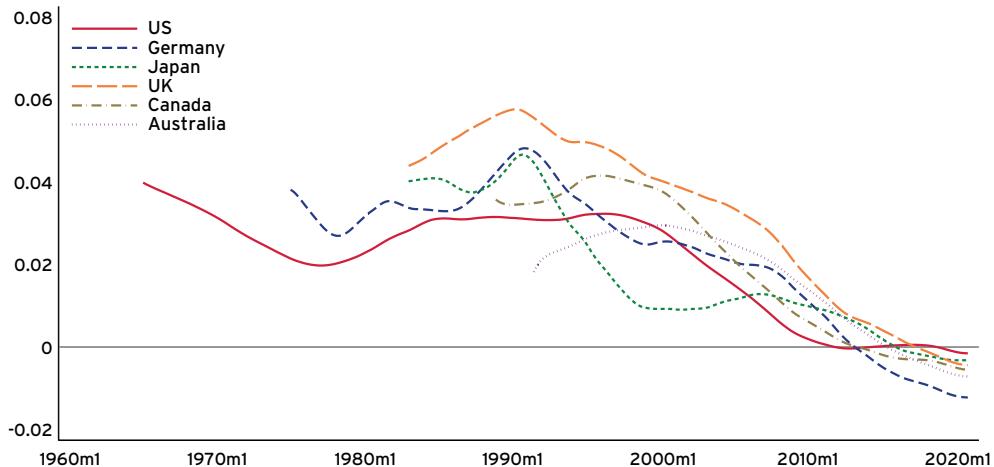
1.3 HOW DID WE GET HERE? THE DECLINE OF INTEREST RATES

The historical record shows that the aggregate quantity of credit in most economies, and in the world as a whole, has been on a secular upward trend over the past few decades. Now we turn to the prices in this market, measured by the equilibrium real interest rate. What do they show?

The starting point for this question is the trend in the equilibrium safe real rate, or real natural rate (r^*), which is the focus of a major strand of macroeconomics research.

Figure 5 shows current estimates of r^* for six major advanced economies using a model developed by Davis et al. (2021). The data start in the 1960s for the United States, the 1970s for Germany, the 1980s for the United Kingdom, Japan and Canada, and the 1990s for Australia.

FIGURE 5 THE REAL NATURAL RATE IN SIX MAJOR ADVANCED ECONOMIES



Source: Davis et al. (2021).

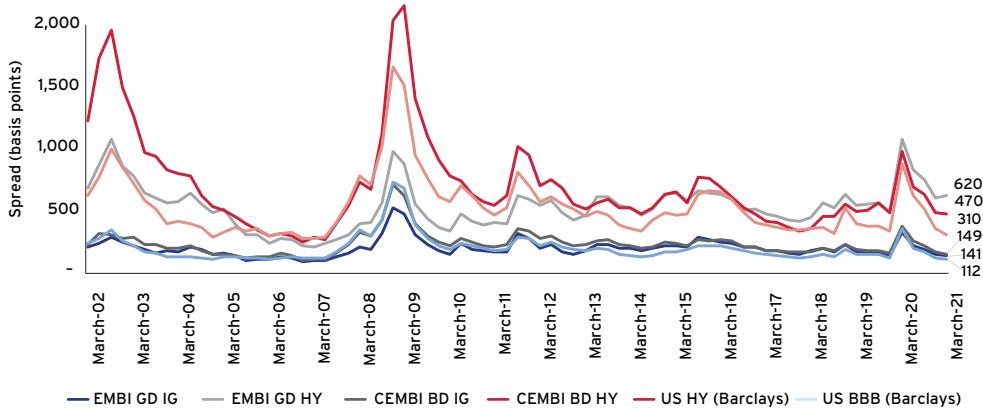
The common trend is one of a mildly fluctuating global natural rate of about 3–5% up to the 1990s, followed by a precipitous decline, first evident in Japan, resulting in real natural rates today that are more tightly grouped in a range at or below zero. In total, the real natural rate has fallen about 400 basis points in the last 30 years. More limited data from other advanced economies show a similar downtrend.

Figure 6 shows that the same trend in declining real rates has also been shared by the emerging economies, and by corporates. Over the last 20 years, investment grade (IG) and high-yield (HY) spreads on US and emerging market corporates and on emerging market sovereigns have seen notable fluctuations, with spikes in 2001–02, 2008–09, and 2020, but over the entire span of two decades the trend in spreads has been flat or downward in all categories.

Thus, despite exposure to high risk-premium volatility, even the riskier government and corporate borrowers around the world have seen their average spread, measured here in US dollar terms, remain unchanged, so they too have shared in the downward drift lower in global real rates.

FIGURE 6 EMERGING MARKET INTEREST RATE SPREADS TO US TREASURIES

Emerging market versus US historical spreads



To sum up, rising levels of debt across the world since at least 1990 have been accompanied by a pronounced secular fall in real rates on safe debt and a comparable decline in other real rates across other risky credit markets in advanced and emerging market economies, with an absence of any offsetting increase in credit spreads.

These data have persuaded most economists that the savings glut is the key global macroeconomic story of our times. To a first approximation, the urge of creditors to acquire more and more debt has outpaced any shifts in borrowers' desire to issue debt, leading to a shifting credit market equilibrium with ever-higher quantities of debt and ever lower real interest rates.¹ As for why this happened and what it means for the future, this remains an important ongoing debate to which we now turn.

1.4 DISENTANGLING THE DEBT: WHO OWES WHAT TO WHOM?

Patterns in the accumulation of debt assets and the path of real interest rates confirm the global savings glut hypothesis as an enduring feature of the world economy from the 1990s, or even earlier, to the present. But which savers caused this glut? Answering that question is not easy. We need to trace the assets via chains of intermediaries to figure out which ultimate end-creditor households were driving the surge of asset accumulation in the last few decades.

¹ While demographics is a factor behind excess supply of saving (see the next section), it might also depress demand. Ageing may result in lower rates of innovation, productivity and GDP growth, as well as population growth, some of the key drivers of the natural rate of interest in standard macro models.

Recent research has started to unveil these asset-holding patterns in more detail across time and around the world (Mian et al., 2021). We highlight the three main sources of the global savings glut, which are not mutually exclusive:

- the savings glut of the old;
- the savings glut of the rich; and
- the savings glut of foreigners.

First, the *savings glut of the old* refers to the inexorable effects of increasing life expectancy and the expanding post-retirement lifespans in our societies.² These trends operate at different speeds in different countries, but the direction is the same. Absent longer working lives, a life-cycle saver reacts to a longer span of retirement by acquiring more wealth to smooth consumption for longer.

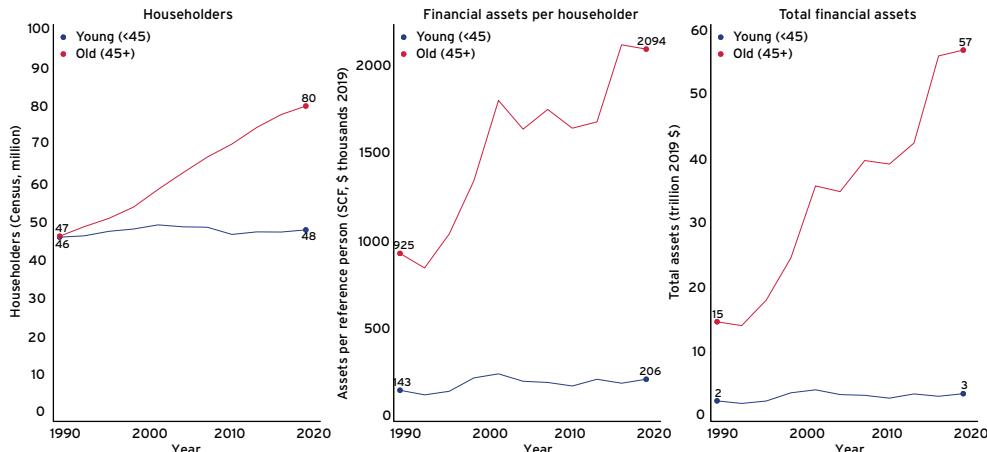
This lifecycle mechanism is a benchmark model and its predictions in recent decades suggest a strong downforce on real interest rates, with a rise in both the number of old people and their asset holdings. The data show how dramatic this change has been.

Looking to US data, Figure 7 shows how asset accumulation has skewed to the old versus the young in the past 30 years. The first panel shows the ageing pattern of demographic change: census data show a flatline for the number of young (under 45) households of 46–48 million, but a sharp rise in the number of older households (45+) from 47 to 80 million, a 70% increase. The second panel shows that older households dominate financial asset holdings and that this gap has widened: the average older person saw assets rise 126% from \$925,000 to \$2,094,000, in 2019 dollars, but the young saw a modest 44% rise from \$143,000 to \$206,000. In the last panel, we multiply these figures: the old saw total financial assets grow from \$15 to \$57 trillion, a near quadrupling and an absolute change of \$42 trillion. In contrast, the young saw assets grow from \$2 to \$3 trillion, a 50% rise and a mere \$1 trillion increment. While not all of these changes represent debt claims, a large fraction does, especially given the tendency of older investors to favour direct or indirect fixed-income holdings.³

2 The life-cycle hypothesis suggests that as the population ages, in particular the baby-boom generation (Gagnon et al., 2016), a rising share of older people in the total population could lead to lower savings, which might exert upward pressure on real interest rates (Goodhart and Pradhan, 2020b). However, the model's predictions change when bequest motives are strong and the elderly do not dissolve strongly or at all. At the same time, rising life expectancy makes households save more to finance longer retirements (Ikeda and Saito, 2014; Gagnon et al., 2016; Carvalho et al., 2016; Lisack et al., 2017; Rawdanowicz et al., 2017). All else equal, these higher savings tend to drive down the real interest rate. The effects will be stronger if households believe that public pension provision will weaken given the additional burden generated by an ageing population (Carvalho et al., 2016).

3 Recent empirical evidence attempts to quantify these influences of demographic change on real interest rates, concluding that the effects are large and unlikely to reverse. For the United States, demographic factors appear to have lowered the interest rate since 1980 by 1½ percentage points (Gagnon et al., 2016). A similar effect is found for Japan (Ikeda and Saito, 2014). More generally, in the advanced economies, the effects could be between ¼ percentage points (Lisack et al., 2017) and 1½ percentage points (Carvalho et al., 2016). Extending United Nations projections to 2050 and 2100, the age pyramids skew further and rates remain depressed (Aucourt et al., 2021; Kopecky and Taylor, 2020).

FIGURE 7 HOLDINGS OF FINANCIAL ASSETS BY OLD AND YOUNG US HOUSEHOLDS, 1989-2019



Source: Federal Reserve data based on SCF; see Kopecky and Taylor (2020).

Next, the *savings glut of the rich* refers to the effects of growing income and wealth inequality. Of course, the old also tend to be richer, so this glut and the previous glut discussed are correlated. In addition, the rich tend to have a higher propensity to save and the poor a higher propensity to consume. The rich can't rely as much on public pension provision to replace average income, giving a mechanical reason to save more. All else equal, the rich desire and can afford to hold more wealth, and so an increase in income or wealth inequality funnels more resources into asset accumulation. It appears this force has also been very powerful in recent years.

Looking at data from the United States, the European Union and China since 1980, Table 1 shows end-household (unveiled) wealth accumulation, by asset class, for two subsets of the rich: the top 10% and the next 40%. The bottom 50% is the residual. Clearly, the largest share of accumulation was driven by the top 10%, accounting for 72%, 56% and 67% in the three regions, respectively. Focusing on the accumulation of fixed-income debt assets, we see that the top 10% were the main drivers of the observed trends, with the next 40% also acquiring greater mortgage debt over time as part of their housing net of debt position. The European Union presents a more egalitarian picture, with both groups sharing more evenly in debt acquisition, whereas in China the trends are more unequal. However, these debts are issued in large part by the bottom 50%, the omitted group, emphasising the part that inequality has played in this history.

TABLE 1 SAVINGS OF THE RICH IN THE UNITED STATES, THE EUROPEAN UNION AND CHINA, 1980-2018

	(1) Share in total wealth	(2) Wealth increase due to saving	(3) Net housing	(4) Net fixed- income	(5) Equity and business	(6) Wealth increase due to capital gains	(7) Net housing	(8) Net fixed- income	(9) Equity and business
United States	100%	57%	-12%	42%	27%	43%	35%	-10%	19%
Top 10%	72%	75%	-1%	46%	29%	25%	19%	-12%	18%
Middle 40%	28%	37%	-26%	44%	20%	63%	57%	-13%	18%
Europe	100%	52%	-6%	44%	14%	48%	52%	-12%	7%
Top 10%	56%	59%	-3%	39%	16%	41%	32%	-7%	17%
Middle 40%	39%	35%	-8%	39%	4%	65%	64%	-7%	8%
China	100%	45%	-3%	28%	55%	55%	48%	-5%	11%
Top 10%	67%	64%	6%	31%	36%	36%	29%	-2%	9%
Middle 40%	29%	31%	-4%	26%	69%	69%	67%	-5%	7%

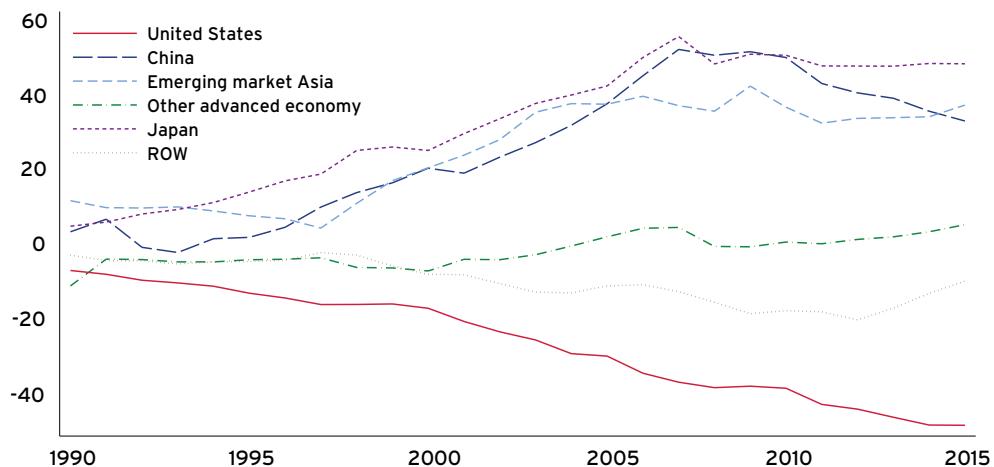
Source: Bauluz et al. (2022).

Finally, the *savings glut of foreigners* refers to the cross-border accumulation of creditor and debtor positions, with our focus being on the trends in debt assets. This links back to Bernanke's (2005) hypothesis that the conundrum of falling real rates in the early 2000s was in part explained by the rising demand for safe and liquid assets in emerging market economies, notably China, for self-insurance. But the idea applies more broadly, and by now encompasses any net external demand for assets, but especially fixed-income assets, by the rest of the world.

Looking at global trends since 1980, Figure 8 confirms the asymmetric features of these external debt flows since 1990. In these five major groups, large negative net debt securities positions have built up to nearly 50% of GDP in the United States and 10% of GDP in other advanced economies. On the other hand, large positive net positions in debt securities, including reserves, have built up to 30% of GDP in China and emerging markets in Asia, and 40% of GDP in Japan. Given that China and emerging markets in Asia saw very rapid GDP growth in this period, they are the single main source of funding of the growing cross-border part of the savings glut, and the United States emerges as the main destination for the funding. Thus, focusing on one part of the world, a wave of debt financing rolling across the Pacific stands out as another key element in the savings glut story.

FIGURE 8 NET FOREIGN ASSET POSITION IN DEBT SECURITIES, INCLUDING RESERVES

(% OF GDP)



Source: External Wealth of Nations dataset.

The global savings glut thus reflects multiple forces at work. All three came together with the greatest force in the United States, which has been under the powerful sway of each kind of debt financing for decades: increasing numbers of the old trying to finance a comfy retirement; increasing numbers of the rich willing and able to build more wealth; and increasing numbers of foreigners inclined to hoard safe and liquid dollar assets. However, all of the same factors, and especially the first two, can be seen at work all across the world in advanced economies and many, if not most, emerging market economies.

Investors sometimes speak of a ‘crowded trade’ at the micro level, referring to a specific security or a narrow asset class. Buyers flood in, positions grow large and prices ramp up. But this is usually just for a segment of the market – a partial-equilibrium phenomenon. In a real sense, however, the story of the savings gluts can be seen as a sustained and massively crowded trade at the macro level: a quest for more debt assets, and a quest for yield, washing across the breadth of all debt asset classes and all around the globe – a truly general-equilibrium phenomenon.

The tectonic shift in the global financial landscape induced by the savings gluts has reshaped global debt markets in the last 30–50 years as investors have sought to acquire fixed-income debt (as well as other assets) in ever-larger amounts, driven by a variety of motives. Positions have grown large across the entire class, and with prices of debt bid up, real interest rates have been driven to very low levels across the board. In 2021, most safe debt trades at negative real yields, and so does a large tranche of global so-called high-yield debt. Some of this may be cyclical, exacerbated by a pandemic downturn, but the underlying trend has been persistent.

1.5 THE SUPER-SECULAR DEBT BOOM: WHERE NEXT?

Our report starts from the two main observations highlighted in this chapter: debt has been in great supply in recent decades, and yet in even greater demand. But what is next, and is the current position sustainable? How will Covid-19 disrupt the status quo? To conclude this introduction and set the stage for the rest of the report, we sum up where the global debt boom leaves us now.

Should we worry about public debt? The World War II run-up in government indebtedness took about 25 years to undo, only to then stage a rebound. The expansion of the welfare state and other government spending in 1970s, and insufficient tax revenues to fund this, resulted in higher public debt, boosted even further by the aftermath of the global financial crisis. The Covid-19 pandemic put further stress on public finances, and many advanced economies now have debt-to-GDP ratios above 100% for the first time since World War II. We discuss the risks of elevated public debt in Chapter 3.

What about private debt? Household debt has experienced a notable expansion over the post-World War II decades, and dramatically since the mid-1980s, mainly via the more than doubling of mortgages debt relative to GDP – a category which dwarfs auto, college and other consumer credit. However, household debt growth in advanced economies has moderated in the last decade in a marked correction after the global financial crisis (a more benign state of affairs that we consider in Chapter 2), but there are greater risks afoot in emerging market economies.

In contrast, corporate debt has been only gradually increasing over the past 70 years. But this category of debt has growth quickly of late⁴ in advanced and emerging market economies, grabbing the attention of observers and policymakers as a potential source of financial fragility. We turn to this issue in Chapter 4.

In the next three chapters, we discuss these three main components of debt, starting with public debt, followed by household debt and corporate debt. In addition to tracing the evolution of each component in more detail and exploring the differences between advanced and emerging market economies, we explore what we should not worry about, what we should worry about, and offer broad views on the policy implications.

⁴ Although some of it motivated by a desire to boost cash positions, as Falato et al. (2020) argue.

CHAPTER 2

Public debt

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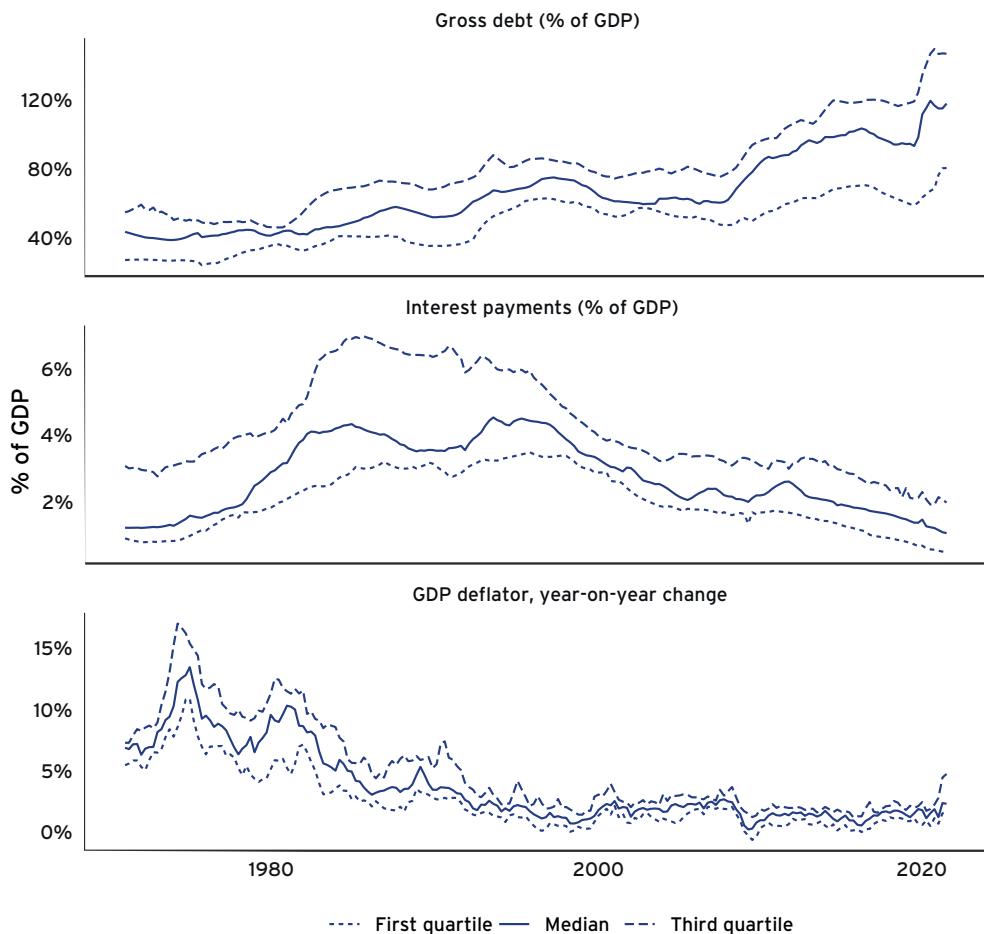
Over the past decades, sovereign debt has increased in many OECD countries, with significant jumps associated with recessions (in particular, the global financial crisis and the Covid-19 crisis). Governments across the OECD generally reacted promptly and on an unprecedented scale to the Covid-19 crisis. Emergency healthcare measures and programmes designed to preserve the incomes of workers and companies due to shutdowns further stressed already stretched public budgets, while private debt guarantees may add further pressure in the future. The Covid-19 support measures have prevented larger declines in employment, income and output, thus paving the way for a quicker and more sustainable recovery, but they have also raised public debt levels significantly, though the final bill is uncertain as many measures were off balance sheet.⁵

Looking forward, although the pandemic-related fiscal pressures are likely to be temporary and should not lead to a premature and counterproductive withdrawal of fiscal support, there are more structural reasons to believe public debt is set to rise further. There are growing demands on policymakers and public balance sheets to ensure economic resilience, to address low growth, to reduce inequality, to manage social benefits and healthcare costs in ageing societies and to mitigate climate change, to name a few. These challenges are being met by economies that find themselves in very different fiscal positions.

In the last 30 years, however, the increase in public debt has also been accompanied by a decrease in debt servicing (Figure 9). In 2021, the ratio of debt to GDP for the median OECD country is historically high and the ratio of interest payments to GDP is historically low, as global interest rates have fallen faster than debt accumulation. In recent years, central banks have hit constraints on their conventional instruments and developed new ones to bring down short- and long-term interest rates while inflation pressures remained moderate, suggesting that equilibrium interest rates are structurally low.

⁵ During the Covid crisis, several governments have provided large guarantees on loans to companies, which may result in financial losses and therefore higher debt later on. For example, Bruegel estimates that France, Germany, Italy, Spain and the United Kingdom committed amounts ranging from 13% to 18% of GDP in the form of government guarantees on loans to businesses. However, these amounts, will not necessarily translate into higher debt: first, the announced loans are much larger than the take-up; second the coverage of the guarantee is generally not the entire loan; and third, the purpose of the loans was to ease cash problems for firms, which should be able to reimburse a sizeable amount.

FIGURE 9 LONG-TERM EVOLUTION OF PUBLIC DEBT, GOVERNMENT INTEREST PAYMENTS AND INFLATION IN 16 OECD ECONOMIES



Note: Quantiles are computed over the 16 countries with data available before 1980: Australia, Belgium, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, the United Kingdom, Italy, Japan, the Netherlands, Norway, Sweden, and the United States. Gross debt refers to general government financial liabilities in the national accounts.

Source: OECD Economic Outlook 110 database.

The economic sustainability of high debt in the future will thus be strongly determined by the projected persistence of those structural factors, on which there is high uncertainty. Low rates, on their own or compared to economic growth, are not a guarantee of sustainability and even create new challenges for fiscal policy by constraining its monetary counterpart. Eventually, the sustainability of public debt will thus require credible and trusted fiscal strategies that can handle future uncertainties and address future priorities adequately, and have the support of citizens.

Societies and their governments have difficult conversations ahead. Given the emergence of new priorities and future long-term challenges, some countries may require the mobilisation of a relatively wide range of policy levers (revised fiscal frameworks, changes in budgeting rules, etc.) going beyond marginal changes to current tax and spending

practices. Reviews of government expenditure and taxation will be needed to better reflect new priorities, including those redefined by the Covid-19 episode, while ensuring sustainability. Political economy factors will therefore play as much of a role as economic factors in standard (academic) debt sustainability analyses. Given the great deal of uncertainty under which economies operate, including the vagaries of political cycles, debt sustainability requires more ongoing commitment to the goal from policymakers. Debt sustainability will also depend on the people's trust in their institutions and the capacity of policymakers to deliver on their promises for current and future generations. Finally, a key element will be investors' confidence, which should be highly correlated with the above.

Against this background, in this chapter we discuss some of the key issues related to debt sustainability.⁶ We argue that developing a credible policy strategy to address the longer-term sustainability of public debt is important to reassure investors so that governments can continue to benefit from favourable borrowing conditions. Notwithstanding the future challenges for public finances, such credibility would also provide the much-needed short-term space to avoid a premature withdrawal of fiscal support at a time of need, which would also potentially strangle the recovery in its infancy, as many countries experienced after the global financial crisis.

2.1 DEBT LEVELS WILL REMAIN HIGH BEYOND RECOVERY FROM COVID-19

The recovery from Covid-19 is on track, but not over

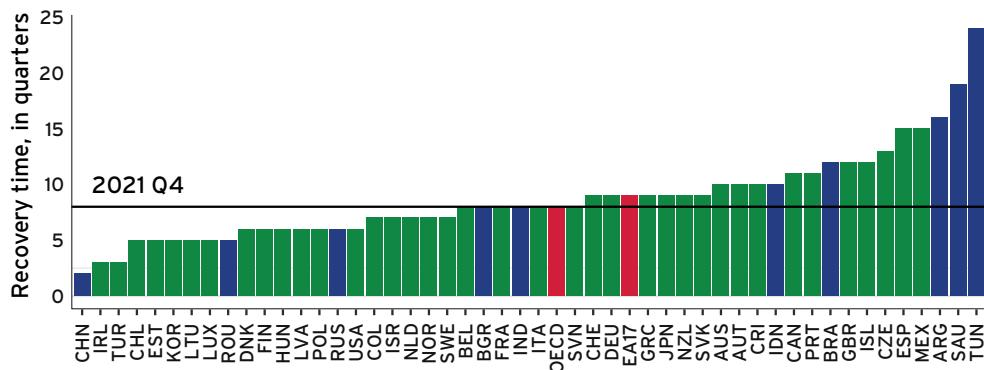
Despite aggressive fiscal and monetary support, the post-Covid-19 outlook remains uncertain. The global recovery continues to progress, but it has lost momentum and is becoming increasingly imbalanced. The strong initial rebound in many countries is weakening amidst persisting supply bottlenecks, rising input costs and the continued effects of the pandemic; while lower-income countries are at risk of being left behind in particular because of the unequal distribution of vaccination rates.

Real GDP per capita in many countries has not yet returned to pre-pandemic levels, though the pace of recovery varies greatly (Figure 10). Furthermore, the employment rate is still below its pre-pandemic level in half of OECD countries (Figure 11) and the employment rate in the median OECD country is expected to remain below that level until mid-2022 (Figure 12). Even in economies where the number of people in work by the end of 2021 was close to or even above the pre-pandemic level, total hours worked were often still lower than in late 2019. Most advanced economies are projected to return to their pre-pandemic output path by 2023, but with still subdued underlying growth potential.

⁶ Interactions between fiscal and monetary policies in a low interest rate environment were discussed at length in the previous Geneva Report on the World Economy (Bartsch et al., 2020).

FIGURE 10 THE SPEED OF RECOVERY VARIES BY COUNTRY

Expected number of quarters since 2019Q4 needed to return to pre-pandemic real GDP per capita levels

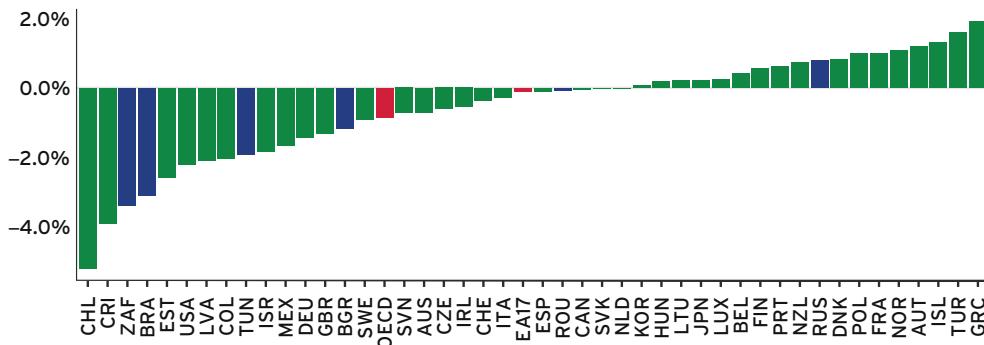


Note: For countries that recover after the end of the projection period (after 2023Q4), calculations are based on the average quarterly growth rate in 2023. South Africa, with a negative average growth rate in 2023, is not represented. Recovery is considered to occur when there is a sustained increase in real GDP per capita above the level in 2019Q4. Green bars are OECD countries, blue bars are non-OECD countries, red bars are country aggregates (OECD and euro area).

Source: OECD Economic Outlook 110 database.

FIGURE 11 EMPLOYMENT RATES ARE STILL BELOW PRE-PANDEMIC LEVELS IN ALMOST HALF OF OECD ECONOMIES

Change in the employment rate, 2021Q3–2020Q1, percentage points

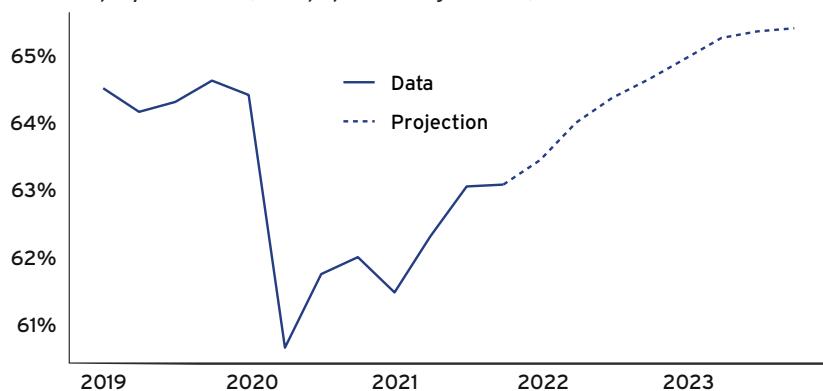


Note: Employment rate defined as the share of employment of the population aged 15–74. Green bars are OECD countries, blue bars are non-OECD countries, red bars are country aggregates (OECD and euro area).

Source: OECD Economic Outlook 110 database.

FIGURE 12 EMPLOYMENT RATES HAVE NOT YET FULLY RECOVERED

Median OECD employment rate (% of population aged 15-74)



Note: Projections start in the fourth quarter of 2021.

Source: OECD Economic Outlook 110 database.

Globally, the recovery of the labour markets in emerging and developing economies has been slower than for advanced economies, and the pandemic has further slowed the catch-up of emerging markets.⁷ A full recovery is probable in a handful of emerging market economies, but output seems likely to fall short of pre-pandemic expectations in most of them, particularly in lower-income countries, leaving sizeable long-term income scars from the crisis.

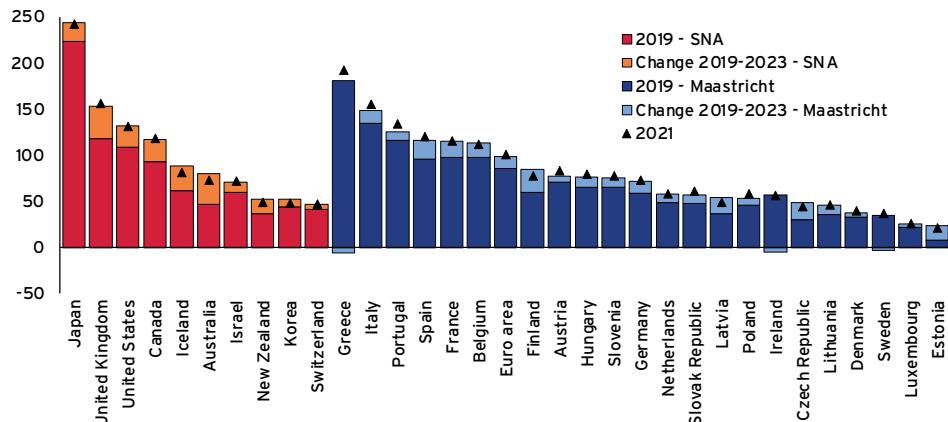
Pandemic-related fiscal pressure should be transitory

Expected robust economic growth in 2021–23 and the subsequent phasing out of emergency support measures will help lower budget deficits. In 2022 they are expected to still be above 2019 levels, appropriately so and not repeating previous crisis mistakes, while gross government debt in relation to GDP is projected to reach the highest levels seen over the past several decades. Compared with 2019, the median debt-to-GDP ratio is projected to rise by 14 percentage points of GDP across OECD countries in 2023 (Figure 13).

The massive fiscal support that governments have provided to people and firms during the Covid-19 pandemic has come on top of already-high debt levels in most OECD countries. This has raised some concerns that governments might lack the fiscal space needed to buffer shocks in the future, or that higher interest rates might make debt service challenging, with possible negative feedback loops on investor sentiment.

⁷ See IMF (2021d) and the OECD (2021b).

FIGURE 13 GENERAL GOVERNMENT GROSS FINANCIAL LIABILITIES (% OF GDP)



Note: "SNA" refers to general government gross financial liabilities as defined by the System of National Accounts. "Maastricht" refers to the Maastricht definition of general government debt, which comprises currency and deposits, debt securities, and loans.

Source: OECD Economic Outlook 110 database.

However, the contribution of this fiscal support to long-term fiscal pressures will likely be relatively small, as long as potential growth is not durably affected and pandemic-related spending is temporary. Even after taking into account pandemic-related budget shortfalls, the cost of servicing Covid-19 legacy debt is small in comparison to spending pressures arising from pension and health care expenditures, or climate change, as shown in the next section (Figure 15). The main reason is that the bulk of support measures for households, workers and businesses introduced since the pandemic are temporary in nature and will be gradually phased out.

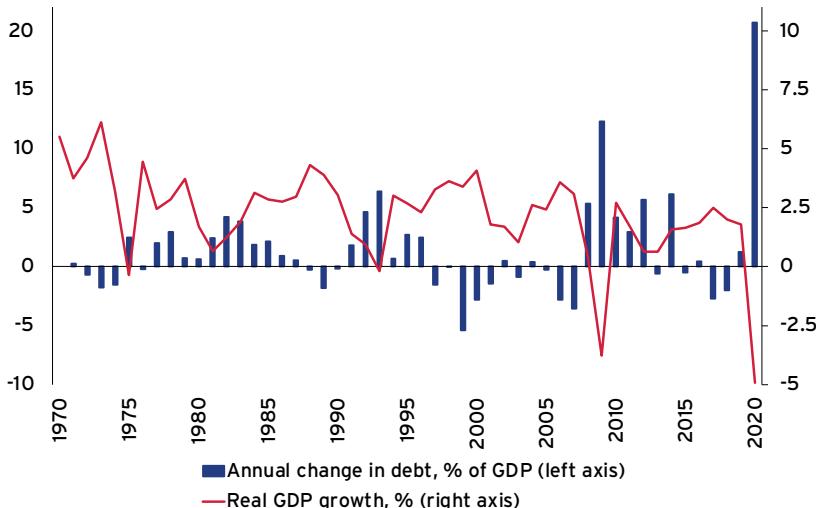
This is particularly important in light of the fiscal strategies adopted in the aftermath of the global financial crisis. Back then, the abrupt consolidations included spending cuts that fell heavily on investment in European countries (Pina, 2016) and have contributed to sluggish growth, which in turn has weighed on the debt-to-GDP ratio. Similar mistakes have so far been avoided in this crisis and should continue to be avoided. In particular, in emerging market and developing economies, the gradual and incomplete recovery may reduce the feasibility and appropriateness of a quick reduction in deficits. Provided market access is preserved, delaying steps to ensure the long-term sustainability of public finances may be justified until these countries can reach a robust recovery path enabled by an improved health outlook. However, once that has been achieved, those steps should be accelerated to preserve market confidence and create buffers.

Nevertheless, we must also acknowledge that those counterproductive responses in the past were partially the consequence of a poor pre-pandemic fiscal track record. While fiscal policy helped accommodate earlier downturns, there have often not been offsetting fiscal consolidations during upswings (Figure 14). Consequently, for example, the public primary balance surpluses accumulated in the decade before the global financial crisis

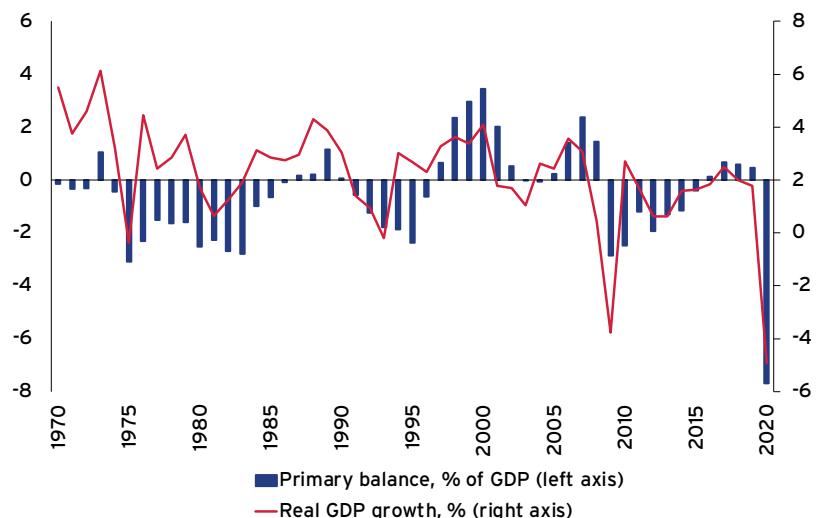
were not enough to compensate for the accumulation of deficits between the mid-1970s and the mid-1990s, and the renewed deterioration of primary budget balances after the global financial crisis and the Covid-19 crisis wiped out the previous gains (Rawdanowicz et al., 2021).

FIGURE 14 PUBLIC DEBT ROSE DURING CRISES BUT WAS NOT SYMMETRICALLY REDUCED IN ECONOMICALLY GOOD TIMES

Change in debt and real GDP growth (median of 15 OECD countries)



Primary balance and real GDP growth (median of 15 OECD countries)



Note: The graphs plot median values over OECD countries for which long time series are available: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States. As the start of time series differs slightly in the group of selected countries, medians are calculated only when data for at least 75% of the number of countries in the group are available.

Source: OECD Economic Outlook 109 database (<https://doi.org/10.1787/4229901e-en>).

Over time, higher debt levels have led policymakers to refrain from fully using fiscal policy tools to address downturns in many advanced and emerging economies, which also contributed more generally to a regular procyclical stance in fiscal policy (Rawdanowicz et al., 2021). Far from providing a persistent fiscal impetus to support a full recovery, in many countries the need – perceived, real, or imposed by markets – to consolidate hindered the recovery and ended up further depleting the public coffers of much needed tax revenues.

Overall, the debt accumulated during the recent health crisis *per se* is not likely to threaten the sustainability of public finances and should not lead to premature restraint. However, sustainability will eventually depend on the ability of governments to improve the *conduct* of fiscal policy (as discussed in Section 2.4) in order to be resilient to the future structural trends putting pressure on those public finances, as discussed in the next section.

2.2 LONG-RUN TRENDS PUT PRESSURES ON PUBLIC FINANCES

As opposed to the temporary Covid-19 shock, the main economic risks for the long-term sustainability of public debt are structural trends that can affect fiscal balances persistently. In that respect, besides public finance management practices of the past, two important challenges are likely to put significant pressure on governments' finances.

First, the ageing of populations is a known persistent feature that is likely to be associated with rising public expenditure on pensions, health and long-term care. Second, climate change is similarly persistent and the transition to a low-carbon economy is likely to put additional pressure on public finances through additional expenditures on investment in clean energy infrastructure and R&D support, as well as substantial subsidies. It will probably also include additional revenues – for example, through carbon taxation – which will improve fiscal balances only temporarily before falling as carbon emissions are reduced.

Other important economic trends are likely to carry challenges for fiscal policy, including the persistence of the recent productivity slowdown, the development of income and wealth inequalities, or the acceleration of digitalisation. Although those trends, and their impact on public finances, are highly uncertain, governments will need to ensure that they have built the institutional capacity and the credibility to address them in a sustainable manner.

Population ageing will put pressure on public pension systems, and health and long-term care expenditures

Persistent demographic trends will affect public finances, as significant public expenditures are tightly linked to the age structure of populations – for example, expenditures on pensions, health and education represent between 40% and 50% of public expenditure in most OECD countries. The population structure also has an indirect impact on public finances via its effect on GDP. For example, an increase in the dependency ratio at a given level of GDP per worker would lead to a higher expenditure-to-GDP ratio even if expenditure per person were constant, because GDP per capita would fall. In the next decades and without reforms, ageing populations are likely to increase public expenditures significantly.

OECD projections suggest that, without reforms, ageing populations will lead to a slowdown in the effective labour force (combining the number of workers and their employment rate), which will eventually reduce GDP per capita growth (Guillemette and Turner, 2021). This negative contribution will start on average in 2040 in OECD countries and sooner in some economies such as the euro area, China and Russia. This indirect effect implies that simply keeping public expenditures per capita constant would lead to higher expenditure-to-GDP ratios.

The direct effect of demographics on public finances will also be significant. Population ageing is projected to increase public expenditures substantially in most countries⁸ if no reforms are introduced (Figure 15):

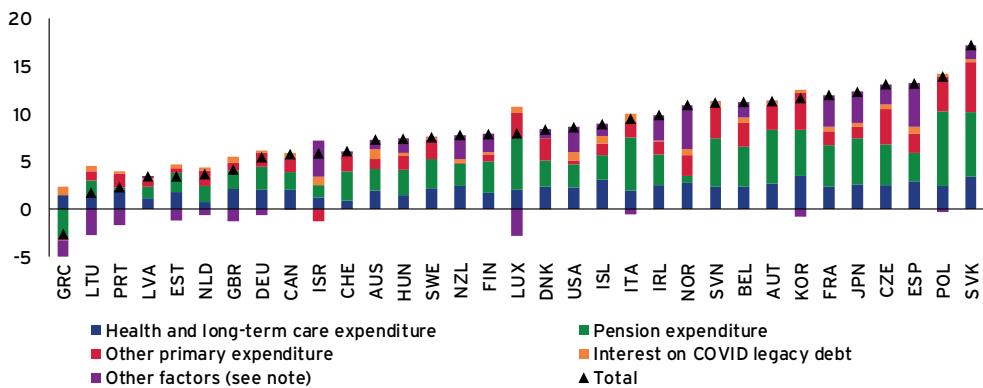
- Public health and long-term care expenditures are projected to increase by 2.2 percentage points of GDP in the median country between 2021 and 2060. These projections are based on pre-pandemic spending baselines, so any permanent increase in health spending in response to Covid-19 would come in addition.
- Public pension expenditures are projected to increase by 2.8 percentage points of GDP in the median country between 2021 and 2060, although cross-country variability is much higher than in the case of health expenditure projections. Countries that have legislated increases in statutory retirement ages – and especially those that have linked future increases to gains in life expectancy, such as the Netherlands, Finland and Portugal – tend to have lower projected increases in public pension expenditure, whereas countries with particularly unfavourable demographics, such as Japan and Korea, tend to have higher projected spending increases.

⁸ See Guillemette and Turner (2021), in particular Box 1, for methodological details regarding the long-term expenditure projections as well as the fiscal pressure indicator.

- Other primary expenditures, assuming they grow in line with the population, are projected to rise by 1½ percentage points of GDP in the median country between 2021 and 2060 via the increase in the dependency ratio.

Those projections implicitly define the amount of revenues that would need to be raised yearly in order to maintain public debt at its current level while facing those additional expenditures. As shown in Figure 15, most OECD governments would need to raise taxes just to prevent gross government debt ratios from rising over time. The median country would need to increase its structural primary revenue by nearly 8 percentage points of GDP between 2021 and 2060, but the effort would need to exceed 10 percentage points in 11 countries.

FIGURE 15 CHANGE IN FISCAL PRESSURE TO KEEP PUBLIC DEBT RATIO STABLE BETWEEN 2021 AND 2060 (PERCENTAGE POINTS OF POTENTIAL GDP)



Notes: The chart shows how the ratio of structural primary revenue to GDP must evolve between 2021 and 2060 to keep the gross debt-to-GDP ratio stable near its projected 2022 value through 2060. The underlying projected growth rates, interest rates, etc. are from the baseline long-term scenario in Guillemette and Turner (2021). Expenditure on temporary support programs related to the Covid-19 pandemic is assumed to taper off quickly. The component 'Interest on Covid legacy debt' approximates the permanent increase in interest payments due to the Covid-related increase in public debt between 2019 and 2022. The component 'Other factors' captures anything that affects debt dynamics other than the explicit expenditure components (it mostly reflects the correction of any disequilibrium between the initial structural primary balance and the one that would stabilise the debt ratio).

Source: Guillemette and Turner (2021).

Importantly, this added pressure will not be restricted to advanced economies as the ageing of populations is a global trend, while the size and the timing of fiscal pressures will vary depending on the structure of countries' pension and health systems, and their phase in the demographic transition. As an example, the IMF estimated in 2019 that the added expenditure on health and pensions would be similar, and of the same order of magnitude, in the developed and emerging economies of the G20 (IMF, 2019). More generally, the long-term increase in pension and health expenditure linked to ageing is expected to be higher in less-developed countries – albeit starting from a lower base – because developed economies are further along in their demographic transition and have already implemented some pension systems reforms (Clements et al., 2015; Amaglobeli et al., 2019).

Climate change will require a considerable fiscal effort

Climate change will affect societies and economies for decades because of the accumulated stock of greenhouse gases (GHGs), the persistency of GHG emissions and – for now – the lack of sufficient technology to remove carbon from the atmosphere. It raises large and uncertain risks, with possible dire economic and social consequences. Climate change will affect public balances both through its effect on GDP and its impact on expenditures and revenues. Overall, climate change is likely to add to fiscal pressure, although the magnitude is uncertain and will vary significantly over time.

First, climate change is likely to affect public finances through reduced growth. Unmitigated climate change would reduce GDP in the long term, for example through reductions in human and land productivity or through the consequences of extreme weather events. Recent estimates, based mostly on the historical link between temperature and productivity, suggest that an unmitigated climate scenario (an increase of more than 4°C) could reduce GDP per capita by 10–20% (Burke et al., 2015, 2018; IMF, 2017, Kahn et al., 2021). The adverse GDP impact is likely to be larger for lower-income countries than for most advanced economies. Uncertainties are large, but the benefits of mitigation are likely to be substantial: similar scenarios considering an increase in temperature by 1.5–2°C, in line with the stated objectives of the Paris Agreement, suggest a reduction in GDP that could be an order of magnitude smaller. The transition could also offer opportunities for growth and innovation, for instance linked to lower energy prices and co-benefits such as the reduction in local air pollution.

Second, climate change will affect public finances directly because fiscal policy has a key role to play in mitigation, adaptation and accompanying measures. Government intervention is needed in particular because of the externalities involved relating, for example, to pollution, networks (e.g., the electricity grid, charging stations) or innovation (Stock, 2021; D'Arcangelo et al., forthcoming). Such externalities can be addressed, for instance, via carbon taxation, infrastructure investment, and R&D support, respectively.

- **The pricing of carbon emissions** will likely raise revenues during the transition, but those revenues will fall with the reduction of emissions. For example, a 2021 IMF–OECD report for the G20 Finance Ministers suggested that a carbon tax at US\$50 per tonne could raise around 1% of GDP per year in G20 countries by 2030 (IMF and OECD, 2021). Still, these gains would fade as emissions are reduced. In addition, reduced emissions are also likely to decrease revenues from existing energy taxation, with a direct fiscal impact on countries' budgets if they are not replaced with other revenue sources (OBR, 2021).⁹ The phasing out of fossil fuel subsidies, which is a necessary step to decarbonise the economy, may reduce somewhat the strain on public budgets, though as it would affect low-income

⁹ Excise taxes on fuel amounted to 1.3% of GDP in OECD countries in 2018 and 1.0% in a selection of 15 developing and emerging economies surveyed by the OECD (OECD, 2021c).

households in many countries, it may be substituted by another form of transfer. The direct transfers made by governments in support of fossil fuel represented 0.1% of GDP on average globally in 2019, but can be significant in some OECD economies as well as in emerging and developing countries.¹⁰ Finally, if carbon revenues are used to finance productive investment or innovation (see below), this will contribute to reducing the direct cost of the green transition.

- **Tackling climate change will also require significant infrastructure investment**, including from the public sector. Those investments include energy infrastructure (e.g., electricity networks), electricity generation (e.g., power from renewable sources) and the decarbonisation of buildings, industry and transport. The IEA (2021b) estimates that in order to achieve carbon neutrality by 2050, total (public and private) global energy investments would need to increase from 2.5% to 4.5% of GDP annually in 2030 before returning to current levels in 2050. In particular, investment in electricity generation would need to rise from 0.6% of GDP today to 1.5% of GDP in 2030. The role of the public sector is uncertain, but it is likely to be more important in developing and emerging markets than in advanced economies. For example, the IMF estimates that public investment represents only 10% of total investment in power generation in advanced economies, compared with over 50% in emerging markets (IMF, 2021b).
- **Achieving the net-zero emissions goal by 2050 will require increases in the funding of innovation.** Governments have a particular role in supporting the emergence and adoption of promising low-carbon technologies, including those that are far from the commercialisation stage. Targeted support to innovation can provide a ‘technology push’ contribution and lower abatement costs in the long run. This is particularly important as half of the innovations required by 2050 to achieve carbon neutrality are not yet available on the market (IEA, 2021a). The amounts at play, however, are relatively small. In particular, the IEA estimates that public funding for demonstration projects¹¹ should be raised to \$90 billion before 2030, compared to the current \$25 billion which is already budgeted or the potential \$50 billion which has been announced.¹²

All these instruments will impact growth. Carbon taxation could have a negative impact on growth in the short term (Pisani-Ferry, 2021), which may be mitigated depending on how revenues are recycled. Recent evidence also suggests that green infrastructure investment (public or private) may have higher multipliers than other type of investment

¹⁰ Direct support for fossil fuels amounted to 0.06% of GDP on average in the OECD in 2019, but 0.3% of GDP in Chile and Colombia, 0.5% in Greece and 1.1% in Mexico; they amounted to 0.8% of GDP in the East Asia and Pacific region (OECD, 2021a).

¹¹ The demonstration stage of technology innovation is described by the IEA as when “[t]he first examples of a new technology are introduced at the size of a full-scale commercial unit”.

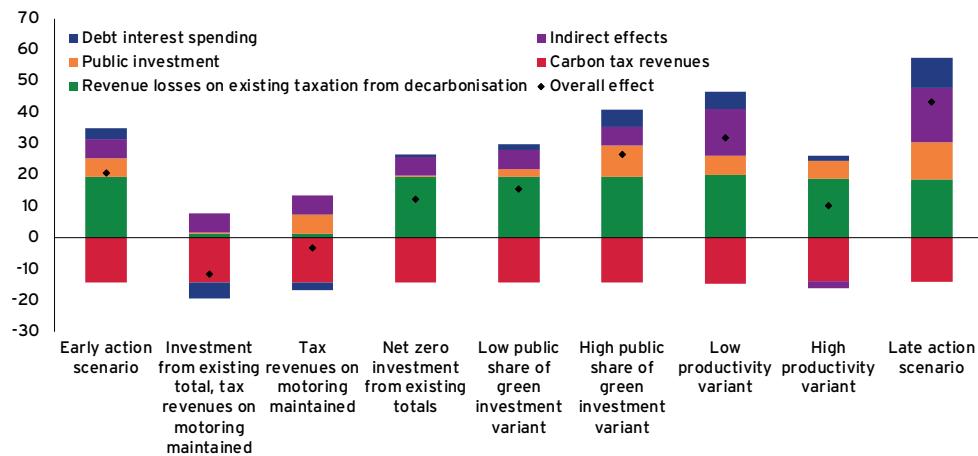
¹² The IEA also estimates that government spending on energy R&D fell from 0.1% of GDP in 1980 to 0.03% of GDP in 2019. Currently, the share of government R&D budget targeting environmental issues is low (below 8% of total government R&D) in most OECD countries (D’Arcangelo et al., forthcoming).

(Batini et al., 2021). Likewise, green R&D has broader spillover effects on the economy than the non-green technologies it replaces (Dechezleprêtre et al., 2016). The right combination of green policies can additionally reduce the potential adverse growth impact of climate change policies. For example, R&D support can orient innovation towards green technology without increasing the distortions generated by a higher level of carbon taxation (Acemoglu et al., 2016).

Finally, fiscal policy will be needed to support the green transition to mitigate the adverse impact on poorer households, affected regions and small businesses, and to help displaced workers acquire new skills and take advantage of new employment opportunities. The impact on public finances is hard to quantify and will depend in particular on the size of the employment reallocation. Existing studies suggest that the aggregate impact on employment from the decarbonisation transition is likely to be muted or positive, but the effect could be significantly negative in specific sectors (coal, oil and gas) and regions (Botta, 2019; Chateau et al., 2018; IEA, 2021a). Public support for education and training, and the development of active labour market policies, will be required to smooth the individual negative socioeconomic impacts

Estimating the overall effect on fiscal budgets from decarbonisation is obviously complex. As an example, the Office for Budget Responsibility (OBR) recently provided estimations of the effect on public debt of strategies to achieve the net-zero emissions objective in the United Kingdom by 2050. In an “early action” scenario with carbon taxation and other policies implemented today, it calculates that the debt ratio would increase by 21 points between now and 2050, including 6 points from additional investment and 19 points from lost tax revenues (Figure 16). The increase in debt would occur after 2035, when the net revenue effect becomes negative thanks to the reduction in emissions, leading to higher deficits of 1–1.5% of GDP per year. The OBR also shows alternative scenarios to understand the most important assumptions. In particular, the use of carbon tax revenues and the replacement of existing taxation on fossil fuels is likely to be a major driver of the link between climate change and public deficits. In addition, delayed action would be significantly more costly because of the higher investment eventually required, the stronger economic distortions once the mitigating measures are put in place, and the negative impact on the GDP trajectory.

FIGURE 16 DECOMPOSITION OF THE IMPACT ON PUBLIC DEBT OF PLANS TO ACHIEVE NET-ZERO EMISSIONS BY 2050 IN THE UNITED KINGDOM (% OF GDP)



Note: The graph presents the change in the debt-to-GDP ratio between now and 2050 linked to different strategies to achieve the net-zero emissions objective in the United Kingdom. The "early action" scenario assumes the policies are implemented immediately. The policies include (i) higher carbon tax revenues, (ii) reduced revenues from existing energy taxation, (iii) public investment in infrastructure, and (iv) an "indirect effect" where reduced GDP implies a higher debt-to-GDP ratio in addition to higher expenditures assuming they are constant in volume. Scenarios labelled "tax revenues on motoring maintained" assume that the reduced revenues from (ii) are fully replaced. Scenarios labelled "investment from existing totals" assume that total public investment is kept constant.

Source: Office for Budget Responsibility (2021); Bank of England (2021).

Other structural trends may bring challenges to fiscal policy, which will need to build the institutional capacity to respond

Demographics and climate change are not the only trends that will bring new challenges to fiscal policy. Other factors will likely affect the conduct of fiscal policy, although their impact on public debt is uncertain. For example:

- **A continuation of the productivity slowdown** would undermine tax revenues in particular, and thus threaten debt sustainability along with the improvement in living standards. The future of productivity will depend on the persistence of the causes of the recent slowdown, over which there is important uncertainty. Possible causes include, among others, disappointing gains from recent innovation waves, likely due to some extent to adjustment costs and insufficient diffusion of new technologies and innovations across firms (Andrews et al., 2016); a decline in business dynamism (Calvino et al. 2020); and a levelling of education attainments (Vollrath, 2019). If this trend were to persist, fiscal policy could also be called to intervene more actively – for example, through fiscal support for structural reforms, or public investment in infrastructure, education and labour market programmes. Conversely, the acceleration of digitalisation that happened with Covid-19 may reverse this trend.

- **A continuation of the rise in within-country income inequality** would add to pressure on government social programmes and could undermine growth and political stability. The recent increase is partly due to automation and globalisation, which have affected the distribution of market income, to uneven equality of opportunities and to less redistributive tax and transfer systems in many countries (Causa et al., 2019). Public finances will have an important role to play in tackling persistent rising inequalities, not only via a more progressive tax and transfer system but also by promoting greater equality of opportunities, including by improving access to high-quality education, healthcare, affordable housing and lifelong training programmes (O'Reilly, 2018).
- **Accelerating digitalisation** provides the opportunity for enhanced productivity and more efficient fiscal policy, but making the most of digital technologies and ensuring that the benefits are spread widely will require substantial new investment not only in connections, but also in human capital, the reorganisation of businesses and governments as well as the design of welfare systems.

2.3 DEBT SERVICING COSTS ARE LIKELY TO REMAIN LOW IN THE NEAR TERM, BUT THIS DOES NOT ABSOLVE THE NEED FOR SOUND FISCAL POLICY

Interest rates are likely to stay low in the near term

As we saw in the previous sections, public debt levels are historically high today and structural trends are likely to put additional upward pressure on them in the long term. All else equal, this would imply additional obligations for governments to meet. However, the eventual fiscal burden will also depend on the evolution of interest rates on the debt.

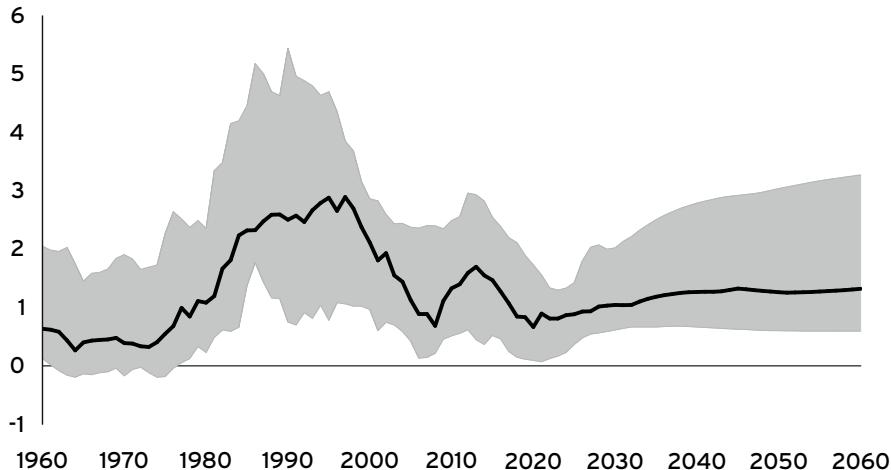
In the short term, at least, the low level of interest rates should provide some headroom: despite debt levels having increased sharply since the global financial crisis, debt-servicing costs have declined markedly over the past two decades. In the median OECD country, net interest payments amounted to about 0.7% of GDP in 2021, similar to just before the financial crisis. The last time a fiscal burden this low was seen was in the late 1970s (Figure 17).

With high future uncertainty, it is reasonable to look at the impact that a modest rise in interest rates would have on debt service. In the baseline OECD long-term scenario, short-term interest rates gradually converge to potential growth from below. In turn, the assumed modest increases in interest rates, with stabilising debt ratios, raise median net interest payments moderately to reach 1¼% of GDP by 2060.¹³

¹³ The natural real interest rate is equal to the economy's trend growth rate plus an unobserved stochastic component that captures other influences. Within this framework, the unobserved component is currently negative, which may reflect excess desired global saving over investment, or a number of other factors. In the baseline scenario of the OECD long-term model, this unobserved component is assumed to gradually disappear over the projection period.

FIGURE 17 NET INTEREST PAYMENTS REMAIN AT A MODERATE LEVEL THROUGH 2060 IN THE BASELINE SCENARIO

Median and interquartile range for OECD countries, % of GDP



Note: The quantiles are computed on a varying sample of countries based on data availability. The full sample of OECD countries is available starting in 1995.

Source: OECD Economic Outlook No. 109 database for history and baseline long-run scenario for projections; Guillemette and Turner (2021).

Such projections are surrounded by a high degree of uncertainty. In practice, the level of interest rates reflects future growth and other factors driving desired investment and saving, in addition to some potential term and default risk. In the last decades, as we discussed in Chapter 1, population trends and rising income inequalities, among other factors, appear to have raised desired savings and reduced desired borrowing, contributing to the steady downward trajectory of interest rates. In parallel, increasing public debt has likely contributed to higher rates, which would have fallen even more had public liabilities remained steady (Rachel and Summers, 2019). As discussed in the two previous sections, this specific trend is likely to continue under constant policy, given the structural pressures on public finances. The trajectory of interest rates will then be determined, in particular, by the evolution of the structural factors which led them to fall lately. This in turn suggests that interest rates will likely remain low for the foreseeable future, because some of those factors are persistent:

- Demographic trends have likely increased savings in the past through a larger share of the working-age population (likely savers) saving for longer retirement with increasing longevity. In the future, population ageing is less likely to increase the saving rate of economies since the elderly have lower saving rates than the working-age population. However, the elderly also tend not to clearly dissave, so that total asset demand is likely to remain high. In parallel, the continued

slowdown in population growth is likely to reduce investment. Interactions between demographics and savings and investment would thus put downward pressures on interest rates over the long term (Kopecky and Taylor, 2020; Auclert et al., 2021).¹⁴

- The increasing equity risk premia, along with the fall in safe rates, also suggests a particular imbalance between the demand and supply of safe assets specifically (Caballero et al., 2017). The relative roles of supply factors (such as the shrinking of safe assets after the global financial crisis) and demand factors (such as recent regulatory requirements on risky-asset holdings by banks, but also demographics) are not clear-cut. However, they are likely to take time to subside.

History may also indicate that low rates are likely to be persistent, given the current context. For example, Gourinchas and Rey (2020) suggest that interest rates are likely to stay low for the proximate future because periods of a low consumption-to-wealth ratio, as can be observed in the recent past, have usually been followed by periods of low interest rates as the ratio reverts to its mean. On longer horizons, previous pandemics have also tended to depress real interest rates (Jordà et al., 2021b) as they can raise the capital-to-labour ratio. Even if these forces are weaker this time, theoretical and empirical work thus suggest rates are likely to remain subdued. However, this does not imply that the accumulation of debt presents no risk.

The expectation of low rates does not imply the absence of sustainability risks, and creates new challenges on its own

The combination of historically high levels of debt and historically low debt payments has reopened discussions about the very definition of debt sustainability. In theory, when the interest rate paid on public debt is lower than the GDP growth rate (i.e., a negative $r - g$), any constant deficit level is consistent with a stable debt level in the long term. In practice, however, current low interest rates do not guarantee that high debt will be sustainable.

First, as mentioned above, the trajectory of future interest rates is highly uncertain. In the past, interest rate growth differentials were no higher prior to sovereign defaults than in normal times (Mauro and Zhou, 2020). Factors that have pushed rates downwards might eventually subside. For example, higher productivity growth would typically lead to higher rates, or the loosening of bank regulation could reduce the demand for safe assets. Likewise, a reduced labour force could generate incentives for automation and additional investment, which would at least partially counteract the negative impact of the

¹⁴ The contribution of ageing to higher savings in the past has been recently nuanced in particular by Mian et al. (2021), who suggest that a more important factor may have been the increase in inequality. This could be explained by the fact that saving rates are more heterogeneous across income groups than across age groups. This would still be consistent with an impact of demographics on equilibrium interest rates through an investment slowdown. On the other hand, Goodhart and Pradhan (2020b) suggest that future demographics will actually push interest rates (or inflation) upwards not only because of decreased savings, but because a reduced labour force and a subsequent increase in wages would create incentives for investment (e.g., automation).

population slowdown on investment (Goodhart and Pradhan, 2020b). More importantly, the saving/investment or the safe asset imbalances are not infinite (or equivalently, the demand for public debt is not infinite): higher public debt may eventually reduce those imbalances and push rates upwards, so that even if the imbalances were to strengthen, sufficiently high public debt would cancel the downward impact on rates. All those uncertainties suggest that numerical thresholds on interest payments, such as proposed by Furman and Summers (2020), could be of limited practical use for the assessment of debt sustainability, in the same way as numerical ‘debt limits’ have proven impractical.¹⁵

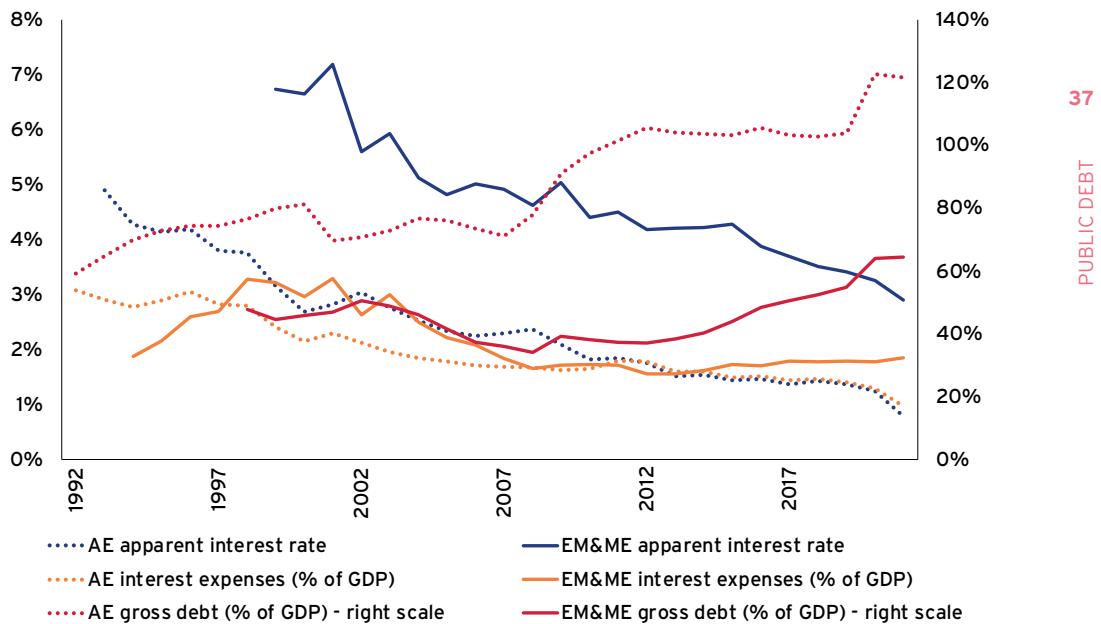
Uncertainties on future interest rates in a context of high debt generate additional concerns because high debt levels mechanically increase the sensitivity to movements in future rates. In addition, they expose countries to rollover risks: many countries will have to roll over significant amounts of bonds each year, and large quantities of debt are not always easy to place in the market without affecting bond prices if the demand for debt decreases. Finally, evidence suggests that high debt levels can weaken the fiscal response to financial crises, weakening and lengthening recoveries (Jordà et al., 2015b). Central bank purchases of public debt mitigate the rollover risk, although they effectively reduce the maturity of public liabilities (by replacing sovereign bonds by reserves in public liabilities) and can hasten the pass-through of higher rates on interest payments.

Uncertainties are even more important for emerging markets whose tax revenues are lower and thus tend to struggle to respond to abrupt changes in rates; where debt is more likely to be denominated in foreign currency and held by foreign investors and thus subject to currency risk and sudden stops; and where stock-flow adjustments have proven significant in the past (Blanchard et al., 2021). In addition, although emerging markets have also seen their effective interest rates fall as gross debt grew over the last 30 years, interest payments have not fallen as much as those of advanced economies and have remained stable at around 2% of GDP on average (Figure 18)

Second, even in an environment of negative $r - g$, the government still faces a well-defined budget constraint (Reis, 2021). In this environment, it is true that the government does not need to repay the current stock of debt only with future primary surpluses, because it is also able to earn revenues by emitting debt liabilities that the private sector is willing to buy for a return below market rates. This is the case because those liabilities effectively provide a service (e.g., liquidity or safety). However, the demand for these services is not infinite: their price will decrease, and so the interest rate will increase, with the supply of public debt. This emphasises again that the low rates on sovereign debt are a function of the (limited) demand for such financial instruments and the service they provide, which in turn depends on the credibility of, and trust in, governments’ fiscal strategies, as we will discuss in the next section.

15 This may be less the case for the United States, as the issuer of the world’s reserve currency.

FIGURE 18 PUBLIC DEBT, INTEREST PAYMENTS AND APPARENT INTEREST RATES IN ADVANCED ECONOMIES AND EMERGING MARKET AND MIDDLE-INCOME ECONOMIES



Note: AE: Advanced economies. EM&ME: Emerging markets and middle-income economies. The apparent interest rate is the ratio of interest expenses over the gross debt of the previous year.

Source: IMF, Fiscal Monitor database.

Finally, although low rates mechanically imply low interest payments, it should not be forgotten that low or negative equilibrium interest rates could be a sign of a globally inefficient economy with a scarcity of investment opportunities (Bartsch et al., 2020). Negative equilibrium rates also place constraints on the ability of monetary policy to stabilise domestic demand with conventional instruments. If there exists an effective lower bound on nominal interest rates, a persistent positive gap can occur between the actual interest rate and the equilibrium interest rate, hampering growth and leading to 'secular stagnation'. Hence, low rates are not necessarily desirable, and can make debt less sustainable if they hamper growth persistently.

In those circumstances, fiscal policy could be called upon to contribute even more to demand stabilisation (Eichenbaum, 2019; Lane, 2021) and, with the final goal of raising equilibrium rates, to policies targeting long-term potential growth. The ability of governments to focus on long-term growth while having the capacity to buffer cyclical shocks will require the reinforcement of political institutions, as we discuss in the next section.

2.4 WHAT WILL SHAPE THE FUTURE DIRECTION OF DEBT-TO-GDP RATIOS AND DEBT SUSTAINABILITY?

38

The previous sections have shown that after the Covid-19 crisis, public debt is likely to remain historically high under constant policy. Future interest rates, and interest payments, will then depend on the demand for public debt. Although this demand is likely to remain high for a while, we saw in previous sections that governments will be confronted with significant uncertainties in the future, rendering a quantitative and non-stochastic assessment of debt sustainability less relevant. However, governments are not empty-handed: a credible commitment to long-term prosperity, internalising the existence of uncertainties through transparent fiscal frameworks, would significantly improve the perspective for sustainable public finances.

Sustainable public finances need credible, trusted fiscal policies with a long-term focus

- Long-term growth is a fundamental determinant of debt sustainability, by eroding the existing stock of debt and providing more revenues for debt servicing. In the past, it has usually been the main determinant of successful debt reductions (Hall and Sargent, 2011; Mauro and Zilinsky, 2016; Rawdanowicz et al., 2021). Governments should have the capacity to invest for the future, including through temporary increases in debt to prevent the use of distortive taxation (Fatás et al., 2019). Public investments are key to growth (Fournier, 2016) and often have a positive long-term effect on government revenue, because of a high long-term multiplier (Bom and Ligthart, 2013; Gechert, 2015). Those investments may be all the more important in today's context, as multipliers are likely to be higher at the zero lower bound (Ramey, 2019) and can be more important for green investments (Batini et al., 2021). Beneficial investments in long-term growth are not limited to infrastructure, or what is counted as 'investment' in national accounts. For example, investments in education and health programmes targeting children, in particular those with lower income, have significant socioeconomic benefits and often fully pay for themselves in the long run (Hendren and Sprung-Keyser, 2020). Well-designed public investment can crowd in private investment (Dreger and Reimers, 2016), in particular in a context of high uncertainty (IMF, 2020). In this sense, insufficient public investment can actually hamper private investment and eventually impair the digital and climate transformation, and ultimately sustainable growth.
- A long-term perspective would also allow governments to use the design of fiscal policy to make public finances more resilient to future uncertainties. For example, governments could increase the share of public expenditures focused on health promotion and disease prevention to support resiliency to health risks;

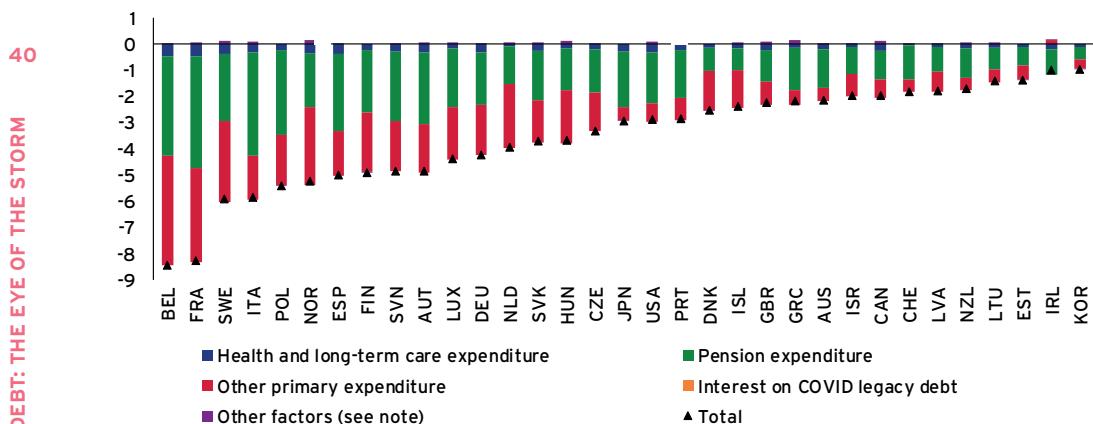
use active debt management to reduce the exposure of public finances to short-term movements in interest rates; or index long-term fiscal programmes to their underlying drivers, such as life expectancy in the case of pensions (Orszag et al., 2021).

- As an example of the fiscal benefits of such a long-term focus, recent OECD simulations have quantified the dividends from ambitious labour market and public pension reforms on the fiscal pressures generated by ageing shown in Figure 15. These reforms include, for example, higher expenditure on active labour market policies and a reduction in tax wedges, along with higher effective retirement ages eventually indexed to life expectancy.¹⁶ Results indicate that, relative to a no-reform scenario, the fiscal pressure could be reduced by between 2 and 8 percentage points of GDP by 2060, thanks to higher GDP per capita and reduced public expenditures (Figure 19). This is about a quarter of the projected increase in fiscal pressure due to ageing, notably in Belgium, France and Italy. The fiscal dividends mostly accrue due to longer working lives and a reduction in future pension liabilities.
- A long-term perspective for growth also provides governments with the full capacity to buffer cyclical fluctuations and large shocks. As discussed in the first section, history shows that countries have refrained from using their fiscal space fully when the economy contracted on some occasions and have often failed to be more conservative in good times. As a result, there have been few buffers rebuilt in good times to address adverse cyclical shocks.
- This crisis has also shown that the perception of fiscal space may vary significantly, depending on the degree of fiscal and monetary policy coordination and the coordination of policy across countries. In Europe, fiscal space has increased on the back of collective monetary and fiscal action (Schnabel, 2021). In emerging economies, fiscal space has increased for some countries thanks to global fiscal support and loosened monetary policy (IMF, 2021a).

¹⁶ In those simulations, each country is assumed to close, by 2030, half of current gaps on a number of labour market policy indicators relative to the five best-performing OECD countries. This implies (i) raising expenditure on active labour market policies (ALMPs), (ii) raising expenditure on family benefits in kind, (iii) increasing maternity leave, and (iv) lowering the tax wedges for both single earners and couples. Specific reform magnitudes depend, for each country and indicator, on gaps relative to best practices according to the latest available data. The implied additional expenditure on ALMPs and family benefits are taken into account in the fiscal projections, but the other measures are assumed to require no additional spending or to be financed by less distortionary forms of taxation. In addition, governments are assumed to undertake policy measures so as to (i) close any initial shortfall between average effective and normal statutory retirement ages for both men and women, and (ii) keep average effective retirement ages rising in the future at a rate equal to two thirds of projected gains in life expectancy if not already the case in the baseline scenario as per current legislation (Guillemette and Turner, 2021).

FIGURE 19 POTENTIAL FUTURE FISCAL PRESSURE TO KEEP PUBLIC DEBT RATIO AT CURRENT LEVEL WITH REFORMS TO LABOUR MARKET AND RETIREMENT POLICIES

Difference in fiscal pressure from the baseline scenario, in percentage points of potential GDP



Note: The chart shows the difference in future fiscal pressures between a scenario with reforms to labour market and retirement policies, and the baseline scenario presented in Figure 15. The fiscal pressure metric measures how the ratio of structural primary revenue to GDP must evolve between 2021 and 2060 to keep the gross debt-to-GDP ratio stable near its projected 2022 value over the projection period (which also implies a stable net debt-to-GDP ratio given the assumption that government financial assets remain stable as a share of GDP). In the scenario with reforms, the underlying projected growth rates, interest rates, etc. are from an ambitious reform scenario combining labour market policy reforms with increases in average effective retirement ages, as described in Guillemette and Turner (2021). See also the note to Figure 15.

Source: Guillemette and Turner (2021).

- Improving the cyclical response of governments would also support long-term growth by preventing the emergence of scarring effects whereby a temporary negative shock leads to a permanent fall in output (e.g., via the persistence of unemployment) (Furlanetto et al., 2021; Cerra et al., forthcoming). The ability of governments to stabilise business cycles will be even more important if interest rates are to remain low, as low rates constrain the ability of monetary policy to tackle demand stabilisation. In addition, fiscal multipliers tend to be higher at the zero lower bound (Ramey, 2019). Moreover, in a world of excess savings, fiscal policy has positive externalities when it reduces aggregate savings. This would call for enhancing the efficacy of automatic stabilisers (Maravalle and Rawdanowicz, 2020) or, if the existing stabilisers prove to be too narrow to achieve the desired demand stabilisation (Blanchard and Summers, 2020), introducing new contingent automatic stabilisers linked to the state of the economy (Sahm, 2019).
- Finally, the sustainability of public finances will depend fundamentally on citizens' and investors' support for government policies as well as the trust in – and credibility of – governments and their strategies. In order to be sustainable over the long run, public finances should respond to citizens' needs and create a perception of fairness within and across generations. In this context, executive and legislative powers need to internalise the implications of their policies and obtain acceptance from voters. Public finances should also be managed in such a way

that preserves access to capital markets, which requires transparent accounting and auditing of public finances management, as well as transparent functioning of the sovereign debt market. It is all the more important that where sovereign debt enters banking capital, this may threaten a doom loop between the banking and public sector if ill-managed.

Political economy biases can hamper the development of such strategies

The development of trusted long-term fiscal plans is threatened by well-known political economy biases, which can misalign the incentives of policymakers and those of society. There are indeed political economy reasons behind the slippage in public finances and the large increases in government debt, which could continue in the future and may raise market concerns more than the level of debt itself:

- **Elections:** The literature on electoral cycles tends to reach mixed conclusions but can give some insights into how elections can influence a government's budget/debt decisions. For example, a government may be inclined to run a fiscal expansion before elections to increase the probability of being re-elected, by undertaking some investment or by boosting voters purchasing power. Conversely, a government set for defeat may decide to let deficits slip to reduce the fiscal space available to its successor (Pettersson-Lidbom, 2001; Yared, 2019). These behaviours could generate political business cycles. Similarly, Alesina et al. (2021) find that tax-based austerity carries large electoral costs, which means that incumbent governments are incentivised not to carry out austerity measures right before elections.¹⁷ In a recent paper, Fuest et al. (2021) find suggestive evidence that governments in OECD countries and emerging markets tend to unexpectedly increase tax rates on personal income and value-added after elections.
- **Common-pool issues:** Political parties or other pressure groups may influence the government to engage in excessive spending because they do not internalise the shared financing costs of such expenditures. This is because those enjoying the marginal benefit from an extra dollar spent on a project are not necessarily those bearing the marginal cost of funding it. If they did, they would choose the level of spending that equates the marginal benefit and the cost of funding. However, since the two groups are not usually the same, those who benefit from a policy tend to ask for higher levels of spending. This is quite standard since fiscal policy is meant to be redistributive across or within generations, as exemplified by energy transition needs. Addressing the common pool problem would help limit its adverse consequences for the overall level of government spending, deficits and debt, and for the efficiency of resource allocation and economic growth (Eichengreen et al., 2011).

¹⁷ The sample uses 16 OECD countries with consolidation plans from 1978 to 2014.

- **Political polarisation:** Common-pool phenomena tend to be reinforced by the rise of political polarisation and fragmentation, high levels of political turnover, or as a coordination problem in federal regions in particular. Previous literature has found that larger deficits are associated with countries with more ministers, with greater ideological polarisation in the executive, and with a proportional (as opposed to majoritarian) election system (Woo, 2003; Persson and Tabellini, 2004; Crivelli et al., 2016). This has been analysed extensively by the European Commission in the EU context (Buti and van den Noord, 2004) to protect against individual countries failing to internalise the impact of their borrowing decisions on the shared interest rates, inflation rates or probability of financial contagion (Yared, 2019).
- **Fiscal illusion among voters:** Voters may overestimate the benefits of current spending and underestimate the future tax burden that will be needed to finance current expenditure, or how this tax burden is shared within generations. One would think that given the extensive discussion of deficits and the pros and cons of austerity policies in the United States and Europe, today's voters would be aware of the potential cost of deficits, even though there may be disagreement on what policies to follow to respond to them. Yet, there is some evidence pointing to the practical relevance of fiscal illusion, with distorted taxpayer perceptions of their tax burdens, in some European countries (Dell'Anno and Dollery, 2014). Based on a sample of 28 European countries between 1998 and 2005, the authors show that the countries with the highest public indebtedness also have the highest levels of fiscal illusion.

Strong institutions can help weaken those biases, and enhance trust and sustainability

Enhanced and more transparent fiscal frameworks and governance can help to address these political economy challenges. Frameworks are bound to differ across countries, reflecting different political and economic contexts, the quality of institutions and societal preferences. Still, the key pillar of better public finances management is ensuring credible and sustainable political commitment. Hence, fiscal frameworks, with strong institutions, may significantly shape the evolution of debt by bringing clarity to the policy choices that impact public finances in the short and medium term, with their intra- and intergenerational trade-offs.

Strong budgetary institutions help to raise the credibility of government plans and support trust in government, provided they are endowed with an appropriately large scope and the means to support their activity. One common way of enhancing political commitment, while preserving the democratic features of fiscal policy, is to rely on independent fiscal institutions (IFIs) or parliamentary budget offices. Around three out of four OECD countries have IFIs, but their efficacy depends on their mandate and means. Despite variations in roles and responsibilities, there seem to be some common

factors in their success in contributing to sound fiscal management: independence, a broad mandate, and access rights to government data and information. In practice, this requires experienced staff and building a reputation for high-quality advice, as well as regular effective communication

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More formally, several criteria may contribute to the success of IFIs:

- First, the IFI must be in charge of translating the government's budgetary decisions into numbers – both the budget balance and the path of public debt.
- Second, the IFI must be tasked with determining whether the government's choices are compatible with long-term debt objectives.
- Third, the competence of the IFI must be beyond doubt. To that effect, its members – or its manager – must be chosen on the basis of explicit criteria that focus exclusively on competence and non-partisanship.

Recent country experience suggests that IFIs can indeed contribute to responsible public financial management across various areas, including: (1) increasing transparency and accountability; (2) producing or endorsing macroeconomic and fiscal forecasts; (3) monitoring compliance with fiscal rules; (4) assessing long-term fiscal sustainability; and (5) estimating the financial costs of policy proposals (Rawdanowicz et al., forthcoming). More generally, the OECD Council has recognised the importance of IFIs and identified a set of principles to ensure their effectiveness (OECD, 2014).

That said, independent IFIs are not enough. Enhanced government accountability and transparency are also needed, including through:

- regular public reporting by governments on their short-term intentions and long-term objectives, and the extent to which they link current budget and long-term sustainability commitments (this ensures political commitment to the fiscal path chosen); and
- regular and independent economic and fiscal reporting, including updates at budget time and between budgets, a pre-election update, a statement on the long-term fiscal position, and an investors' statement on the state's balance sheet at least every four or five years.

Such political commitment may help provide guidance on a path for the future, including current and future challenges, ensuring that the necessary fiscal space remains available in the short term while reassuring private actors on the medium-term sustainability.¹⁸

¹⁸ This would be especially important in the current juncture; providing investors and private sector agents with a clear picture of public finances direction would raise certainty.

More transparent and publicised fiscal frameworks would, in tandem, help provide the public and financial community with a political economy narrative, which would spur mutual trust among the various stakeholders for today and for the future. In turn, this would not only help to ensure the fiscal space needed today is provided, while keeping rates low, but also that the future debt trajectory is on a sustainable path.

2.5 CONCLUSION

By historical standards, the evolution of public debt may raise concerns, especially as pre-existing and new challenges are likely to exert further pressure on debt. Yet the main issue is not so much Covid-19-related debt. First, public finances will be challenged by upcoming structural challenges such as ageing populations and climate change. Second, governments will need to address the failures in the management of public finances that were apparent before the crisis and, in particular, how short-sighted management of public finances has proven to be in some crises and the failure to create fiscal buffers in good economic times.

While the recovery is still incomplete, premature consolidations and investment cuts akin to the strategies followed in the post-global financial crisis period should be avoided. However, a deep overhaul of public finances management is warranted, and governments today have an opportunity to develop institutions that would guarantee their capacity to follow fiscal strategies with a long-run perspective. Developing such resilient fiscal frameworks will be fundamental to address the demands of the ecological transition and the need for public infrastructure investment in a sustainable way, and to ensure that the rising needs of ageing populations can be met. It should also help governments respond efficiently to future unknown challenges when they arrive.

CHAPTER 3

Household debt

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Most commentators and researchers agree that an extraordinary run-up in house prices, together with rapid household leveraging, was a major factor contributing to the 2008 global financial crisis and subsequent deep recession. More generally, academic research now concludes that credit expansions, and especially mortgage lending booms fuelling asset price surges, tend to precede financial crises and deep downturns.¹⁹

The Covid-19 virus and the measures taken to contain its spread generated a sudden economic stop, with mass layoffs in many countries and a historically rapid decline in economic activity. Given today's highly leveraged economies, one might have anticipated another period of financial distress, with perhaps another wave of mortgage delinquencies and depressed housing prices, echoing that of 2008.

Yet, the opposite appears to have been the case in advanced economies. Household debt has remained under control, even as house prices have experienced another continued and rapid bout of appreciation. Meanwhile, household debt in emerging economies continues to climb and is now reaching levels similar to those that preceded the global financial crisis in advanced economies. Should we be concerned about these developments, especially in emerging market economies? Is household debt sufficiently contained? What should be done about it?

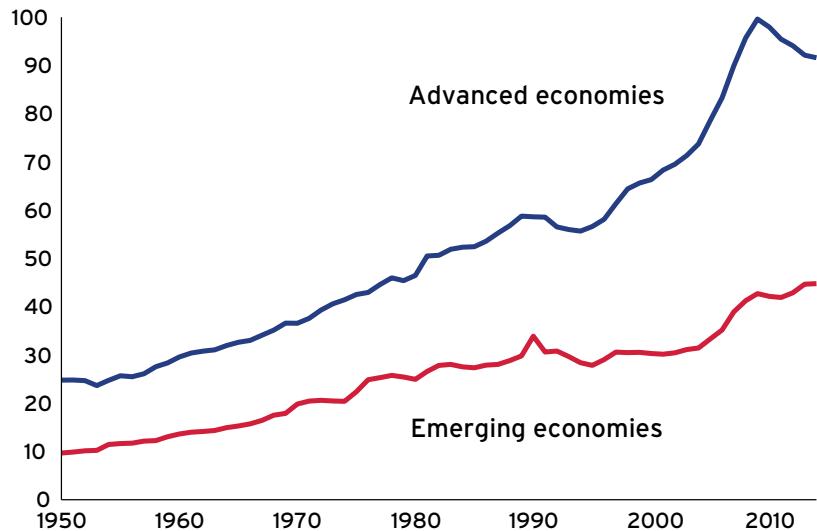
3.1 TRENDS BEFORE COVID-19: ADVANCED VERSUS EMERGING ECONOMIES

Almost every category of debt has been gradually increasing since World War II and household debt is no exception. However, we should be careful in distinguishing the expansion of debt between advanced versus emerging economies. Recent research by Müller and Verner (2021) shows that, for many decades, emerging economies had seen a much more moderate expansion of private (business + household) debt. In fact, the global financial crisis started primarily as an advanced economy crisis, and most emerging economies had not experienced the same run-ups in household debt or similar increases in house prices. It might be said that they ended up as innocent bystanders during a time of financial excesses in the advanced economies. This can be seen in Figure 20, which reproduces Figure 1 in Müller and Verner (2021). The figure shows a nearly 60 percentage point gap in the 2000s between private debt-to-GDP ratios in advanced versus emerging economies.

¹⁹ See, for example, Mian and Sufi (2010) and Jordà et al. (2015a; 2015b).

FIGURE 20 PRIVATE DEBT EXPANDED MORE QUICKLY IN ADVANCED ECONOMIES BEFORE 2008

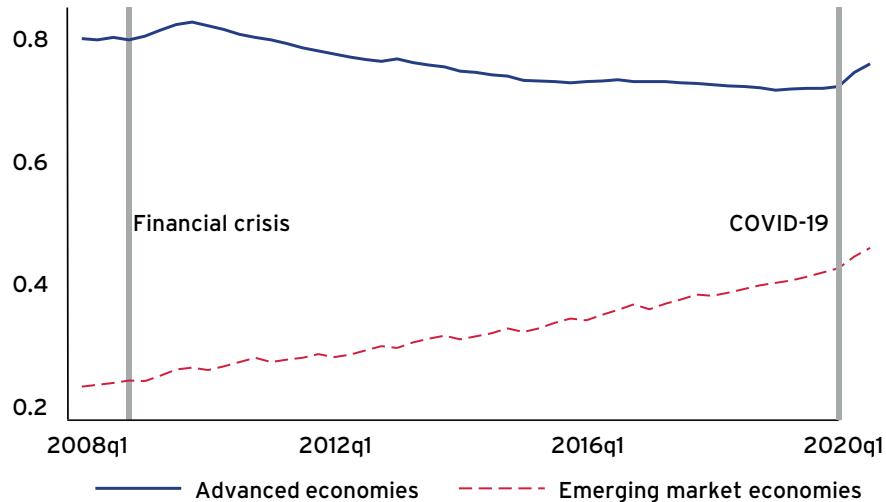
Private credit (% of GDP)



Notes: Reproduces Figure 1 in Müller and Verner (2021). See their paper for further details.

FIGURE 21 HOUSEHOLDS IN EMERGING ECONOMIES HAVE CONTINUED TO LEVER UP

Household debt-to-GDP ratio using PPP exchange rates



Data source: Bank for International Settlements.

However, as Figure 21 shows, the post-global financial crisis trends in household debt in advanced and emerging economies have diverged quite significantly, and in disquieting fashion. Whereas household debt in the advanced economies has moderated considerably and is now below the level it reached in the global financial crisis, household debt in emerging economies has continued to trend upwards and for some it now sits at levels similar to those seen in advanced economies on the eve of the financial crisis. This is potentially a source of concern as emerging economies do not generally have the same fiscal space to deal with financial crises.

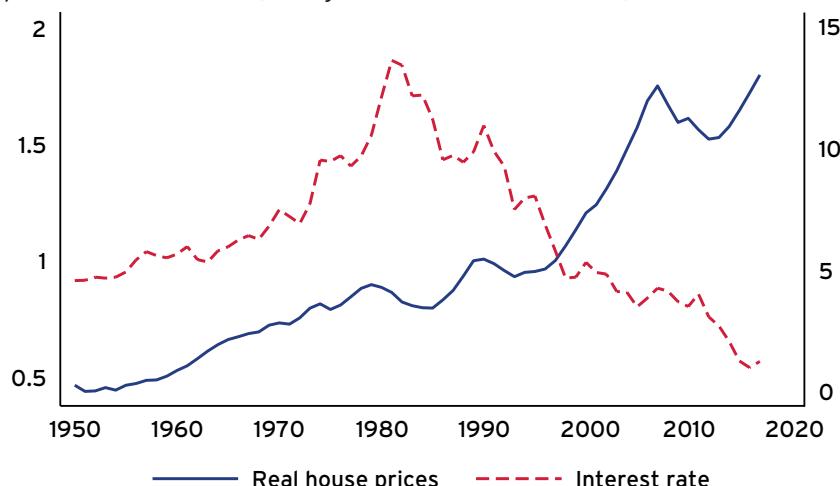
3.2 HOUSEHOLD DEBT, HOUSE PRICES AND INTEREST RATES

If one were to draw a trendline using real house prices from 1950 to 2000, the house price appreciation that afflicted the vast majority of advanced economies in the run-up to the global financial crisis would be of the order of 30–40% by the most conservative estimates.

This much is clear from Figure 22, which displays real house prices (that is, adjusted for the effects of consumer price inflation) along with nominal interest rates on government securities (5–10 years in maturity) for the average of the same 18 advanced economies displayed in Figure 1 in the introduction. The divergence is most clear after 1980, when the large run-up in real house prices coincides with a decline in nominal interest rates. The same goes for real interest rates.

FIGURE 22 CHANGING CORRELATION BETWEEN REAL HOUSE PRICES AND LONG-TERM INTEREST RATES

House prices and interest rates (average for 18 advanced economies)



Notes: Real house price index (adjusted for consumer price inflation) versus nominal interest rates on government debt (usually 5–10 years maturity). Average over 18 advanced economies (see footnote 1). Data described in more detail in Jordà et al. (2017).

The 1980s therefore represent a before and after demarcation line. Following World War II and up to the 1980s, house prices and interest rates moved together in advanced economies. This is what one would expect as levels of borrowing increase. More demand for loans should make interest rates go up, all things equal. But just as house prices began their most meteoric rise, interest rates began a secular decline.

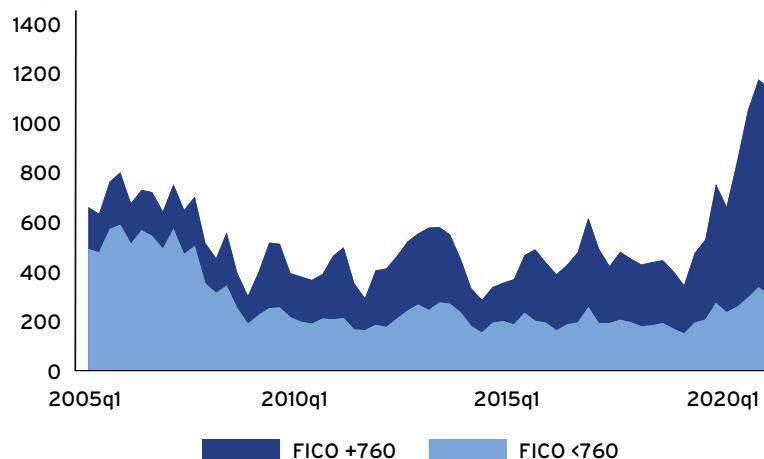
Clearly, then, not all things are equal, as we saw in the introduction to this report. Other forces are driving interest rates down. Moreover, Mian et al. (2021) argue that high levels of debt paired with further declines in interest rates may be creating their own negative feedback loop that is keeping the economy in a highly indebted, yet stagnated state. House prices did decline somewhat in the aftermath of the global financial crisis – not surprisingly – but they have since experienced another boom at a time when nominal interest rates are hovering just above zero and real rates are negative in advanced economies.

Are we therefore headed for another financial crisis? Have we not learned the lessons from the previous financial crisis? Has Covid-19 put further stress on the financial system? Surprisingly, the answers to these questions appear to be no, no and no – at least for now, and for advanced economies. Household debt levels have moderated considerably and the quality of borrowers has improved markedly.

Figure 23 illustrates this point by showing, for the United States, the credit score (also known as FICO score) associated with new mortgage originations. A score above 760 is reserved for the very best borrowers. In the run-up to the global financial crisis, most mortgage origination went to riskier borrowers. This situation has since reversed, as banks have applied far more stringent lending standards by choice and also to comply with regulation introduced since the crisis.

FIGURE 23 NEW MORTGAGES ARE NOW MOSTLY ISSUED TO THE LEAST RISKY BORROWERS

Mortgage origination by credit score (billions of US dollars)



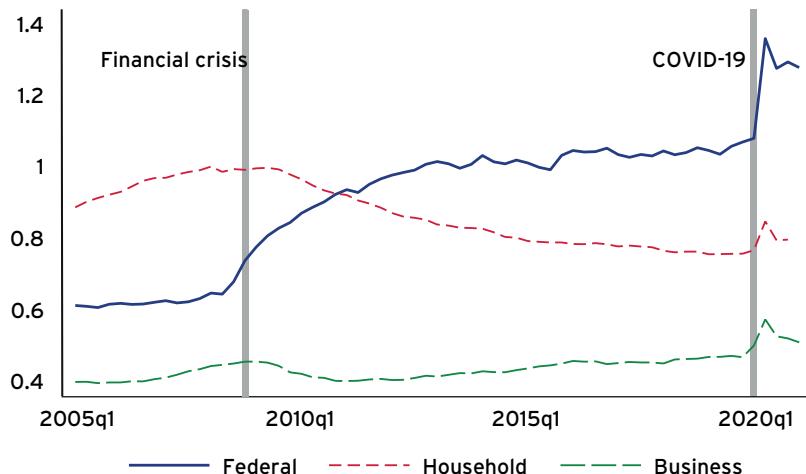
Notes: A FICO score above 760 is reserved for the very best borrowers, the maximum score is usually in the low 800s. Scores below 760 are for riskier borrowers. The riskiest have scores below 700.

3.3 Household debt and interest rates in the pandemic era

To make sense of house prices and interest rates, and the possible burdens that household debt places on the economy, it is helpful to zoom in on the past 15 years, using the United States as an example. Figure 24 displays the ratio of public (federal), business and household debt up to the most recent quarter of available data. Several interesting patterns are worth discussing.

FIGURE 24 PUBLIC DEBT HAS EXPANDED AS HOUSEHOLD DEBT HAS RETRENCHED AND BUSINESS DEBT HAS INCREASED MODERATELY

US federal, business and household debt (as a ratio to GDP)



Notes: US data from the first quarter of 2005 to the first quarter of 2021.

The most dramatic trend is in public (i.e., US federal) debt. Although this category excludes state and local debt, these components tend to be relatively marginal in comparison. In the years leading up to the global financial crisis, public debt had hovered around 60% of GDP. The response to the financial crisis required considerable resources, as tax revenues dwindled and government spending ballooned during the downturn. At the same time, of course, GDP was declining dramatically and, in fact, has not yet reached the trendline growth before the crisis. Not surprisingly, then, the public debt burden jumped by about 40 percentage points from 2007 to 2019, hovering at around 100% of GDP just before the Covid-19 pandemic struck. The pandemic response has resulted in an additional 20–25 percentage point increase in US public debt, which now stands at around 130% of GDP.

Next, we consider the evolution of household debt during the same period. The painful deleveraging following the global financial crisis resulted in a 20 percentage point *decline* in the ratio of household debt to GDP, which was all the more impressive since early on GDP dropped quite dramatically. The Covid-19 pandemic has resulted in a relatively modest notch up in the ratio, which has to do more with the decline in GDP than in any additional leveraging by households.

Finally, corporate (business) debt remained quite stable even in the aftermath of the global financial crisis and has only picked up in the past five years or so, but along the lines of the trend rate of growth seen before the financial crisis. Even allowing for the fact that the increase has been considerable (from about 40% of GDP to about 50% today), for reasons that we discuss in Chapter 4, we do not think this run-up in business debt presents a risk to the financial system or to the economy as a whole, at least in the United States or in other advanced economies.

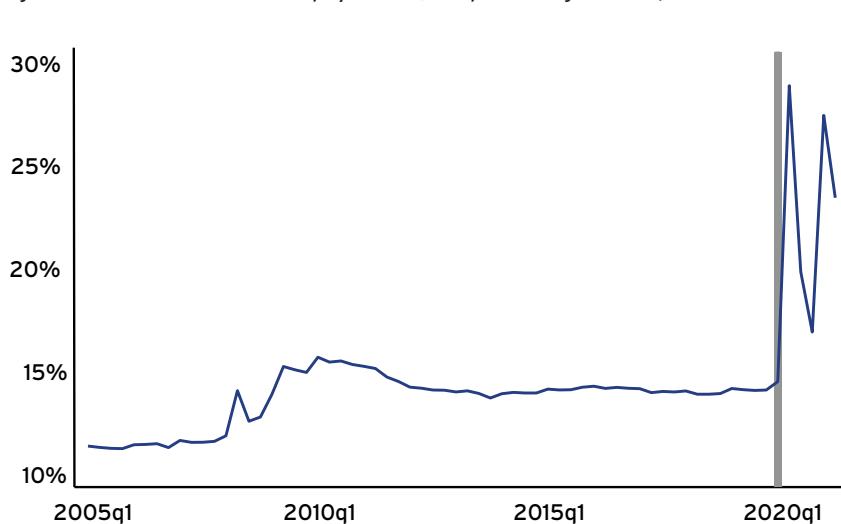
3.4 DEBT SERVICE BURDENS IN THE PANDEMIC ERA

Not only have banks tightened lending standards so that new lending has gone primarily to the least risky borrowers (and those least affected by the pandemic, since they have been able to work remotely); governments, to varying degrees depending on their fiscal space, have also acted aggressively to make up for the lost income due to Covid lockdowns.

As an example, consider the United States again. Figure 25 shows federal government current transfer payments as a ratio to GDP. In order to avoid normalising to a large decline in GDP during the pandemic (and hence making transfers seem larger), we normalise to GDP in the fourth quarter of 2019. Even with this crude correction, it is clear that the fiscal effort was considerable. Transfers had been stable at just below 15% in the years leading up to the pandemic, but the two major stimulus programmes (first in 2020 during the Trump administration and again in 2021 under the Biden administration) resulted in a sustained jump, with a peak near 30% of GDP.

FIGURE 25 THE FISCAL EFFORT DURING THE PANDEMIC WAS QUITE LARGE

Federal government current transfer payments (as a percentage of GDP, normalised to 2019Q4 GDP)



In addition, central banks aggressively eased financial conditions, keeping their policy interest rates low and resuming QE (i.e., asset purchase) policies. Covid-19 did not result in an increase in the overall debt burden faced by households (though with stark differences across different demographic groups). This is clearly illustrated in Figure 26.

Figure 26 shows the household debt service burden relative to personal disposable income (essentially a measure of the income households receive net of taxes). That burden had been as high as 13% of disposable income before the global financial crisis. Gradual deleveraging brought it down to around 10%, where it stood on the eve of the Covid-19 pandemic. Substantial transfers from the government to individuals have relieved household debt burdens (as shown in Figure 25), which are, if anything, even lower than before the pandemic started. Figure 27 shows that similar patterns are visible for other advanced economies.

That said, once again we have to be careful to highlight the heterogeneity that exists within advanced economies and between advanced and emerging economies. Though the debt burden has also declined in emerging economies, as Figure 27 shows, they started from very different levels of debt, as we saw in Figure 21. Recall that this earlier figure showed the household debt-to-GDP ratio (adjusted by purchasing power parity, or PPP) for advanced and emerging economies using data from BIS.

FIGURE 26 THE INTEREST RATE BURDEN ON HOUSEHOLDS HAS BEEN MODERATE

Household debt service (as a ratio to disposable income)

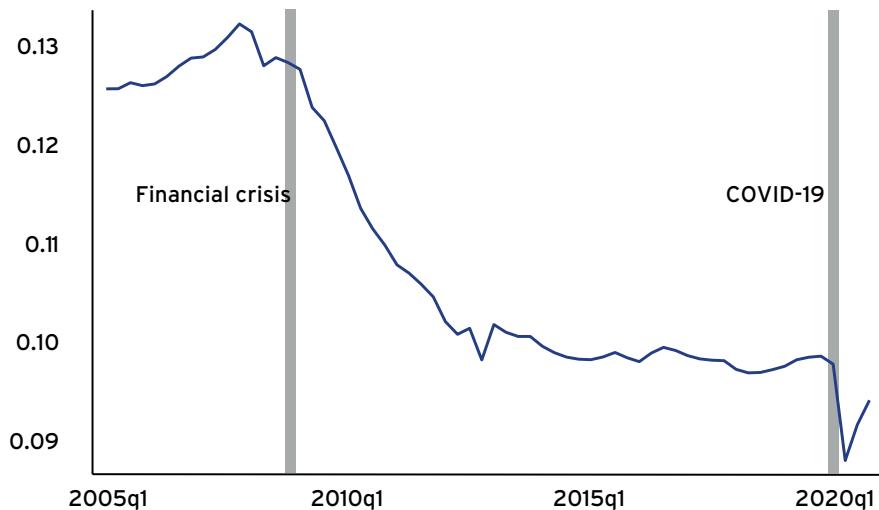
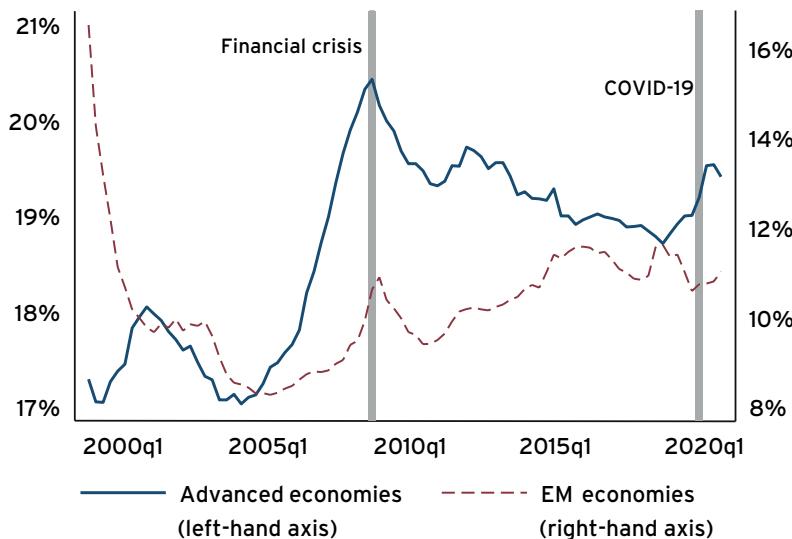


FIGURE 27 DEBT BURDENS HAVE DECLINED FOR ADVANCED ECONOMIES TOO

Household debt service: Advanced versus emerging market economies (as a percentage of disposable income)



The process of deleveraging following the global financial crisis was evident for advanced economies, along the lines of the process experienced in the United States and displayed in Figure 26. However, as anticipated earlier, emerging economies had much lower levels of household leverage (less than 25% of GDP) and were not affected by the global financial crisis to the same extent. Worryingly, emerging economies now have about the same levels of leverage as advanced economies had in 2001, just a few years away from the financial crisis, with household debt now standing at 50% of GDP. The next section evaluates the risks and possible policy alternatives.

3.5 THE RISKS OF HIGH LEVELS OF HOUSEHOLD DEBT

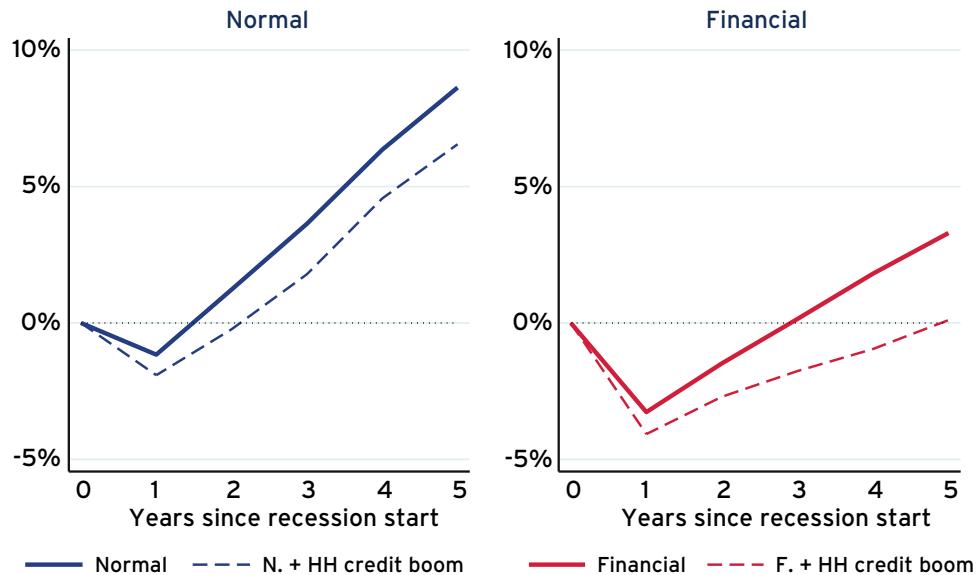
Financial crises are nearly impossible to predict. There is one variable that correlates well with the likelihood of a financial crisis, however, and that is household/mortgage debt booms (e.g., Mian and Sufi, 2009; Schularick and Taylor, 2012; Jordà et al., 2013, 2016b; Mian et al., 2017). Household debt booms predict financial recessions relatively well. In a post-World War II sample, you could predict about 60% of such recessions correctly (true positives) in the sample of 18 advanced economies used in Figure 1, and would only make mistakes (false positives) about 25% of the time.²⁰ Clearly, not all household debt booms end in a crisis, but many of them do.

20 Technically, the area under the receiver operating curve, or AUC, is approximately 0.75. The AUC is a statistic common in medical testing and ranges from 0.5 to 1, with 1 being perfect classification ability.

However, even when household debt booms do not end up in a crisis, they still have measurable effects on the business cycle. In fact, Jordà et al. (2016b) show that household credit booms make recessions deeper and longer-lasting even if they do not turn into a financial crisis. One way to appreciate this result is with Figure 28. The figure displays two charts based on the 18 advanced economies we have used previously over the post-World War II sample. The chart labelled “Normal” displays (i) the typical path of a normal recession (solid line), and (ii) the path of a normal recession when household debt has expanded at a rate that is two standard deviations above the historical mean (dashed). The chart labelled “Financial” presents the same two scenarios for a recession associated with a financial crisis.

FIGURE 28 HOUSEHOLD CREDIT BOOMS MAKE RECESSIONS WORSE, ESPECIALLY FINANCIAL RECESSIONS

Household credit booms and the recession path



Notes: Recession paths calculated using real GDP per capita and comparing its changes to the start of the recession. Financial recessions are recessions where a financial crisis occurs within a 2-year window.

Source: www.macromhistory.net/database.

What are the lessons from Figure 28? Let's start with normal recessions. In a typical recession, as the left-hand panel shows, real GDP per capita (to normalise across the 18 economies) declines in year 1 by about 1%, about 6 months later it has recovered to the level it had entering the recession, and thereafter the economy continues to grow on trend. When the same recession follows a household debt boom, the recovery is delayed by six months and, by year 5, output is nearly 2 percentage points lower than it would have been.

A household credit boom makes it more probable that the economy will experience a financial crisis recession. And the more credit builds up, the more severe it will be. The “Financial” chart in Figure 28 makes this point clearly. Financial crisis recessions are deeper and longer-lasting than typical recessions. Compare the initial drop in year 1, which is more than two times larger. And the recovery to the level before the recession is slower too – about three years. A household credit boom before the recession aggravates matters dramatically, with the recovery to the level before the recession arriving about five years later. Five years after the crisis, real GDP per capita is about 3 percentage points lower than it would have been if credit had not built up as much, and a whopping 8 percentage points lower when compared to a typical recession at usual levels of debt accumulation.

3.6 POLICY OPTIONS

When it comes to household debt, the previous sections paint very different pictures for advanced and emerging economies. In advanced economies, leverage came down following the global financial crisis and the Covid-19 pandemic has not materially altered this state of affairs. Though house prices are quite frothy, the risk profile of new debt is clearly tilted toward the safest borrowers. Banks are very cautious in choosing to whom they lend. Moreover, with interest rates at historic lows, the debt service burden on borrowers has declined considerably since the eve of the global financial crisis.

Meanwhile, though emerging economies had relatively low levels of debt before the global financial crisis, leverage has been building up year after year so that today they look more like the advanced economies looked right before the financial crisis. Except, of course, the fiscal space available to emerging economies, typically smaller to begin with, has been reduced by policies adopted to mitigate the economic consequences of the Covid-19 pandemic. These economies can potentially threaten the stability of the world’s financial system – though since they represent a considerably smaller share of overall global borrowing, their global impact is more likely to be contained.

What should be done about all this? The easy temptation is to engage in a host of financial austerity measures designed to rein in household debt. It is always dangerous to dispense general advice on economies that present quite different macroeconomic conditions; the devil truly is in the details. However, there are some general lessons to keep in mind that apply broadly.

A natural tool to control the surge of household debt in emerging economies is raising interest rates. Higher interest rates should dissuade new borrowers. However, increasing the interest rate raises the interest burden for existing borrowers. Since the stock of debt is generally much larger than new borrowing, this can result in significant economic drag. As a result, tightening financial conditions might risk tipping the economy into recession or even a financial crisis, an argument recently made by Schularick et al. (2021). They provide empirical evidence precisely on this channel and quantify the financial risks

of interest rate policy being deployed to try to bring down leverage. Given that many economies are still depressed by the Covid-19 pandemic, this risk is even more relevant. To paraphrase Keynes, the boom, not the bust, is the right time for financial austerity. The instinct to act pre-emptively using monetary policy may end up causing more harm than good.

Of course, central banks have other tools. Since the global financial crisis, there has been a surge in research on macroprudential policies designed to manage financial fragility from bank leverage such as raising capital requirements, raising loan-to-value ratios, direct interventions in specific markets and other similar tools meant to decelerate the creation of new credit. These macroprudential tools can moderate further build-up of leverage. Alongside them, judicious use of fiscal policy can smooth the recovery from Covid-19 and reduce financial instability further by supporting economic conditions.

Finally, recent research by Mian et al. (2021) suggests that, given current levels of debt and the accumulation of savings by wealthier individuals relative to the dissaving of the poor, policies designed to tweak monetary conditions are likely to fail. They argue instead for using a variety of fiscal policy tools with the goal of redistributing excess saving by wealthier individuals to more productive uses.

In summary, household debt is elevated and is a key driver of financial stability. However, current conditions in advanced economies appear relatively benign. Because debt markets in advanced economies dwarf those of emerging economies, the risks to the global financial system appear to be well contained in this respect at this time. That said, conditions in emerging markets are more worrying. Household debt has been increasing rapidly at a time when public finances are stressed. Should these countries face a financial crisis, their lack of fiscal space might make the recovery more painful and longer.

CHAPTER 4

Corporate debt

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The Covid pandemic hit the world economy after a decade of rapid corporate debt growth. Companies in many countries had taken advantage of a low interest rate environment to borrow from bond markets and banks. The Covid shock has exacerbated these trends in two important ways. First, earnings collapsed due to the effects of the pandemic, putting debt service capacity at risk. Accelerated structural change due to the pandemic could lead to bigger problems in sectors most severely affected, such as bricks-and-mortar retailing and commercial real estate. Second, large government liquidity life-lines – though welcome – have increased companies' debt liabilities, even if at favourable terms for the borrowers. As a result, corporate debt-to-GDP levels have increased by about 15 percentage points relative to GDP in emerging markets and by about 10 percentage points in advanced economies during the pandemic, on top of a similar increase since 2010. Corporate debt-to-GDP ratios now stand at a historical high in many countries.

Time-tested indicators of exuberance in corporate lending markets, such as the share of high-yield bond issuance, covenant-lite lending and issuance of collateralised loan obligations (CLOs), were all flashing red at some point in recent years. Moreover, while quantities of credit were rising fast, the price of corporate credit risk in financial markets fell substantially. Lower credit spreads despite higher volumes and lighter covenants signalled to many that a supply-driven corporate credit boom had taken hold that could end badly and make a future downturn much more severe (Wiltjer and Haunss, 2019).

After this decade-long debt boom, many observers now ask whether corporate balance sheets have deteriorated so much in the pandemic that corporate debt overhang and zombification will become a millstone for the recovery, similar to the effects that household debt had after the global financial crisis. Another historical analogy is also often invoked: Japan in the 1990s and early 2000s. When the Japanese real estate bubble burst, companies and banks were left with significant exposure to the collapsed real estate market. Evergreening of loans secured against these assets became a widespread phenomenon, undermining the restructuring of the Japanese business sector, with negative effects on productivity growth (Caballero et al., 2008).

This chapter discusses the debt situation in the corporate sector and the implications for the real economy and the recovery from the Covid-19 pandemic. Overall, our message is that fears about a wholesale zombification of economies and major debt overhang are likely overblown. On a macro level, there is little evidence that corporate debt overhang has first-order effects on business cycles.

There are three caveats to this borderline Panglossian view that we will discuss as well. First, debt restructuring regimes and bankruptcy codes can function reasonably smoothly and encourage swift reorganisation of corporate balance sheets (Jordà et al., 2020). Second, not all corporate credit booms are alike, and the composition of the corporate debt boom matters, as recent research by Müller and Verner (2021) has shown. Non-tradable sector debt is associated with macroeconomic boom-and-bust dynamics akin to household debt booms. Third, a latent risk factor is that, in bank-based financial systems, weakly capitalised or weakly supervised banks have incentives to avoid losses and evergreen bad loans in the hope of a future recovery of asset values or an improvement in the financial position of the borrower. ‘Extend and pretend’ policies leading to ‘zombie lending’ were arguably a major impediment to Japan’s recovery from the crisis in the 1990s (Caballero et al., 2008). Evidence of zombie lending has also been uncovered in Europe after the global financial crisis (Schivardi et al., 2017; Storz et al., 2017, Andrews and Petroulakis, 2019, Acharya et al., 2020).

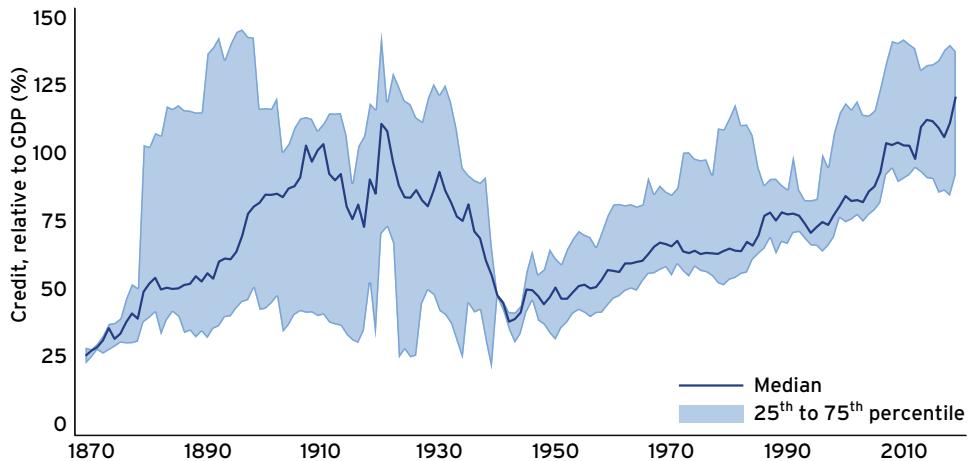
Despite the post-Covid surge in corporate debt ratios, the burden of debt service and overall leverage ratios (debt-to-assets) have not increased meaningfully, largely because interest rates have stayed low and asset prices have remained high through the pandemic. The robust policy response has led to gains in asset valuations, supporting balance sheets throughout the economy. In many European countries, the corporate sector had also sharply increased savings in the decade before the pandemic and balance sheets had regained strength.

Also, the banking sector is in better shape than in Japan in the 1990s and arguably also better than in the aftermath of the global financial crisis. Banks have more capital allowing them to realise losses. Bankruptcy reforms have progressed in some countries and make an efficient reorganisation of debt easier wherever necessary. As for fears that accommodative policy and ultra-low interest rates will prevent restructuring and lead to zombification, such fears have to be balanced against the effects of demand growth on firm creation and growth. Recent advances in the literature on firm and productivity growth suggest that demand factors are crucial for firm growth and productivity trends (Ignaszak and Sedlacek, 2021). We therefore classify corporate debt as a risk to watch, but we stop short of sounding the alarm bells.

4.1 TRENDS IN CORPORATE DEBT

Figure 29 shows the evolution of business credit from a long-term perspective (1870 to 2018). The figure plots the cross-country median and the inter-quartile-range of business credit relative to GDP for a sample of 16 advanced economies. Historically, business credit has ranged between 50% and 100% of GDP for most advanced countries. The series trends upwards in the lead-up to World War I before entering a period of high volatility in the interwar years, followed by a sharp reduction in the 1930s. This turned around after World War II and business credit has doubled from about 50% to 100% of GDP today.

FIGURE 29 BUSINESS DEBT SINCE 1870 IN ADVANCED ECONOMIES

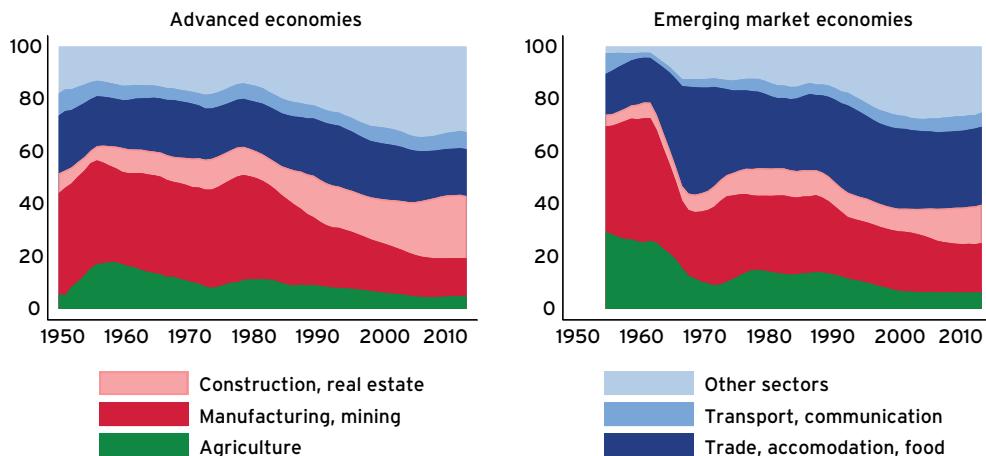


Source: Jordà et al. (2020).

On this measure, several countries are currently at their highest level in the past 150 years, albeit not far off the levels observed at previous peaks before World War II. Relative to other indicators of economy-wide credit, the business sector has not increased borrowing in a massive way, and has even become a net lender to other sectors in the economy in various countries. Moreover, as the earnings share in GDP of listed firms has increased in recent decades (Kuvshinov and Zimmermann, 2020), the corporate debt increase would appear even less pronounced when scaled by earnings.

Long-run sectoral trends in corporate debt are marked by a fall in the share of manufacturing and a rise of real estate and construction lending, as the recent work by Müller and Verner (2021) has shown. Figure 30 shows that other sectors, predominantly services, have also increased in importance. In emerging markets, mining and manufacturing account for a larger share of overall corporate debt, making this share of lending more sensitive to commodity prices, whereas corporate borrowing in advanced economies is more dependent on the state of the commercial real estate cycle. In the United States, about 80% of corporate lending is cashflow-based and only 20% is asset-based (Lian and Ma, 2021).

FIGURE 30 SECTORAL SHARE IN CORPORATE CREDIT



Source: Müller and Verner (2021).

In the last two decades, corporate debt has risen in the BIS reporting countries, albeit with important differences across countries. The overall increase in the ratio of corporate debt over GDP since the financial crisis amounts to approximately 20 percentage points in advanced economies and a whopping 80 percentage points in emerging markets. The Covid-19 pandemic accounts for about 15 to 20 percentage points of the increase as GDP has dropped and companies in many economies have drawn on pre-existing credit lines or tapped into government liquidity facilities. Figure 31 shows trends for emerging and advanced economies, as well as for the United States and the euro area. As can be seen, corporate debt has been stable or falling in the advanced European economies but increasing in the United States after the deleveraging following the 2008 crisis. The increase in the ratio during the pandemic has been driven by the GDP drop and additional debt.

There is substantial cross-country heterogeneity, as seen in Figure 32. First, within advanced economies, corporate debt levels have risen much more strongly in the United States than in Europe and Japan. In many European countries, the corporate sector has deleveraged in the decade since the global financial crisis. In the United States, companies have made more use of the low interest rate environment to leverage up after an initial deleveraging following the financial crisis.

FIGURE 31 CORPORATE DEBT-TO-GDP RATIOS

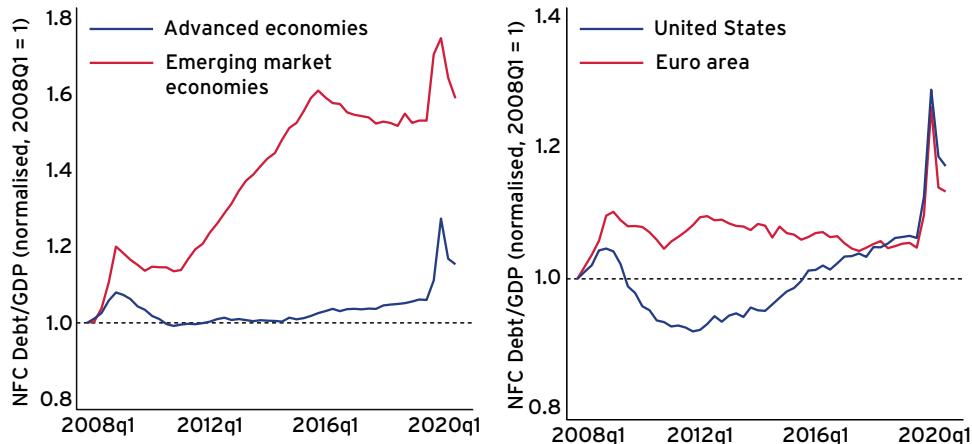


FIGURE 32 CORPORATE DEBT: COUNTRY TRENDS SINCE 2010

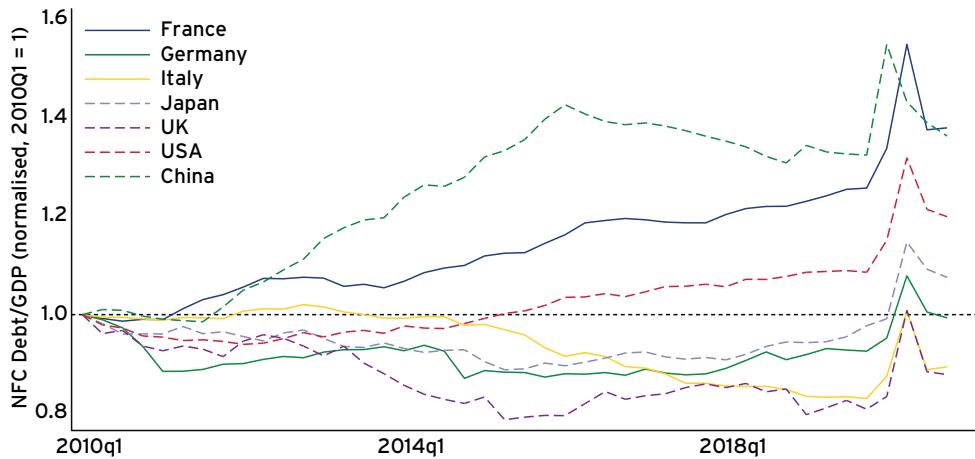
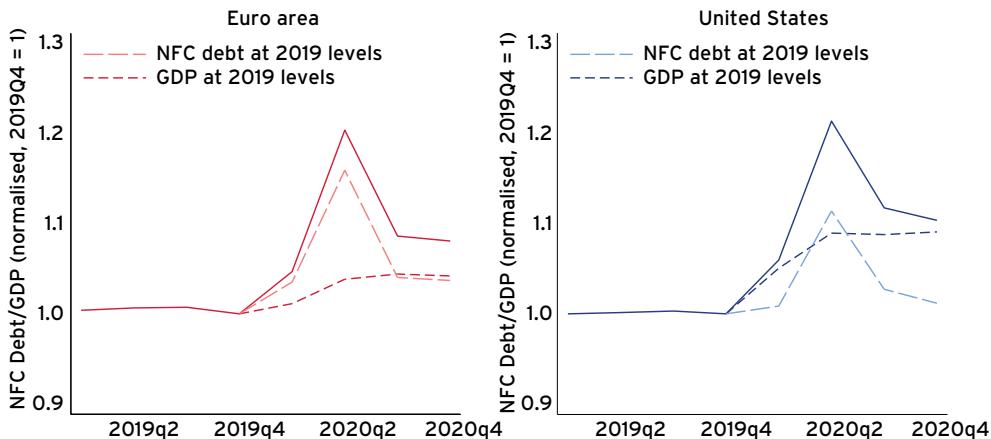


Figure 33 breaks down the rise of corporate debt in the pandemic into two contributing factors: the drop in GDP and the increase in borrowing. As it turns out, a substantial part of the increase in corporate debt ratios was due to GDP effects, especially in the euro area. With the rebound in production and further normalisation, the increase in the debt ratio will turn out to be much smaller. It is important to acknowledge that the Covid shock is different: it hit many viable firms that experienced temporary liquidity squeezes, but that are otherwise healthy (the European tourism sector comes to mind).

FIGURE 33 CORPORATE DEBT IN EUROPE AND THE UNITED STATES

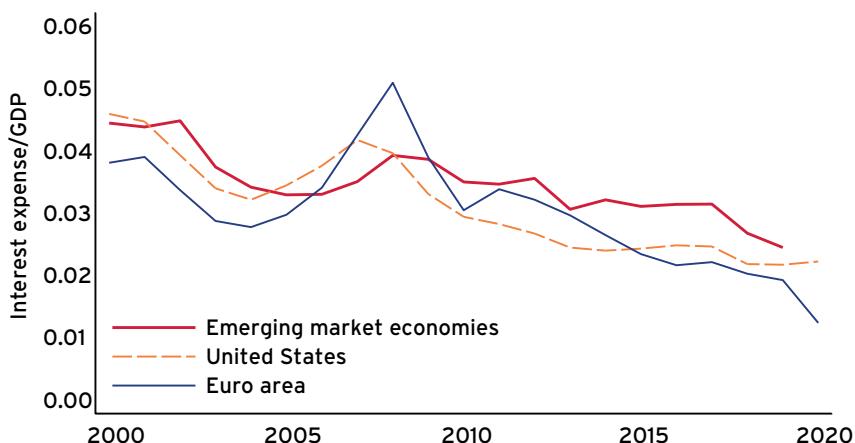


As a consequence, the European corporate debt-to-GDP ratio will be only a few percentage points above pre-pandemic levels when activity normalises. The dynamics are somewhat different in the United States, where the initial GDP drop was less severe so that a larger part of the debt increase was due to higher corporate borrowing. Even after the return to 2019 GDP levels, corporate debt-to-GDP ratios in the United States will remain about 10 percentage points higher than before the pandemic.

By contrast, the increase has been considerably more pronounced in emerging markets, where corporate debt levels have doubled in relation to GDP since 2008. While China accounts for a large share of this increase, similar trends can be observed in Indonesia, Mexico and South Africa, among others. In a different part of this report, we look at the situation in Chinese debt markets and draw separate conclusions.

The increase in debt-to-GDP ratios masks two other important and noteworthy trends. First, as Figure 34 shows, the pricing of corporate debt in secondary markets has not reacted to rising debt levels so that debt service costs have fallen sharply, both in advanced and emerging market economies. Despite the surge in Covid-related debt, the interest coverage measures have greatly improved with falling interest rates, reducing vulnerabilities in the corporate sector (as long as interest rates stay at their current low levels). These developments are reflected in the pricing of corporate debt, where spreads have generally remained low.

FIGURE 34 CORPORATE AND INTEREST SERVICE IN EMERGING MARKET AND ADVANCED ECONOMIES



4.2 CORPORATE DEBT AND THE MACROECONOMY

Should we fear that debt overhang from the pandemic will slow down corporate investment and growth going forward? What is the evidence that corporate debt booms leave traces on the business cycle?

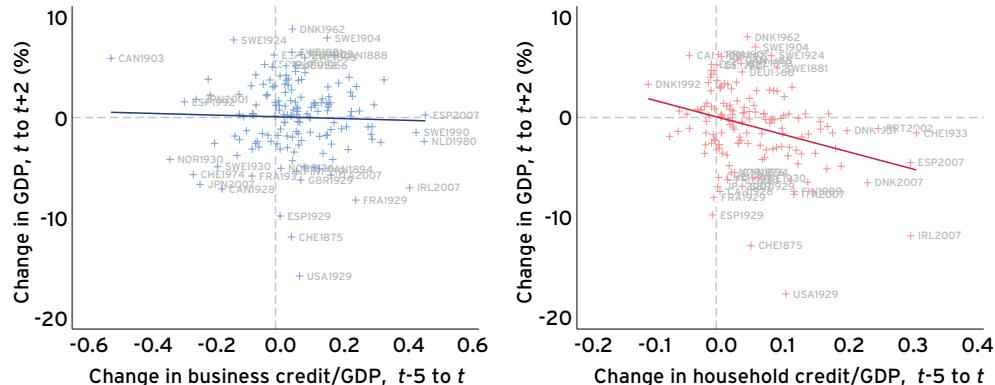
Two historical analogies are often invoked to highlight the risks that debt overhang could pose for the recovery. The first reference point is the experience after the global financial crisis that highlighted the role of household debt overhang and balance sheet repair for aggregate spending and recovery speed (Dynan, 2012; Mian et al., 2013). Since then, research has shown that the aftermath of a household debt boom is often marked by a prolonged recession and slow recovery (Jordà et al., 2013; Mian et al., 2017).

The second example is the Japanese experience in the 1990s. When the Japanese financial bubble burst, corporates were left with significant debt on their balance sheets, often asset-based lending linked to the commercial real estate sector. The debt overhang, slow restructuring of bad debts and ongoing lending to ‘zombie’ companies are seen as important reasons behind the prolonged recession and depressed productivity growth in Japan’s lost decades (Peek and Rosengren, 2005; Caballero et al., 2008).

To address the question, we will turn to the history of modern business cycles. As a way to motivate the question posed in this section, consider the simple correlation between business/household credit booms during the expansion and the severity of the subsequent recession and the speed of the recovery.

Is there a systematic relationship between corporate credit growth in the expansion and the severity of the following recession? The core evidence for 18 advanced economies since 1870 appears in Jordà et al. (2020). In Figure 35, we do this by plotting, for each of more than 150 business cycles in our dataset, two-year GDP per capita log-difference in the first two years of the recession (from peak year t to $t+2$) against the five-year change in business credit relative to GDP in the preceding five years before the peak (from $t-5$ to t).

FIGURE 35 CORPORATE DEBT BOOMS AND RECESSION SEVERITY



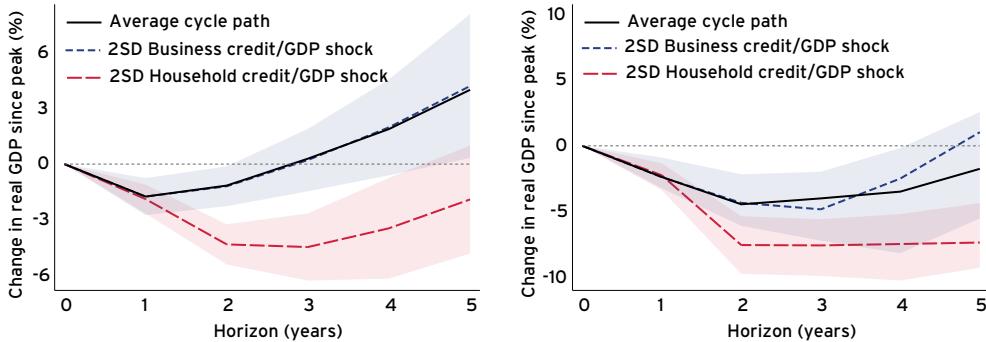
The visual impression from the scatterplot is clear and is also robust to more sophisticated econometric analysis: household credit booms are associated with costly debt overhang, but not run-ups in business debt. Corporate credit booms do not depress growth, nor do they depress aggregate investment. These findings corroborate the results of Mian et al. (2017) from a shorter but broader post-World War II sample.

Although the figure is quite persuasive, it is a rather crude test in at least two respects. First, do we fail to see a relationship because high growth of business credit leads to shallower but longer-lasting recessions? Or perhaps recessions are deeper but with quicker recoveries? Or is it that recessions come in all shapes and sizes that have nothing to do with business credit? Second, we may wonder whether factors other than business credit explain this correlation.

But also, on closer inspection, recent research has not found evidence that the result survives more sophisticated analysis (Jordà et al., 2020). Estimated via local projections (Jordà, 2005), Figure 36 shows the effects of a two standard deviation increase in corporate and household debt on the recession trajectory over a five-year period, controlling for key macro properties of the preceding business cycle expansion. As is visible from the impulse responses, the effects are very different for the two types of debt booms. Corporate debt does not impact the business cycle trajectory, while household debt does. Corporate credit booms do not depress aggregate demand – whether consumption, or more interestingly,

investment. This is in stark contrast to a household credit boom, the effects of which are particularly visible in investment. A possible explanation as to why investment is relatively insensitive to a corporate boom is that firms may shift to other internal sources of financing – i.e., equity instead of debt.

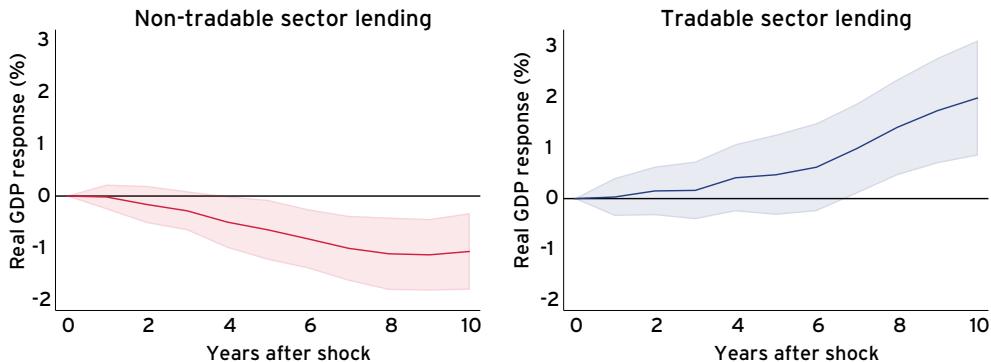
FIGURE 36 CORPORATE DEBT AND RECESSION SEVERITY



Yet another possibility could be that corporate debt has no visible effects at the mean, but it may bring considerable tail risk to the economy. The lower quantiles of the GDP growth distribution may contain potentially extreme losses. Yet, once more, there is little evidence that corporate debt booms make tail outcomes worse. This is shown in the right-hand panel of Figure 36 using quantile local projections. Studying the 20th percentile of bad recession outcomes confirms that household credit makes bad recessions even worse, but not corporate debt.

As mentioned above, there are three important caveats to these findings. First, the sectoral composition of the corporate credit boom matters. Recent research by Müller and Verner (2021) suggests that tradable versus non-tradable credit booms differ in their real economic outcomes, as shown in Figure 37. The higher the share of credit going into the non-tradable sectors (just like household credit), the more problematic the aftermath of a corporate credit boom becomes. Whereas tradable credit booms often lead to growth spurts and productivity increases, non-tradable credit booms predict negative outcomes.

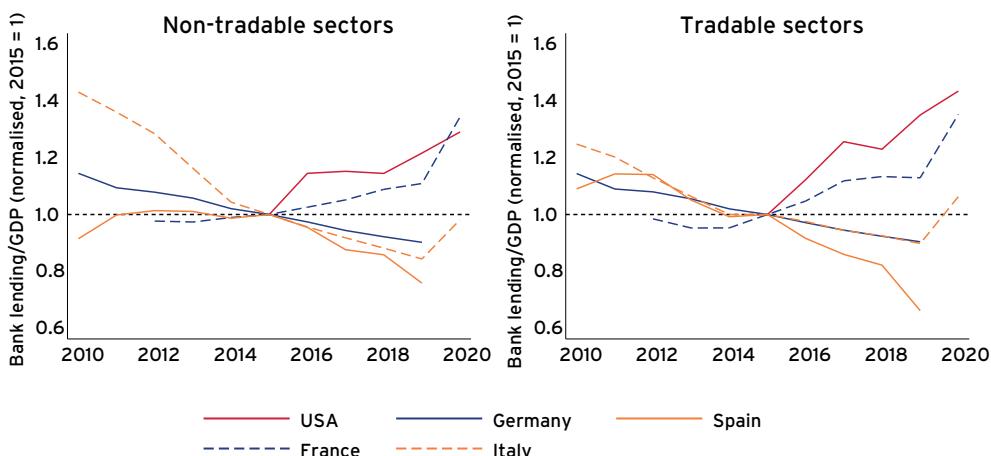
FIGURE 37 THE AFTERMATH OF CORPORATE DEBT BOOMS BY SECTOR



Source: Müller and Verner (2021).

We extend the sectoral credit data of Müller and Verner (2021) for the main economies in the euro area and the United States until end-2020 and group the sectoral lending data into tradable and non-tradable in a similar way. Figure 38 shows the evolution of both types of credit relative to GDP, indexed to 2015. Note that the data cover both bank lending as well as bond issuance by sector from Bloomberg and include (for most countries) the composition in 2020 as well.

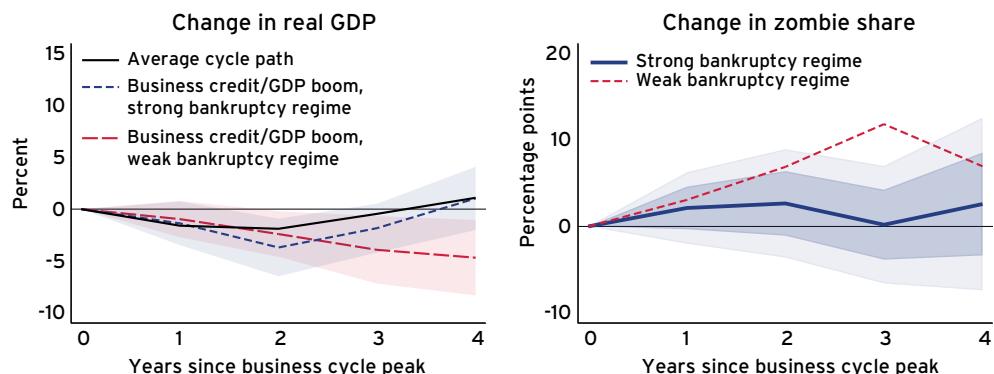
FIGURE 38 GROWTH IN NON-FINANCIAL BUSINESS CREDIT, BY SECTOR AGGREGATE



Overall, the picture is quite reassuring for advanced economies. Among the four big euro area economies – France, Germany, Italy and Spain – only France witnessed a meaningful non-tradable corporate credit boom. But even in the case of France, the tradable credit boom was larger than the non-tradable one before the pandemic. The same is true for the United States, where tradable lending boomed after 2015.

Second, there is evidence that corporate bankruptcy regimes play an important role in determining the economic costs of corporate debt booms. There is wide variation in insolvency regimes across OECD countries. Recent research has uncovered that the aftermath of corporate credit booms varies with the costs of efficient debt resolution. The latter is crucial to prevent debt overhang and zombie firms following a corporate debt boom. The harder it is to restructure debt, the worse the corporate debt overhang becomes. This is shown on the left-hand side of Figure 39. Recessions that follow corporate credit booms become much more severe if the bankruptcy regime is weak. In low-cost, efficient debt-reorganisation regimes, a corporate credit boom leaves no meaningful traces on business cycle dynamics.

FIGURE 39 THE MACRO-EFFECTS OF CORPORATE CREDIT BOOMS BY BANKRUPTCY REGIME



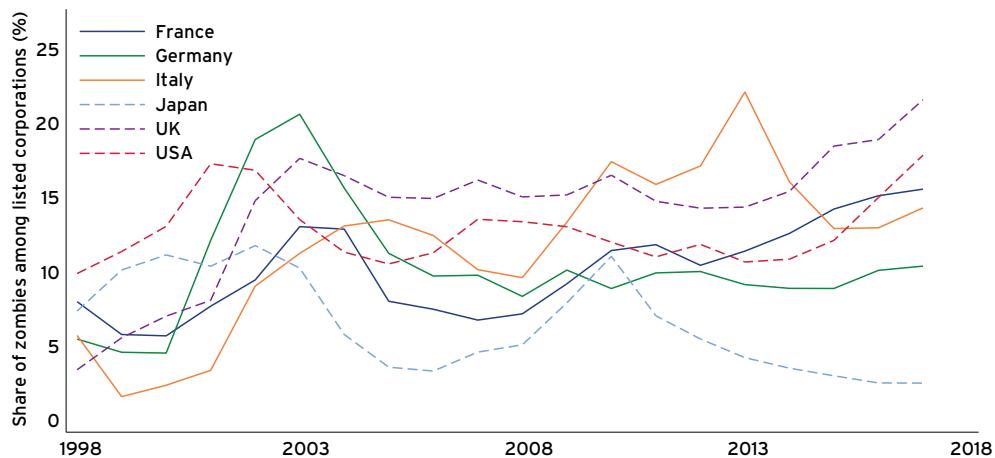
Similarly, liquidation and reorganisation regimes with high deadweight costs appear to substantially increase the population of zombie firms, as the right-hand panel of Figure 39 shows. Zombie firms are defined here, as in recent research by Banerjee and Hofmann (2021), as firms that have insufficient earnings to cover interest payments for an extended period.

The upshot of both phenomena is that debt-reorganisation and bankruptcy regimes have important implications for real economic outcomes. An important policy priority in the coming years consists in encouraging corporate debt reorganisation. The implementation of efficient bankruptcy regimes is an important prerequisite to deal with corporate debt problems if and where they exist. Also from a distributional perspective, there is no need to protect typically wealthy creditors and equity holders from a loss of wealth.

A third major caveat to the view that corporate lending booms do not leave major traces on business cycle dynamics has to do with the creation and survival of corporate zombies. Macro evidence exists that suggests that corporate debt booms can turn into a macro problem if such booms are accompanied by slow loss recognition and evergreening of loans. One might call this the Japanese scenario: situations in which an overly indebted corporate sector, instead of reorganising the debt or liquidating the firm, is thrown an artificial lifeline by weak banks that do not want to book the loss (Caballero et al., 2008).

Banerjee and Hofmann (2018) use firm-level data on listed non-financial companies in 14 advanced economies. In their definition, zombie firms are unprofitable firms with an interest coverage ratio below one that also have a low stock market valuation. Following this definition, zombie companies have been on the rise in some countries, especially the United States and the United Kingdom. On a sectoral level, zombies appear to be concentrated in the mining and energy sectors. Figure 40, from Banerjee and Hofmann (2018), also shows that the zombie share has not declined after the initial rise during the global financial crisis, raising fears that the low interest rate environment has allowed unprofitable companies to survive longer than they should.

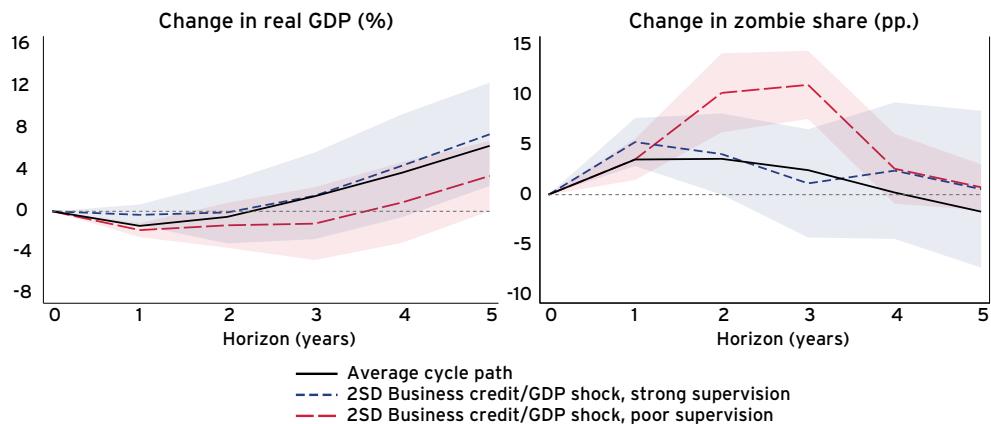
FIGURE 40 CORPORATE ZOMBIE SHARES



Source: Banerjee and Hofmann (2018).

Figure 41 looks at the role of weak banking supervision for zombie creation. For the underlying estimations, we combine an index for the quality of banking supervision from Abiad et al. (2010) with credit and macro data from the Macrohistory Database (Jordà et al., 2017). The local projections display the effects of corporate lending booms in weak and in strong banking supervision regimes on output. The estimates point to sizeable macro after-effects of corporate debt overhang when banks are weakly supervised. Three years after the onset of the recession, the output path in weak supervisory regimes is more than 2 percentage points lower compared to the strong supervisory regime.

FIGURE 41 CORPORATE CREDIT BOOMS, BANK SUPERVISION QUALITY AND ZOMBIES



The panel on the right sheds light on a potential mechanism: the emergence and survival of zombie companies. The share of zombies increases in all recessions as companies suffer losses. In normal recessions, however, the zombie company share peaks after about one year and then declines. The same path can be observed after a large corporate credit expansion, provided that the banking supervisory environment is strong. In a poor supervisory environment, the zombie share continues to rise as loss-making companies do not exit. The peak is reached after three years, matching the much more severe GDP drag in the left-hand panel. These results underscore the importance of banking supervision in reducing the emergence and survival chances of corporate zombies.

In the advanced economies, the persistent doubts about the balance-sheet health of the European banking system are likely the clearest and most prominent threat to a smooth workout of corporate debt and a strong recovery. While the capital position of many European banks has improved, it is not hard to arrive at substantial numbers for a potential capital shortfall under conservative assumptions (Schularick and Steffen, 2020). In this sense, the Covid-pandemic also presents an opportunity to use credible stress tests and precautionary recapitalisation to finally leave behind the spectre of the global financial crisis that haunted the European financial system for a decade and learn the key lessons of the past decade with respect to recapitalisation and growth (Acharya and Steffen, 2020; Jordà et al., 2021a).

4.3 CONCLUSION

Debt overhang problems in the corporate sector are often conjured as key risks for a quick rebound from the Covid-19 pandemic. Recent insights from macro-financial research do not raise alarm bells — at least for advanced economies. The literature makes a clear distinction between the aftermath of household credit booms, which tend to be costly (Jordà et al., 2013; Mian et al., 2017), and corporate credit booms, which are not systematically associated with subpar economic outcomes.

In emerging markets, however, the corporate debt boom has been spectacular over the past decade and the factors that make such booms costly for the real economy often apply to a stronger degree: bankruptcy regimes are inefficient, in some countries — China comes to mind — credit was tilted towards the real estate sector, and banking sector regulation can be less stringent. While fears of a major corporate debt drag on the recovery are likely overblown in advanced economies, it is a clear risk in emerging markets and bears watching.

CHAPTER 5

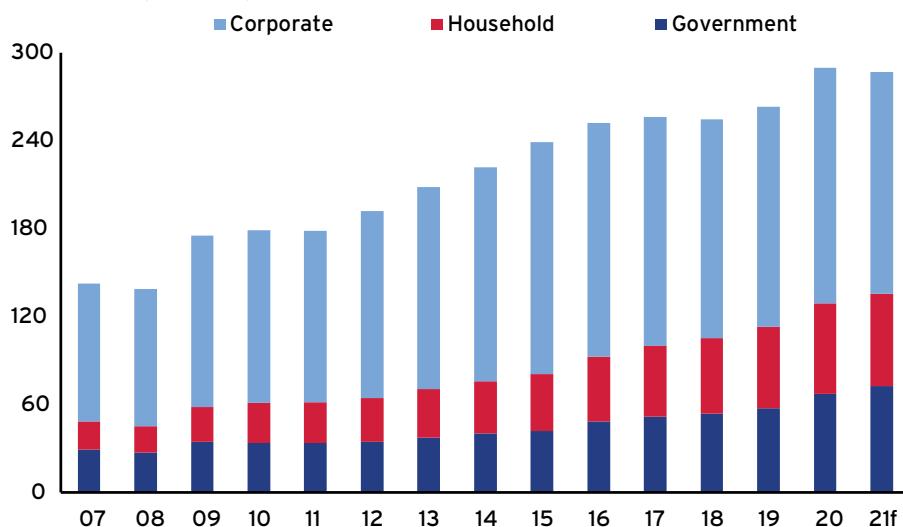
71

China's debt surge: How concerned should we be?

China's debt levels have soared since the global financial crisis, with the total (government, corporate and household) debt-to-GDP ratio reaching 290% in 2020, twice the 2008 level (Figure 42). China's overall debt ratio is thus comparable to that of high-income advanced economies like the United States (296%) and the euro area (292%) and far exceeds debt levels in other major emerging market economies such as India (181%), Brazil (189%), Russia (136.9%) and Indonesia (80%).

FIGURE 42 CHINA'S TOTAL DEBT-TO-GDP RATIO HAS DOUBLED SINCE 2008

Total social debt (% of GDP)



Source: PBOC, NBS, PIMCO.

Both the pace of the increase and the level have been a concern for many international observers, but also within China. In fact, following the post-global financial crisis debt surge, in 2017 the Chinese government adopted a multi-year strategy of credit tightening and controlled restructuring to slow the further build-up of debt. However, in response to a slowing economy in 2019 and the Covid shock in 2020, this 'deleveraging' campaign was temporarily put on hold, leading to double-digit overall credit growth and, together with the slower nominal GDP growth, another sharp rise in debt-to-GDP. More recently,

with the Chinese economy rebounding strongly from the Covid shock, the government's focus appears to have shifted back to deleveraging and overall credit growth slowed significantly during the first half of 2021. The credit tightening campaign has led to acute financial distress in the highly leveraged property sector in September 2021.

China watchers are voicing two types of concerns. First, the government's attempts to control soaring debt may turn out to be half-hearted given other policy priorities such as maintaining growth and financing the transition to a greener economy. If so, another credit boom might develop, leading up to a 'Minsky moment' when boom eventually turns to bust, or so the story goes. Alternatively, the government may (unintentionally) overdo its deleveraging campaign and trigger a system-wide loss of confidence, thus provoking a crisis or a sharp slowdown in growth with negative repercussions for rest of the world.

How concerned should we be about these two scenarios? At the time of writing this report, China's property boom market is quickly turning to bust, snaring several of the largest real estate developers in its wake, including China Evergrande Group, Kasia Group, and China Fortune Land – three of the largest developers in the world. Such is the size of debt obligations coming due – a considerable chunk of which is owed to foreign investors – that, according to the *New York Times* of 10 November 2021, “[t]he stress of Chinese developers is so intense that the United States Federal Reserve flagged it as a potential risk to the American economy in a report this week” (Stevenson and Dong, 2021). As the global financial crisis demonstrated, spillovers from such debt defaults can quickly spread through the financial system, making the inevitable eventual government rescue larger the longer it waits to intervene.

Historical analysis of the consequences of leveraged asset price booms and busts is not reassuring. It is well known that financial crises are difficult to predict, but many tend to be preceded by credit booms (e.g., Schularick and Taylor, 2012). However, where credit is allocated matters. In more recent research by Jordà et al. (2016b), we see that a housing boom financed by credit is even more strongly associated with the probability of a financial crisis, based on a historical sample of 17 advanced economies. Equity bubbles financed with credit do not appear to have any association with financial crises – the dot-com bust was followed by the shallow 2001 recession, for example.

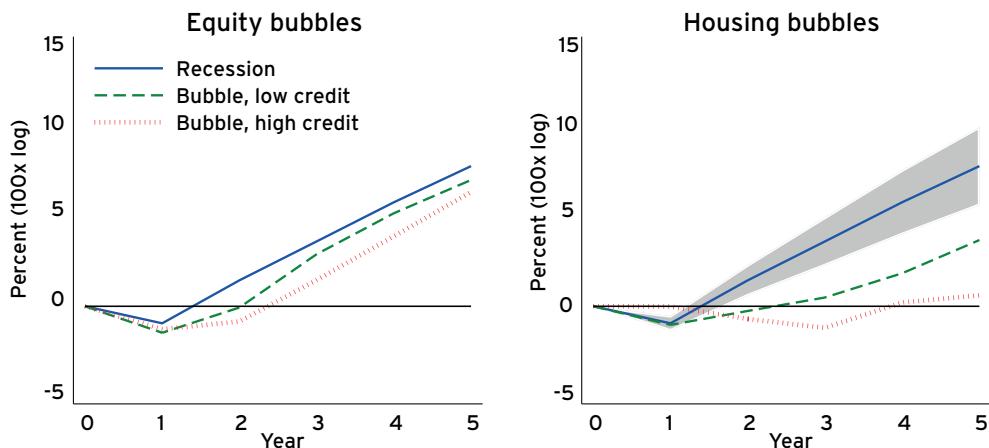
The recoveries from crises induced by leveraged real estate asset price booms tend to be slow and protracted. The path of a financial crisis recession with these characteristics is shown in Figure 43. The figure compares typical recession paths with recession paths coincident with an asset price bubble under two scenarios: (1) one where leading up to the recession credit grew at a rate that surpassed the historical mean (bubble, high-credit

case); versus (2) when credit grew below mean (bubble, low-credit case). In the left-hand panel, we display bubbles in equities; housing bubbles are displayed in the right-hand panel. The analysis of Figure 43 is based on post-World War II data and borrows from Jordà et al. (2015b).²¹

Several lessons can be drawn from Figure 43. First, equity bubbles, even when fuelled by easy credit, tend to be relatively well-contained. Whether leverage is high or low appears to make no difference. The path of the recession is virtually the same as the path of typical recessions.

In contrast, housing bubbles fuelled by credit are dangerous. In a typical recession, output drops by about 1% in the first year and recovery to pre-recession levels takes place in year two, from which point the economy continues to grow. A recession linked to a housing bubble with high credit is very different. Five years after the start of the recession, the economy has barely recovered to its pre-recession levels.

FIGURE 43 RECESSIONS MOST SEVERE WITH HIGH CREDIT HOUSING BUBBLES



One could argue that the defaults spreading through Chinese developers reflect debt problems in the corporate sector and not the household sector. As we saw in Chapter 4, one might presume that as long as defaults such as Evergrande's are properly managed, all should be well and with little effect on the economy. However, recent work by Müller and Verner (2021) suggests that allocation of debt to non-tradeable sectors (such as housing construction) can have much the same consequences as household mortgage booms, as originally shown in Jordà et al. (2015b). How will all these lessons apply to China?

21 More details can be found in the cited paper.

5.1 WHY CHINA'S DEBT IS DIFFERENT

Financial risks in the Chinese financial sector are high. Both corporates and households have leveraged up substantially in the past decade. One way another, China will have to deal with the aftermath of this credit boom. That being said, the risk of an uncontrolled credit boom-to-bust cycle in China remains relatively low, for several reasons.

First, the overwhelming part of China's debt is held by domestic creditors. Put differently, China largely owes to itself. Foreign indebtedness, while rising over past few years, accounts for only 5% of overall debt. This virtually eliminates the risk of a 'sudden stop' by foreign investors, which have caused, or at least contributed to, most emerging market debt crises in the past.

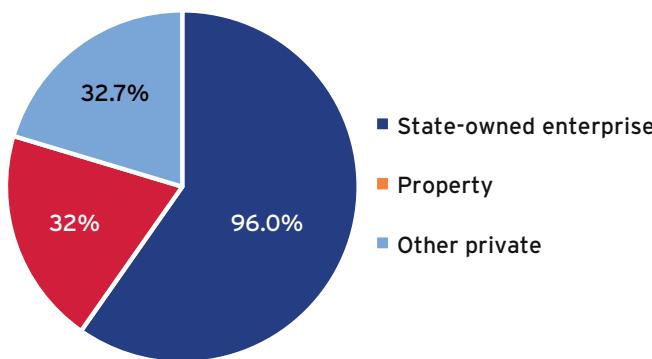
Second, for Chinese domestic investors, there is almost no way out because the capital account remains relatively closed. Thus, the risk of large-scale capital flight by Chinese investors is small and China's high household saving (relative to household income) remains bottled up in the domestic capital market and/or on domestic bank accounts.

Third, much of the debt resides within the (broadly defined) public sector. Estimates suggest that about 60% of the corporate debt is owed by state-owned enterprises (SOEs) (Figure 44). With overall corporate debt (SOEs and privately owned companies) amounting to 160% of GDP, SOE debt is thus close to 100% of GDP. In addition, central government and local government debt together account for close to 70% of GDP. Meanwhile, the lenders to SOEs, highly indebted local governments and quasi-fiscal local government investment vehicles are banks that are directly or indirectly controlled by regulators and hence the government. This implies that 'extend and pretend', controlled defaults and gradual recognition of non-performing loans (NPLs) are the norm, rather than large-scale sudden lending stops. Fourth but not least, apart from being able to directly control and direct bank lending, the Chinese central government has sufficient fiscal space to prevent a systemic credit crisis, if needed. Central government debt amounts to only around 20% of GDP. Also, similar to most advanced economies and in contrast to most emerging market economies, Chinese sovereign debt trades like 'hard duration' (i.e., government bond yields fall during recessions and financial crises), thus allowing the government to borrow more at lower costs. Moreover, the Chinese government has access to the central bank's balance sheet or can instruct the central bank to provide liquidity to the banking system or even engage in direct lending to corporates in need.

Taken together it is important to take into account that there are factors linked to the special nature of China's 'state capitalism' that reduce the risk of a 'hot' financial crisis.

FIGURE 44 STATE-OWNED ENTERPRISES ACCOUNT FOR 60% OF CORPORATE DEBT

Non-financial corporate debt breakdown (% of GDP)



Source: PIMCO.

5.2 DELEVERAGING AND GROWTH

But this does not mean that China will escape the growth costs of unwinding the past credit boom. One risk is an overly harsh tightening of credit conditions by the government as it resumes its deleveraging campaign. Recent events in the property sector give an idea of how complicated an orderly deleveraging can be. Indeed, tightening by just the right amount may be tricky in a \$15 trillion economy that is highly leveraged. However, while an overtightening is certainly possible and has on occasion occurred in the past, leading to episodes of a sharper than expected slowing of growth, Chinese policymakers have the policy tools they need to reverse course and have demonstrated in the past that they are both able and willing to use them at the first signs of slowing growth. Policy mistakes are always possible, but the baseline scenario is that a sharp slowdown in growth would be met with a policy response at some point.

Importantly, recent research also points out that credit booms, especially those in the household and real estate sectors, often have real economic consequences – even if a full-blown financial crisis can be avoided. Jordà et al. (2013) show that ‘credit bites back’ in the sense that the unwinding of credit booms can depress growth for a considerable period. Mian et al. (2017) show that household credit booms predict growth slowdowns even in the absence of ‘hot’ financial crises. Müller and Verner (2021) provide complimentary evidence for the corporate sector. They demonstrate that corporate credit booms that are concentrated in the non-tradables sector, and especially in the real estate sectors, are also often marked by a growth slowdown. Baron et al. (2021) show that large bank equity decline presage credit crunches and large output gaps even without ‘hot’ financial crises. In this light, the 40% decline in the stock price of Bank of China since January 2018 could be a signal of what’s to come in China. In all likelihood, the Chinese economy will not be able to avoid paying a price for the past credit excesses. At this stage, it seems safe to say that the deleveraging pressures will become a headwind for the Chinese economy

going forward. While they can potentially be countered with expansionary fiscal policies, policymakers will have to react appropriately. Whether that response will be forthcoming at the right time, and to what extent the realignment of private sector expectations will still result in a pronounced slowdown, are the central questions for the economic outlook for the world's second largest economy.

5.3 CONCLUSIONS

China's relatively high overall debt level certainly bears close watching. Recent financial stress might prove temporary if the government intervenes to organise an orderly restructuring of real-estate sector debt. However, the potential growth headwinds in the aftermath of a credit-fuelled property boom might well last longer and take time to work out. While an uncontrolled financial crisis does not seem particularly likely to us, the challenges for policymakers have grown substantially in recent months.

The most likely scenario remains a 'soft landing' engineered with the help of 'extend-and-pretend' policies where needed, controlled defaults and NPL recognitions, as well as a gradual redirection of credit from consolidating SOEs to smaller, private-sector firms. Financial repression and independence from fickle capital flows in its various forms should help to keep elevated debt levels manageable. Such policies are not without costs as they contribute to a misallocation of capital if market prices are not allowed to signal scarcities and growth opportunities. Along with ageing demographics, this will likely contribute to a further slowdown in economic growth. Even if a full-blown crisis can be avoided, the challenges for policymakers in the coming years are substantial and the margin for error small. While the high debt level will be kept manageable by various forms of financial repression, the growth headwinds for China have become stronger with the recent financial distress. The 2020s in China will not be roaring.

CHAPTER 6

Higher public debt, higher inflation?

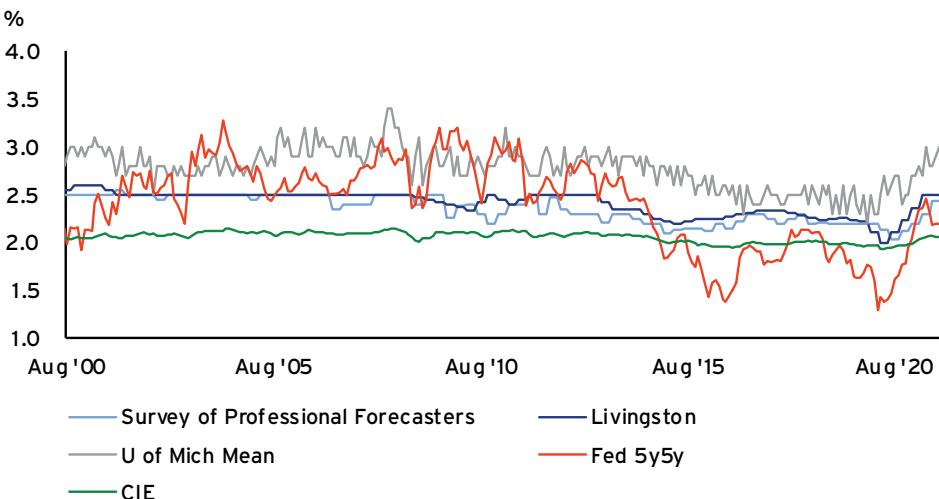
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Many observers worry that the Covid-related surge in government debt in advanced economies documented in the previous sections of this report could usher in an era of persistently higher inflation, especially as it has been accompanied by an expansion of central bank balance sheets due to quantitative easing. The jump in inflation during 2021, while mostly due to Covid-related supply–demand imbalances during the economic restart, has added to such concerns. However, despite this year’s major inflation surprises, long-term inflation expectations have remained anchored so far (Figure 45). Moreover, historically, the low-frequency correlation between central bank balance sheets and inflation is only loosely related to subsequent inflation.

In this section, we discuss the various channels through which a rise in government debt could result in higher inflation and explore whether the fears of debt-driven inflation are justified in the light of both historical experiences and the current and prospective economic and policy environment.

FIGURE 45 INFLATION EXPECTATIONS ARE ANCHORED AROUND TARGET

Long-term inflation expectations from surveys



6.1 EXPECTATIONS PLUS GAPS

To frame the discussion, it is useful to recall the widely accepted description of inflation dynamics as a function of (i) expected inflation and (ii) cyclical pressure. Inflation expectations are a key determinant because, put simply, if everybody expects higher inflation, consumers will bring forward purchases, sellers will be quicker to raise prices and workers will demand and be granted higher wage increases. This is why central banks emphasise the importance of anchoring inflation expectations. If wage- and price-setters expect inflation to be on target, they will behave accordingly and ensure that outcome; if not, central banks are in trouble.

The second factor driving inflation dynamics is cyclical pressure. Rising rates of resource utilisation – think shrinking output gaps and shrinking unemployment gaps – typically raise inflation pressures. Generally, inflation should come back down once the cyclical pressure abates as long as inflation expectations remain anchored. But if not, a price-wage spiral could result, which central banks and/or fiscal policymakers can only reverse at high cost in terms of output and employment losses.

Against this backdrop, in order to analyse how the surge in government debt could result in higher inflation, one has to consider how it may affect these two main drivers of inflation – inflation expectations and cyclical pressure.

6.2 THREE POPULAR INFLATION NARRATIVES

Looking at the current macro debate, there are three distinct, though not mutually exclusive, narratives about how high fiscal deficits and rising debt levels could cause higher inflation.

The first narrative, based on the traditional Phillips curve concept, emphasises the potential for large fiscal stimulus programmes, especially in the United States, to cause an overheating of goods and/or labour markets – the cyclical pressure mentioned above.

A second narrative ascribes an important role to monetary factors in conjunction with government debt dynamics. Proponents of this view highlight the closer monetary-fiscal coordination during the pandemic, the large-scale ‘monetisation’ of government debt and, looking ahead, the risk of fiscal dominance as high debt levels could constrain central banks’ ability or willingness to tighten monetary policy if inflation rises. In this narrative, monetary and fiscal expansion leads to both intensifying cyclical pressure and rising inflation expectations, which jointly push inflation onto a higher trajectory.

A third narrative, based on the fiscal theory of the price level, postulates a more direct link between unsustainable and 'irresponsible' fiscal policies and inflation. If the private sector loses faith in the government's ability or willingness to make up for current budget deficits by running surpluses in the future, private spending will pick up as people no longer expect future tax hikes to pay back the debt, thus creating cyclical pressure. In addition, inflation expectations will also rise because, in the absence of government default, inflation will be seen as the only way to make the debt sustainable.

Each of these narratives deserves closer scrutiny, but before doing so we take a quick look at what, if anything, history can teach us about the link between government debt and inflation.

6.3 LESSONS FROM HISTORY: A STORY OF WAR AND PEACE

Unfortunately, history doesn't provide a clear-cut answer as to whether a surge in government debt in advanced economies will cause higher inflation. While some episodes of sharply higher government debt were indeed accompanied and/or followed by bursts of inflation, some other prominent instances of rising public debt coincided with, and were followed by, low inflation or even mild deflation.

Importantly, the episodes in which inflation followed debt higher typically occurred during or in the aftermath of wars. The most prominent examples include the United States after each of the two World Wars (see the discussion of this episode in Bartsch et al., 2020) and the German hyperinflation of the early 1920s. While expansionary fiscal policies coupled with loose monetary policies clearly played a role, other factors – such as a shortage of labour supply during the wars, a lifting of price controls after World War II and, in the case of Weimar Germany, a destruction of large parts of the capital stock during the war, high reparation payments to the Allies thereafter and a turbulent political climate – contributed to the inflationary outcomes. While some observers have compared the fight against Covid-19 to a war, there has been no comparable destruction of physical capital and loss of labour supply, nor an accumulation of repressed inflation through price controls that, once lifted, could usher in massive increases in the prices of a wide range of goods.

Moreover, there are several notable periods of large increases in government debt during peacetime that did *not* lead to higher inflation; Japan's surge in the debt to-GDP-ratio over the past several decades that was rather accompanied by mild deflation for most of the period is a case in point. Also, despite initial inflation fears, the large increase in US and European debt ratios during the global financial crisis was followed by more than a decade of mostly below-target inflation rates.

More generally, looking at a sample of 18 advanced economies in the post-World War II period, we find 14 episodes when public debt-to-GDP ratios surged by 20 percentage points or more within three years – thus roughly comparable to the Covid-induced jump in debt. In 12 out of these 14 cases, average inflation in the five years following the debt surge turned out to be lower than the previous five-year average. In only two cases did inflation increase relative to the previous five years, but only marginally so and from very low levels.

Conversely, the Great Inflation in the 1970s was preceded by a long-term *decline* in the US debt-to-GDP ratio in the previous two decades rather than an increase. True, expansionary US monetary and fiscal policies in the late 1960s and early 1970s to help finance the Vietnam War likely played a role in overheating the economy, but the main reason for the outbursts of inflation in the mid-1970s and early 1980s were the two oil price shocks that were accommodated by loose monetary policies.

Taken together, these historical episodes suggest that a surge in government debt is neither a necessary nor a sufficient condition for higher inflation.

6.4 EXAMINING THE DEBT-DRIVEN INFLATION NARRATIVES

We now turn to a discussion of the three previously described popular ‘debt-driven inflation’ narratives that feature in the current macro debate.

Peak fiscal stimulus lies behind us

Most governments in the advanced economies reacted swiftly and boldly to the Covid-19 recession in order to cushion the impact on individuals’ and firms’ incomes. Together with the built-in stabilisers, these discretionary increases in transfers and temporary cuts in various taxes led to a sharp widening in budget deficits. While the initial response was uncontroversial, more recently many observers have started to worry that some governments may have been doing too much of a good thing by adding more stimulus, particularly the US administration with the \$1.9 trillion stimulus package that passed Congress last March. In fact, large-scale transfers to households, combined with pent-up demand and excess savings accumulated during the pandemic, contributed to a surge in demand during and after the reopening and, together with Covid-induced supply bottlenecks and sharply higher energy prices, pushed inflation to multi-decade highs.

However, while inflation has far exceeded forecasters’ expectations during 2021, there are several reasons to expect inflation to moderate again in the course of 2022.

First, income support via transfers to households and companies likely has already peaked in most countries as economic activity has been ramping up and many of the support measures (unemployment benefits, furlough schemes, temporary tax cuts, etc.) have expired. Any additional fiscal measures in the United States are likely to be focused on (physical and human) infrastructure investment, with spending spread out over several years. Moreover, this kind of investment, to the extent that it raises potential output over time, should be disinflationary rather than inflationary.

Second, measured by the employment-to-population ratio as well as the gap between actual unemployment and estimates of the natural rate of unemployment, most advanced economies remain far from full employment and likely won't get back there for some time, despite the rebound in growth that is currently underway. The current shortages in parts of the US labour market are likely to be temporary and should be resolved by an increase in labour force participation over time.

Third, even when the economy returns to full employment and cyclical pressures emerge, this will not guarantee significantly stronger wage growth given that the bargaining power of workers has been much reduced over the past several decades due to the growth of the gig economy. Moreover, the pandemic has turbocharged digitalisation and automation, which further reduces the relative bargaining position not only of blue-collar but increasingly also white-collar workers.

Last but not least, both market-based and survey-based inflation expectations, while having risen sharply from their extreme lows of spring 2020, have stabilised around central banks' targets. As long as this is the case, any cyclical inflation pressures should remain temporary.

Why fiscal-monetary cooperation doesn't necessarily spell inflation

Turning to the second narrative, how concerned should one be about the 'monetisation' of the large Covid-related fiscal deficits through central banks' quantitative easing? And what about the risk of fiscal dominance? In short, while inflation risks from excessive monetisation and from extreme forms of fiscal dominance cannot be dismissed, there are several reasons why both may be perfectly compatible with low rather than high inflation.

For starters, QE on its own does not increase net assets in private hands; it merely swaps one form of government liabilities (bonds) for another (reserves that banks hold with the central bank). Importantly, as these reserves carry interest (which can be positive, as in the United States, or negative, as in the euro area and Japan), they are a close substitute for government bonds that also carry very low or even negative interest. It is thus not obvious at all why the QE 'swap' of very similar assets should be inflationary per se. It is even questionable to call this process 'monetisation' or 'money printing' because the interest-bearing reserves created (which cannot leave the banking system but can circulate amongst banks within the system) are very similar in nature to short-dated government bonds and bills.

But what if QE is employed to help, directly or indirectly, the government finance additional fiscal spending or tax cuts, as has widely been the case during the pandemic? In this case, money in the hands of the private sector (mostly bank deposits) increases with no offsetting reduction in other assets. In theory, this could lead to higher spending and, once spare capacity in the economy is used up, cyclical inflation pressures.

However, a few important caveats apply. First, as long as there is slack in the economy and the injection of money is a one-off during the slump but not continued once the economy returns to normal, inflation should remain well-behaved. As discussed earlier, we are likely to have already seen 'peak fiscal'. Second, even if money-financed fiscal expansion continues for longer, the private sector may save rather than spend the transfers or tax cuts in the expectation of higher taxes in the future. Such 'Ricardian' behaviour, which appears to have been prevalent in Japan during the monetary-fiscal expansion over the past few decades, may also be supported by other motives to save more such as longer life expectancy and a desire to increase precautionary balances after experiencing the pandemic shock.

Finally, what about fiscal dominance – defined as a situation where the central bank is constrained in its actions by fiscal considerations – leading to higher inflation? This is a risk that has to be taken seriously in the light of ever higher levels of public debt. For example, Borio (2021a) argues that the pandemic has not only led to much higher debt levels but may also lead to a full retreat of globalisation. In such a world, there would be both the incentive and the ability to generate higher inflation. Note, however, that even in a regime of fiscal dominance caused by a large stock of public debt, governments may still choose to behave responsibly and decide not to run overly expansionary fiscal policies going forward. Rather, even dominant fiscal policy may be geared to keeping inflation relatively low as this seems to reflect the preferences of ageing median voters in ageing mature economies.

Is inflation always and everywhere a fiscal phenomenon?

The discussion of fiscal dominance brings us to the third narrative about debt-driven inflation – the fiscal theory of the price level – which goes a step further. Monetary policy doesn't really play a role in this approach as money and government debt are treated as essentially the same. Rather, the theory postulates a direct link between government debt and inflation. According to this line of thought, whether or not rising fiscal deficits today cause higher inflation all depends on whether the private sector believes that the government will eventually balance the books by running compensating budget surpluses in the future. If people believe this to be the case, fiscal expansion isn't inflationary because rational, forward-looking individuals will anticipate higher taxes and/or lower government transfers in the future. Public dissaving will thus be offset by higher private saving.

However, many proponents of this theory believe that the sharp increase in deficits and debt over the past year or two has pushed us closer to a situation where people will lose confidence in the government's willingness or ability to behave responsibly and offset current deficits with future surpluses. Yet, once people stop expecting future tax hikes or cuts in government transfers, they feel richer and spend today's government cheques and other transfers. Also, inflation expectations will rise in this narrative as rational individuals know that in the absence of future surpluses (and assuming no hard government default), the debt can only be made sustainable through higher inflation.

To be fair, given the sharp rise in Covid-related debt, we may be closer to that alleged pivotal moment when a crisis of confidence in governments unfolds and inflation surges. Emerging economies, especially in Latin America, have a wealth of experience of this situation, but such events are extremely rare in advanced economies with well-established and credible institutions, relative political stability and, importantly, several decades of low and stable inflation that helps to anchor inflation expectations.

Last but not least, as discussed in an earlier section, the fact that, at least in the advanced economies, governments' borrowing costs are below the growth rate of the economy ($r < g$) creates additional breathing space for governments as it allows them to run a certain level of primary deficits (depending on the size of the initial debt-to-GDP ratio and the extent to which g exceeds r) without increasing the debt-to-GDP ratio. Moreover, to the extent that government deficits are used to enhance potential growth via investment in infrastructure and education, they will generate higher tax revenues in the future.

6.5 CONCLUSION

Taken together, the popular narratives that predict an era of higher inflation due to the surge in government debt do not seem wholly convincing. Past episodes of surging debt and higher inflation have typically occurred during and after wars, while the surge in debt in the advanced economies during the global financial crisis, as well in Japan over the past few decades, has not resulted in higher inflation. The current inflation pressures resulting from stimulus programmes and supply bottlenecks, while more persistent than expected, are unlikely to last so long as inflation expectations remain anchored and slack in labour markets persists. Clearly, those are two important preconditions that bear watching.

Historically, neither monetisation nor fiscal dominance has led *inevitably* to higher inflation. And while fiscal theories of inflation are elegant and increasingly popular in the light of the debt surge, so far there are few signs that we are anywhere close to a major crisis of confidence in the ability of governments in the advanced economies to roll over their debt.

However, while the rise in government debt per se is neither a necessary nor a sufficient condition for higher inflation, we do acknowledge that uncertainty about the longer-term inflation outlook has increased. Yet the risks cut both ways: the pandemic and the policy responses have increased both upside *and* downside risks to the longer-term path of the price level.

Upside risks could materialise if both fiscal and monetary policy remain expansionary long after the economy has returned to normal utilisation levels. This could ultimately lead to a non-linear rise in inflation expectations which, if unchecked by policy, could lead to a classical wage–price spiral. The trend towards deglobalisation, which has arguably been boosted by the pandemic, could also contribute to such an outcome.

Conversely, and less widely discussed, downside risks to future prices have also increased, for two reasons. First, expansionary monetary and fiscal policies, if continued, risk fuelling asset bubbles. Sharp asset price corrections, as typically follow asset bubbles, tend to be disinflationary or even deflationary, particularly when leverage is high. Second, the pandemic has turbocharged digitalisation and automation, which could increase labour productivity and give rise to higher technological unemployment. This would increase disinflationary pressures over time.

CHAPTER 7

Conclusion: What to worry about, what not to worry about, and what to do about it

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At the time of writing this report, the debt levels of households, companies and sovereigns are at historical highs (relative to output). Debt and credit are closely linked to financial crises, to the evolution and shape of the business cycle – such as its volatility and skewness – and to the likelihood of negative tail events. As a result, economies are fundamentally more vulnerable to income and asset price shocks than they used to be. As much research has shown, financial vulnerability is endemic in a highly leveraged world. In such a time of record-high debt, it is difficult not to be pessimistic about our future economic, financial, social and political stability. One might even conclude that debt needs to be urgently reduced.

However, this pessimism needs to be tempered by a deeper understanding of the secular causes that got us here. This huge debt boom is, mechanically, the flip side of the surge in gross savings while investment has declined and the multiplication of financial wealth experienced in recent decades. For every debtor, there is a creditor, and thus for every dollar or euro of savings in financial assets, someone else has to incur an equivalent financial liability. If we look at the asset side of balance sheets, we find that, relative to their income, households have never been wealthier. Yet despite this wealth boom, researchers are baffled as to why households are not consuming more. A consumption boom could certainly become unsustainable and an obvious source of economic instability. Perspective thus matters in understanding why societies are accumulating – that is, both issuing and acquiring – debt in all its forms at such high rates.

What is behind this recent accumulation of debt? Is it a new urge to borrow, or a new desire to save? An important insight into this question is that, while debt has risen, interest rates on debt have fallen. As we discussed in Chapter 1, the combination of falling rates and rising debt can only mean that there are relatively more creditors than debtors, on net. Abundant savings relative to investment have driven interest rates down, elevated asset prices and encouraged (some) households, firms and governments to borrow more. Today, with sky-high asset prices, indicators of net household wealth look solid, debt-to-asset ratios are moderate and debt service costs are at record lows despite record debt levels. If the overall macro backdrop of the past two decades continues, interest rates

and debt-servicing costs can be expected to stay low and asset prices high. In such a world, high debt levels could be manageable, although the economy may become more vulnerable to income and asset price shocks. Overall, perhaps debt is not as problematic as we initially thought?

Arguably the greatest challenge will be the management of public debt in the years to come. Public debt has surged in the great Covid recession. The levels remain manageable in most countries, not least given current interest rates. However, the legacy debts from two big crises within the last 10 to 15 years, in some cases decades of mismanagement of public spending, and the substantial burdens of public spending anticipated by governments in the years to come make the medium-term challenges appear enormous. Countries need to maintain the necessary fiscal space to manage future shocks while at the same time financing the transition to greener economies as well as the pension and health demands of ageing populations. As long as interest rates stay low and growth returns to a healthy pace, scenarios are possible where these new demands on public spending can be met while stabilising the public debt-to-GDP trajectory. Chapter 2 discusses these challenges in great depth.

Policymakers thus have a difficult task in trying to strike the right balance, in a world of high debt, between the desire to borrow more and the vulnerabilities that more debt brings. Moreover, digging below the aggregate statistics, one uncovers further distributional issues related to high debt. First, households that have increased their savings in recent decades tend to be older and richer; borrowers tend to be younger and poorer. Second, the business sector has turned globally from a net borrower to a net saver in recent decades, in what some have described as a corporate savings glut in the form of retained earnings. Yet, at the same time, observers worry about leveraged corporate balance sheets and zombification of parts of the corporate sector. Some firms have built enormous savings in the form of cash buffers, while others have substantially increased leverage and lowered coverage ratios in a decade-long debt boom. Depending on where one looks in the firm distribution, one can quickly reach divergent conclusions. Recent research has made some inroads into mapping this heterogeneity and into understanding the corresponding sources of macroeconomic fragility, but many questions remain open.

What do we need to watch out for? Dealing with these inequalities and with the vulnerabilities of debtor–creditor relations in a world of high debt will be a central task for policy going forward. This report highlights areas of concern that seem likely to become a particular focus in coming years, as distinct from some other issues that appear to be less problematic. For example, a central finding of Chapter 3 is that household debt booms are much more problematic and historically have been a source of financial fragility, as the global financial crisis reminded us. Yet the household sector in advanced economies, much like the banking sector, entered the Covid recession in much better shape than in 2009. At least in the short run, the challenges probably lie elsewhere, with some concerns for emerging markets.

Worries about the debt position of the corporate sector are probably overblown. Clearly, in light of the run-up in corporate debt, there will be pockets of default and creditor losses; not all leveraged loan deals will go well. However, as Chapter 4 shows, we have tools to deal with over-indebted corporations in the form of bankruptcy laws and debt-reorganisation institutions. When such institutions are well set-up and left to function smoothly, corporate debt booms typically leave few traces on the macroeconomy. Thus, corporate and household debt likely fall into the category of items that do not present special challenges.

The other major area to worry about relates to China, as we describe in Chapter 5. The world's second largest economy is in many ways a poster child of the dangers of credit booms gone bust. Barring major policy mistakes, there are convincing arguments why a 'hot' crisis can be avoided. The Chinese government remains in firm control of the financial sector (including cross-border flows) and has ample fiscal resources to deal with any major fallout. However, the economic effects of a waning credit impulse, financial deleveraging and a resetting of expectations will likely have very real macroeconomic effects on the Chinese economy. The knock-on effects on growth in other economies could be more substantial than widely thought, illustrating once more the dark side of credit booms. Policymakers around the world, but especially in economies highly geared towards Chinese demand, need to be prepared for such a slowdown.

During the pandemic and its aftermath, the effort of the public sector across both advanced and emerging economies will likely be considerable. And at already high levels of public debt, the question naturally arises: will high levels of public debt generate a new era of high inflation? As Chapter 6 discusses, the evidence indicates that this need not be the case. Previous jumps in public debt responded to times when economies were on their knees and inflation pressures weak. The public sector was coming to the rescue of economies in distress. At other times, trends in public debt related to the expansion of the welfare state in past decades have coincided with a global decline in inflation, even in emerging market economies where central banks have become more adept at keeping prices stable. In the present moment, public debt is not yet a driver of inflationary pressures, but rather supply disruptions coinciding with unusually strong demand for goods, which ought to be transitory provided that monetary and fiscal support is recalibrated over the cycle.

In sum, the picture that this report paints is one of cautious and perhaps unexpected optimism. As long as credit supply remains plentiful relative to debt issuance, and thus interest rates remain low, higher levels of debt are sustainable. We are not blind to the challenges policymakers will have to face. Nor are we blind to the possibility, in a world awash with debt, that negative shocks will generate more bouts of instability, which will inevitably spill over onto innocent bystanders in a globalised economy. However, the trends behind the oversupply of credit will likely continue for a long time. Debt should not be ignored. But neither should it be feared.

Discussions

DISCUSSION OF CHAPTERS 1 TO 4

Chaired by Samy Chaar, Lombard Odier

Silvia Ardagna, Barclays²²

This report leaves no stone unturned and is also not short of policy advice. The authors reach an optimistic conclusion that, in spite of challenges and risks, one should not worry too much about future debt dynamics. The principal argument is that structural factors will keep the debt servicing costs low and manageable.

My own take is a bit less optimistic. I will focus on the euro area and on public debt. In the end, my optimistic message is that we can have a smooth economic recovery conditional on both monetary and fiscal policy continuing to complement each other. Either both policies remain highly accommodative until countries grow out of debt or, when it is time to start normalising policies, little monetary policy tightening will be feasible until improvements in countries fiscal positions take place. I will try to be specific and discuss two examples highlighting the importance of fiscal and monetary policy complementarity. First, I will discuss what I call the ‘sovereign rating channel’. Then, I will discuss the size and the composition of the announced fiscal adjustments from a historical perspective.

In a baseline case, we estimate probabilities of a sovereign rating downgrade based on macroeconomic fundamentals changing from their 2019 values to 2021 values (for 2021, we use our own growth and fiscal variables forecasts). Looking at Italy, for example, the probability of a downgrade goes up from 29% to 51% in 2021. When we assume that public debt increases further by 10%, the probability of a downgrade for Italy increases on average from 29% to 61%. Yet, when the stock of government securities held by the ECB and public debt simultaneously increase, the probability of a downgrade remains broadly unchanged, suggesting that the ECB’s holding of government securities neutralises the negative effects related to rising public debt.

Why should we care? Sovereign rating downgrades matter in a very nonlinear way, and particularly so when a country is at the threshold between an investment grade and a non-investment grade rating. At this threshold, spikes in interest rate costs and fire sales can arise as demand, notably from certain classes of investors who cannot hold high-yield bonds, shrinks. Sovereign rating downgrades also matter for monetary policy because ratings are still a criterion of securities to be eligible for QE, for example.

22 The views in this discussion are those of the author and not those of Barclays.

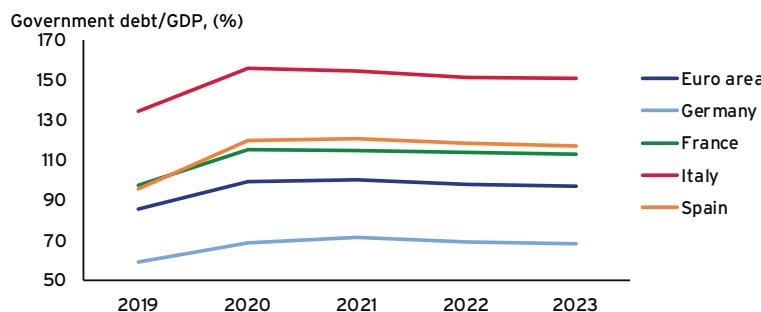
Even so, should we worry as public debt has supposedly already peaked (Figure 1, panel a)? The answer depends on several assumptions related to the stabilisation in government debt-to-GDP ratios. One assumption is that the extensive stimuli provided by governments during the Covid-19 pandemic in the form of guarantees (see the green bars in panel b of Figure 1) are not going to fully materialise. Taking Italy as an example, contingent liabilities of budget support roughly accounted for 35% of Italian GDP, according to the IMF.

So far, we have observed limited increases in bankruptcies. While bankruptcies in the euro area decreased somewhat at the beginning of the crisis, the trend has picked up in Spain and in Italy bankruptcies are close to pre-pandemic levels (panel c of Figure 1). Yet, levels are still very low compared to the global financial crisis. Nevertheless, we should keep in mind that the trend may grow if fiscal support decreases and/or the economic outlook deteriorates. Stage 2 loans and NPLs under public guarantees are also relatively low compared to the global financial crisis, but there is still an increasing trend in some countries (panel d of Figure 1).

Another assumption underlying the stabilisation in government debt-to-GDP ratios relates to the primary balance. Debt stabilisation forecasts rely on governments foreseeing fiscal tightening in their budget plans, which are not small by historical standards. Panel a of Figure 2 plots the change in the cyclically adjusted primary balance for four euro area countries. If we look at Italy again, according to the European Commission data, there was a fiscal adjustment in 2020 and 2021 in the order of 2.5% of potential GDP. According to recently released estimates, the Italian government expects a structural adjustment of 2.1%, which is significant by historical standards. That said, if we stick to the budget plans and we split the cyclically adjusted improvements in the primary balance between primary spending and revenues, the majority comes *via* the spending channel. It is also important to think about what is inside the expenditure. If we take the 2% reduction in the primary expenditure of the GDP plan for Italy as an example, it should come with a simultaneous increase in public investment, which indicates that a decline in current spending should be even stronger with de facto more severe consequences for growth. One could then discuss what is a *good* versus a *bad* fiscal adjustment. The impulse response functions in the bottom panels of Figure 2 show that the spending-based fiscal adjustments do not seem that bad for the outlook on growth. Tax-based fiscal adjustments, however, are much more contractionary.

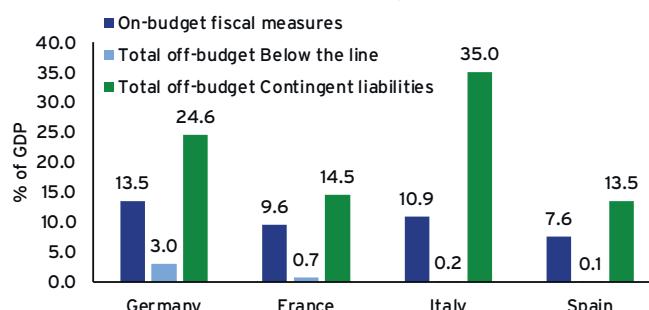
FIGURE 1 PUBLIC DEBT HAS LIKELY PEAKED

a) Public debt has peaked



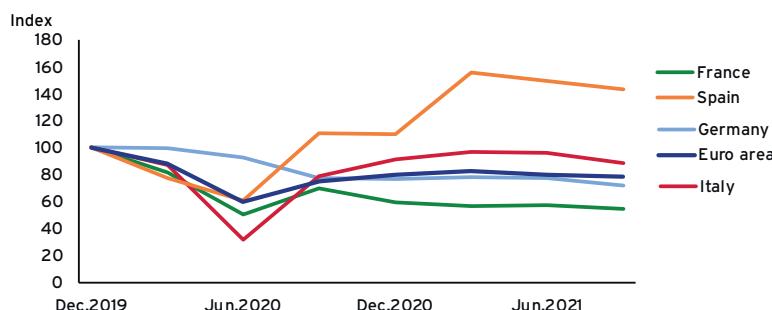
Source: European Commission.

b) Fiscal stimulus was provided via discretionary easing, automatic stabilisers and guarantees



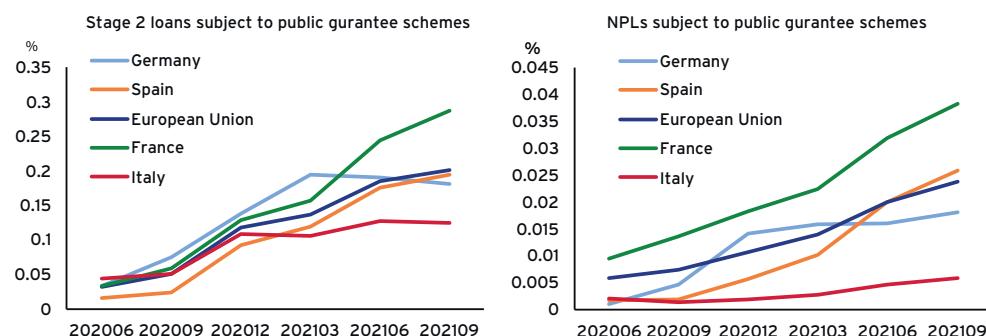
Source: IMF; European Commission; national sources.

c) Bankruptcies remain low but have recently risen and...



Source: Eurostat.

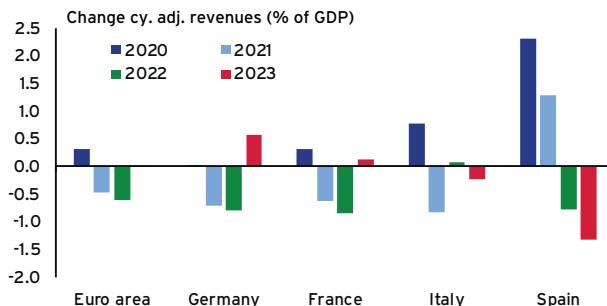
d) ...similarly to stage 2 and non-performing loans



Source: European Banking Authority.

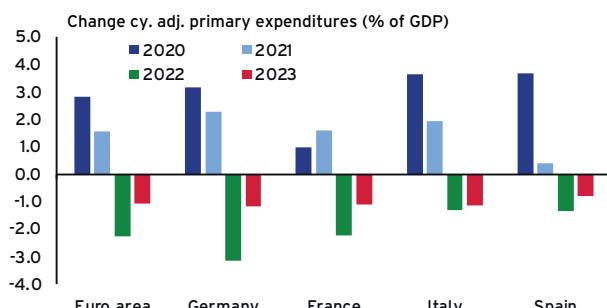
FIGURE 2 FISCAL POLICY STANCE: FROM EXPANSIONARY TO CONTRACTIONARY

a) Governments are planning cuts to primary expenditures...



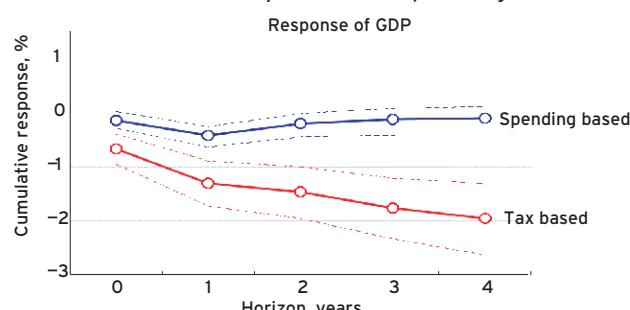
Source: European Commission; national sources.

b) ...with almost no increases in taxes



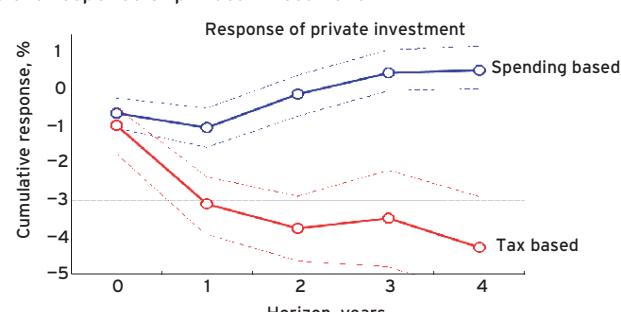
Source: European Commission; national sources.

c) Spending-based fiscal consolidations may have little impact on growth...



Source: Alesina et al. (2019).

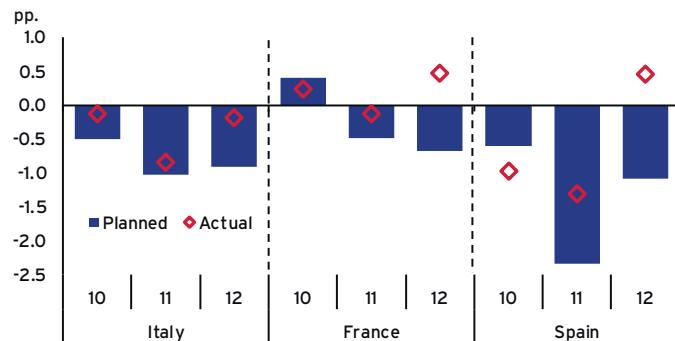
d) ...mainly due to the response of private investment



Source: Alesina et al. (2019).

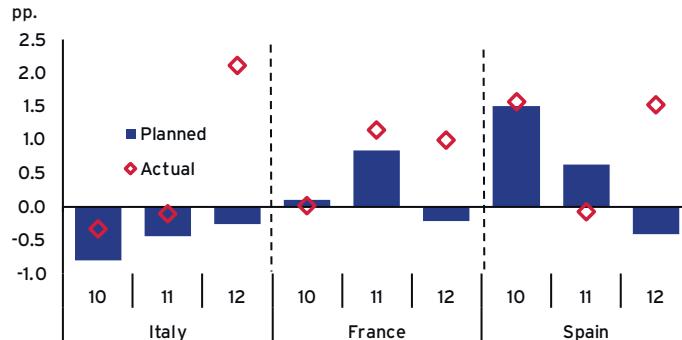
FIGURE 3 HISTORY SUGGESTS GOVERNMENT PLANS ARE AT BEST INDICATIVE

a) Change to cyclically adjusted primary balance



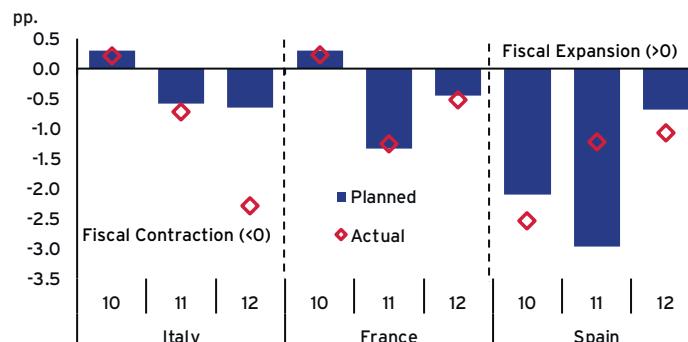
Source: European Commission; national sources.

b) Change cyclically adjusted revenues



Source: European Commission; national sources.

c) Change to cyclically adjusted primary balance



Source: European Commission; national sources.

The issue is that these adjustments are not likely to occur. The top panel of Figure 3 compares actual fiscal plans based on the Stability and Growth Pact submitted by the governments of Italy, France and Spain to the European Commission from 2010 to 2012 and their actual realisations. The first observation is that the cyclically adjusted primary balances planned for Italy and France during this period were much smaller than what is planned today. Looking at Italy, while the country almost met its target in 2011, the

following year required a much larger contraction. Looking at the bottom panel of Figure 3, Italy also ended up doing more tax-based fiscal adjustments than revenue-based fiscal adjustments. I do not think that so much austerity was planned at the time, but it was rather a necessity due to monetary conditions. Thus, we need to acknowledge what happened in the past to avoid a repetition of the global financial crisis. The coordination of monetary policy and fiscal policy remains, in my opinion, extremely important.

Signe Krogstrup, *Danmarks Nationalbank*

I agree with many of the general conclusions in this report. Yet, as I will argue, the devil is in the detail, and details matter when it comes to the problems and concerns arising from rising debt levels. My comments are based on the perspective of a central bank on debt dynamics in Denmark. We certainly monitor gross debt, but we find that careful consideration of developments underlying gross numbers is key in order to judge whether we should be concerned. The main point is that it is questionable whether developments in gross debt levels are always the right measure to consider for debt sustainability.

First, the report suggests that an increase in savings (i.e., a savings glut) drives the observed increase in gross debt levels and the fall in global interest rates. Savings are not equal to debt, however. For example, savers not only demand debt instruments, but also save in equity instruments. Thus, when considering the sustainability of debt, it seems important to also consider the related developments in outstanding equity, the substitutability of debt versus equity for savings purposes, and incentives to issue and hold equity. Equity has different stability characteristics compared to debt. It can better absorb losses, and there is, as a consequence, a debate around whether we could get more equity type features into debt, which should be relevant but which the report does not touch on.

My second point relates to the issue of gross versus net debt. Many economic agents as well as sectors are both gross savers and gross borrowers, and not all are net debtors. Some of the increase in gross debt across the world is indeed related to an increase in net debt. Yet, it is also related to sheer balance sheet expansion. Gross debt can of course function as an indicator of vulnerability, even if net debt does not increase; an economy that is more leveraged may be more vulnerable to unexpected reversals in the value of assets. But it depends on the underlying structure of individual or sectoral balance sheets. One may hence ask what needs to be netted out to get a relevant measure of debt for the purposes of evaluating sustainability. Should we consider gross global debt, country-level or sectoral net debt, or something different?

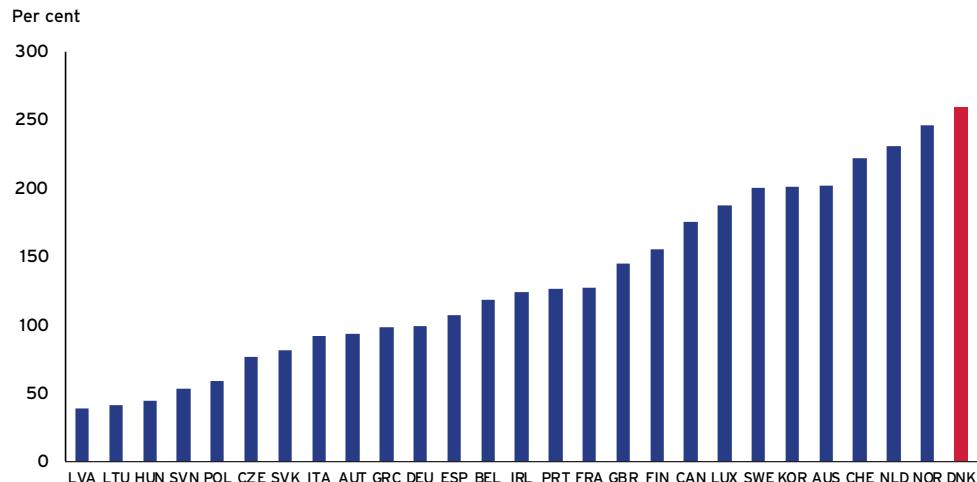
Danish household balance sheets are a salient example of the relevance of this question. Denmark has had high and increasing levels of gross debt, but also a high balance of payment surplus for some time, and high gross as well as net external foreign assets. These developments are partly driven by savings in the household sector. This comes as a surprise if you only look at gross household debt. Figure 1 depicts gross household debt as a percentage of net disposable income in 2020 for OECD countries. Denmark

has the highest ratio (approximately 250%). Other countries with high gross household debt levels include Switzerland, the Netherlands and Norway. What is striking is that the household sector is a net saving sector in all of these countries, and all countries have high levels of foreign assets. At least in the case of Denmark, the high level of gross debt and net savings is partly driven by the pension system and tax incentives. For example, Denmark has a broad-coverage labour market pension scheme in which opting out by the individual saver is typically not possible. The overall effect may well be that households defer debt repayments and accept higher levels of gross debt to counterbalance high compulsory pension savings. Moreover, tax incentives in pension schemes lock savings until the contributor retires, which spurs accumulation of pension assets. There are also tax incentives to borrow, which allow households to deduct interest expenses related to debt from their taxable income. Thus, we end up having a net saving household sector in Denmark with very high balance sheets fuelled by the pension system and tax incentives.

Should we be concerned about the gross household debt level that this system results in, given that aggregate net household savings are positive? Well, it depends on the underlying distribution of vulnerabilities embedded in household balance sheets, which are concealed in debt aggregates. An example is mortgage debt, an area that receives special attention in many countries given its role in earlier financial crises.

High house price growth combined with high mortgage credit growth have historically been linked with financial vulnerability. Denmark experienced a very high increase in house prices during the pandemic. Currently, aggregate mortgage credit growth is contained. However, when considering specific geographical areas where house price growth has been particularly high during the pandemic, we currently observe high and increasing levels of credit growth. Moreover, this credit growth consists to a higher degree of interest-only loans, which are increasingly taken by debtors with high levels of debt relative to the house price. These trends are concerning but do not show up in the aggregates, as they currently hide underneath.

FIGURE 1 HOUSEHOLD DEBT IN OECD COUNTRIES (TOTAL % OF NET DISPOSABLE INCOME)

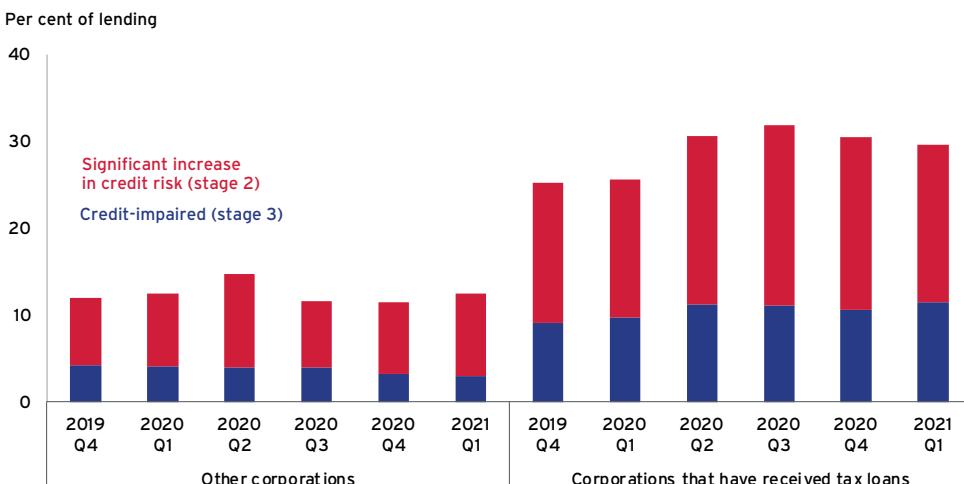


Source: OECD.

Another element that aggregates hide is driven by a broad-based shift toward banks transmitting negative interest rates on to household bank deposits that has been taking place in the past two years. This may be affecting the behaviour of households, but heterogeneously. Anecdotal evidence suggests that there may have been two broad types of reactions to the shift toward negative interest rates on household deposits. On the one hand, some households may have decided to consolidate their balance sheets and pay down some of their existing debts to avoid paying negative interest on deposits. This may have contributed to a reduction in credit. Other households, in contrast, in need of borrowing to enter the housing market or to upgrade on housing, may have taken advantage of lower, sometimes negative lending rates to take on more credit than would otherwise have been possible, which may have contributed to an increase in credit. Partly cancelling out, the aggregate numbers for credit growth remain moderate, while underlying segments of the population may nevertheless building up systemically vulnerable balance sheets.

A third and related point concerns corporate gross and net debt, as well as corporate balance sheet size. While corporate gross debt has increased, so has corporate financial assets and liquidity, net of which, it is not clear that corporate debt has generally increased. Moreover, corporate equity has increased alongside corporate debt in many countries. Equity should help cushion risks to debt. Is the rise in corporate gross debt then a problem?

FIGURE 2 PRE-PANDEMIC CREDIT IMPAIRMENT LEVELS OF DANISH FIRMS



Source: Danmarks Nationalbank.

Again, the distributions underlying the aggregates matter when answering this question. As an example, using our new credit registry data for Danish banks, Figure 2 illustrates the development of credit impairment levels of Danish firms which have credit with banks. The left panel exhibits credit impairment scores of companies that did not use liquidity support programmes offered by the government during the pandemic, while the right panel displays the credit scores of companies that used and are still using these liquidity support programs. The data show that companies which increased their debt by drawing on liquidity support schemes during the pandemic already were credit impaired before the crisis. Thus, this may suggest that liquidity support schemes are currently keeping some companies alive that may not be financially viable. While this is not deemed to be a problem for financial stability in Denmark, labour and capital in these less viable companies could be used more productively elsewhere.

Nathan Sussman, *The Graduate Institute*

First of all, I agree with Alan Taylor that the tone of the report is positive. When looking at long-term trends of interest rates, I am also very optimistic. Yet, we also need to consider the mandate of central banks, which is to deal with the rocks on the road and much less with long-term trends. I completely concur with the authors that a rise in the quantity of debt combined with decreasing interest rates suggests that the supply forces must have been a dominant factor.

Yet, another important aspect to examine is what has happened in the last 10 to 15 years, especially as real interest rates became negative. Could it be that central banks' supply has pushed interest rates into negative territory? The strong negative correlation between central banks' balance sheets and real interest rates over the last 20 years is striking (see Figure 1).

While this does not explain the declining trend in interest rates that we have witnessed over the past 100 years, the role of central banks in the last fifteen years should be kept in mind.

FIGURE 1 IS THE NEW KID IN TOWN THE CENTRAL BANK?

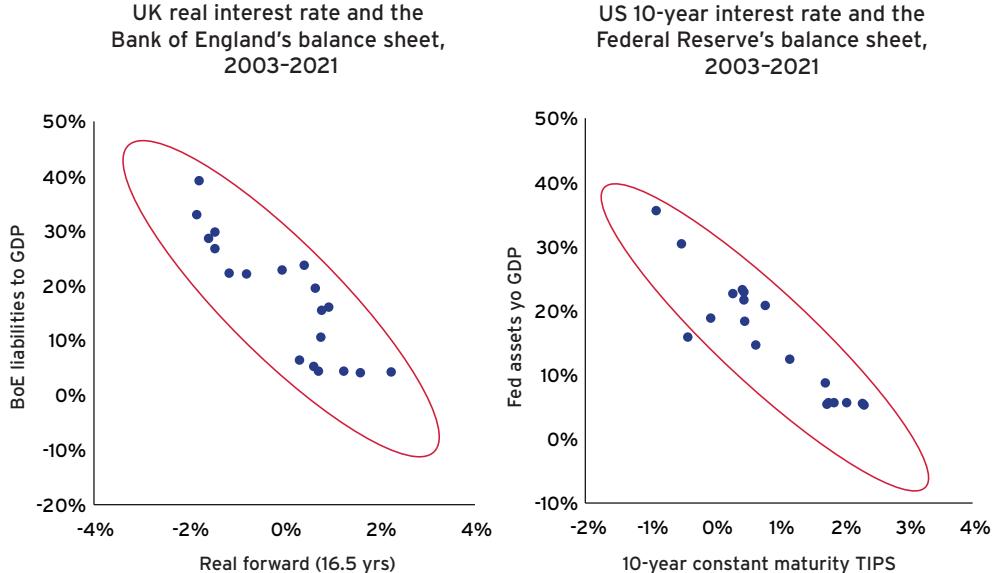


FIGURE 2: A CAUTIONARY TALE: CENTRAL BANKS MAY TAKE THE PUNCH BOWL - LESSONS FROM A CENTURY OF BRITISH HISTORY

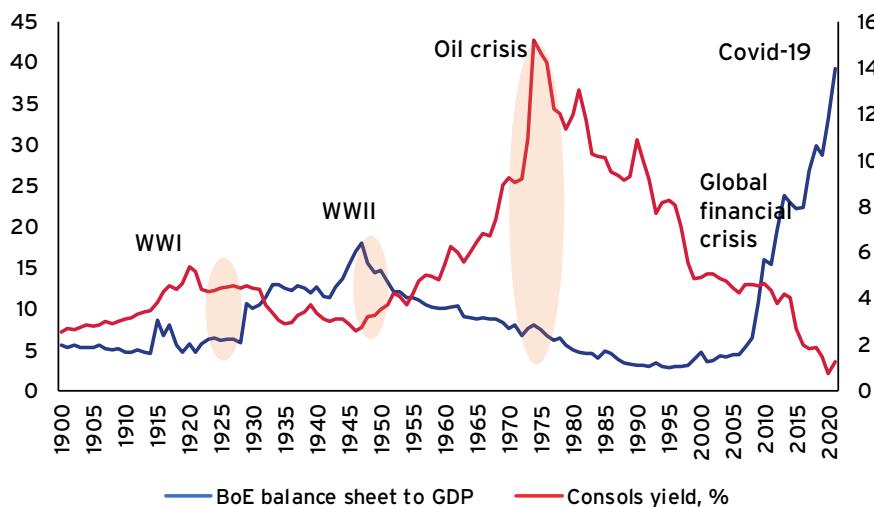


Figure 2 plots the Bank of England's balance sheet as a percentage of GDP against the nominal consolidated yield (and not a real yield to have an asset without having to make complicated calculations on the real yield over such a long period) over a much longer time span. The first observation is that the level of the Bank's bank balance sheet as a percentage of GDP has reached uncharted territory relative to 100 years of history. Second, what we usually observe after run-ups in central banks' balance sheets is monetary tightening. Is this time different? Will our central banks keep these huge balance sheets of liabilities and assets relative to GDP? Or will they take away the 'punch bowl', as they have repeatedly done in the past?

In conclusion, since the global financial crisis (and probably even a couple of years before), central banks drove real interest rates down by increasing their balance sheets. So far, this has worked very well and I think that it was the right thing to do. It worked well because central banks basically cashed in on hard-earned credibility in the disinflation period. Yet, I do not think that central banks will remain with these balance sheets forever. In my opinion, all the future fiscal pressures discussed in this report, including ageing and climate change, are not going to be financed by central banks, which means that central banks are likely to unwind their positions. Thus, the challenge is that higher interest rates together with fiscal pressure may result in fiscal space running out.

In other words, while I share the optimism of the report, I believe we should be careful about the short run in order to deliver on the optimistic long-run promises. What are the solutions? First of all, it is all in the report: the obvious solution is growth. If we view the real interest rate as some natural rate mimicking the productivity growth or income per capita growth, it is hard to believe that the world is imploding (i.e., that negative rates will continue to dip). This would be in contradiction to the world history. We are on a growth pattern, so the natural rate cannot always continue to fall. Another solution is convergence. If we think of a global natural rate, we have many high natural rates in countries that are in the midst of the convergence process. Many other factors can also push up growth, such as artificial intelligence (AI) and other technologies solving some of the ageing problems. There is also sustainable finance. We should change our mode of financing from debt to equity, which may help with convergence for less-developed economies. In order to finance all these fiscal pressures, and acknowledging that central banks are basically exhausted, taxes seem inevitable. Again, I agree with the conclusion that we should not push on the brakes too early, but once we are out of the woods I would definitely think that it is prudent to think about taxes as well.

Floor discussion

Amlan Roy (London School of Economics) noted that the report could have discussed debt in terms of horizons, suggesting that a country's debt can be outstanding on a short-term basis but unsustainable in the long term. He remarked that the report focuses on the savings glut but overlooks the point discussed by Signe Krogstrup on the investment-savings gap.

Dirk Niepelt (Gerzensee and University of Bern) remarked that the report jumps somewhat abruptly from an exploration of debt positions to a narrative that emphasises savings and its determinants. On the one hand, balance sheets and their structure can change independently of savings, as Signe Krogstrup emphasised. On the other hand, savings and investment depend on interest rates, while balance sheet length and structure also reflect interest rate differentials. Niepelt argued that it is important to distinguish between gross debt, which the report focuses on, and net debt, to which ' $r - g$ '-type arguments mainly apply. Finally, he emphasised that regarding government solvency, fiscal sustainability and intergenerational equity, the elephant in the room is implicit rather than explicit government debt, by an order of magnitude.

Charles Wyplosz (The Graduate Institute) commented on the savings glut and the decline in interest rates. There is some debate on the actual global increase in net or gross savings. Assuming that the private sector, corporates and households have been saving more, then we should observe a negative impact on the demand for goods and stronger central bank and government interventions, which the data suggest. But causality is hard to establish. The savings glut story is not totally convincing. On the decline in the natural rate, Charles Wyplosz echoed Nathan Sussman's view on the role of central banks in pushing interest rates down. A key argument for theories explaining why inflation has not picked up while interest rates are going down is a decline in the natural rate. Yet again, there could be a reverse causality. Central banks have been pushing the interest rates down, and now argue that they did this because the estimated natural rate had declined, but the causality may go the other way around.

Claudio Borio (Bank for International Settlements) followed up on a couple of points from the panellists and discussants. The first point is about quantities. There is a clear distinction between saving, investment and financing. In fact, there is no reason for a close relationship between saving, investment and the amount of debt in the economy, which goes back to the gross versus net debate. Assuming an economy with no saving (and hence, if closed, no investment), the process of production of output can still require a lot of credit – even more so if one includes intra-sectoral claims. And apart from debt related to production of output, there is also likely to be a lot of credit and debt in this economy as a result of purely financial transactions. How does this actually happen? Through an increase in the velocity of deposits. Going back to the cross-border context, there is very little relationship between current account surpluses and deficits and the amount of gross liabilities and assets. In fact, and looking only at the episode of the Great Financial Crisis, there was hardly any change in the current account of the United States. By contrast, there was a huge contraction in gross positions, mainly because banks withdrew.

The second point is about prices, that is, the real interest rate. The question is: what determines the real interest rate over the long run? Empirically, going back to the 1870s, there is no systematic relationship between the usual (real) suspects (such as growth, demographics, etc), on the one hand, and real interest rates, both short and long, or

estimates of r^* , on the other. A relationship emerges only since the mid-1980s, as all these variables have a downward trend over this specific period. By contrast, there is a systematic relationship between monetary policy regimes and the level and change in real interest rates over the whole sample.

Why might this be the case? At any point in time, the central bank determines the short-term nominal rate while prices are largely predetermined. As a result, it also sets the short-term real rate. (In addition, it has a major influence on long-term interest rates, through its impact on expectations and, via large-scale transactions, risk premia). If this is true at *any* point in time, it must logically be true *at all points in time*. Thus, when people say that the short-term real interest rate tracks the natural rate (the natural rate is a short-term rate), what they must be saying is that the *reaction function of the central bank* is such that it tracks the natural rate, or equilibrium rate, over time. Presumably, the idea is that, unless they do so, something 'bad' will happen and they will need to change course. In the current thinking about the natural rate, the *only* 'bad' thing that can happen is an unwelcome behaviour of inflation.

The problem is that, naturally enough, economists typically tease out this natural rate from what happens to inflation. Yet, if the link between output gaps and inflation is very weak (probably because of a flat, and unreliable, Phillips curve), then central banks might not be responding to the right factors in order to track this equilibrium rate. To be more specific, since the 1980s, there has been a big change in the nature of the business cycle. Until the mid-1980s, it was essentially inflation going up and central banks tightening policy that generated recessions. Since the mid-1980s, because inflation has tended to be low and stable, there has been very little tightening of monetary policy during expansions. By contrast, we have seen large credit booms turning into a bust and causing recessions, which is basically what the evidence in this report suggests. Thus, if central banks respond to inflation and inflation does not rise during expansions, and if central banks need to ease during contractions, this *mechanically* generates a decline in the real interest rate over time. The policy is not sufficiently countercyclical on the way up.

Alan Taylor (UC Davis) replied to some of the panellists and discussants' comments. He agreed there is more clarity needed on why *gross* versus *net* matters and what is meant by savings. The report discusses debt positions, that is, the acquisition of assets in a post-crisis world. Part of the crisis of macroeconomics was a dominant paradigm that aimed to describe the economy in terms of flows, without regard for gross financial positions, and with representative agents and firms – but the global financial crisis proved this wrong. Balance sheets, and the acquisition of assets and liabilities, are important and they need to be kept in mind. And deep down, there is also a story of heterogeneity. The net savings in the economy may be a small number, but the gross savings can be much larger – some households and corporates save a lot while others borrow. There is also a lot going on in different parts of the balance of payments. It is important to consider this heterogeneity because it is being funnelled through the financial system either by banks, formal institutions, or by markets, which may malfunction. The focal point for fragility

is whether the system is going to break, as it did in 2008. On quantitative easing, Taylor acknowledged that it was significant since the global financial crisis. Looking back over the past two to three decades, total savings in the economy went up by 400%–500%, notably for households and corporates. The data also suggest that current central banks' balance sheets, in a few of the advanced economies in which QE is very active, account for around 70% of GDP. This implies that central banks contribute to some extent to the net influx of credit but this effect is comparable in magnitude to the shift out in savings from all the other sources discussed in this report. Yet, the main effects of QE may not be coming through controlling the R^* equilibrium but perhaps more about selecting the right fiscal equilibrium. From a multiple equilibria perspective, there is a bad equilibrium where the government is not funded. The message from Mario Draghi is to do whatever it takes to reach the right equilibrium and avoid funding runs. The appearance or disappearance of QE is a way to make sure that the euro area funding crisis is not going to repeat. As a debtor, if you do not believe that QE is always going to be there, then, as a precautionary mechanism the rational response is to expand your balance sheet. On the reasons why emerging markets borrow significantly but simultaneously save, Taylor suggested that it is because there is uncertainty in the availability of funding liquidity in the future. This reasoning may also hold for households and corporates. He also concurred with Silvia Ardagna's comments on the post-austerity narrative and the need for a coordination of policies. This point ties in with Perotti's (2013) 'austerity myth', which suggests that the past cases in which austerity led to a benign outcome were those accompanied by monetary support.

Moritz Schularick (University of Bonn, Sciences Po and Federal Reserve Bank of New York) followed up on some comments of the panellists and discussants. On the gross versus net debate, he suggested two ways to look at trends in debt that are complementary but also both necessary: a cash flow perspective and an asset perspective. In the corporate sector, 80% of lending is cashflow-based and only 20% is asset-based. Thus, looking at corporate debt over earnings or GDP as a proxy is valuable and necessary. It does not mean that the asset perspective is not true. In the French case, for example, a significant portion of corporate borrowings occurred in asset-rich corporations. Yet, it is a very different question to ask what these assets are and how their valuation change in times of stress. In the United States, households never seemed richer than in 2007, until their balance sheets proved to be very fragile.

DISCUSSION OF CHAPTERS 5 AND 6

Chaired by Patrick Zweifel, Pictet Group

Harald Hau, University of Geneva

The general optimism of the report, discussed during the morning sessions, is particularly prominent with respect to China. The key takeaway here is that the risk of a typical credit boom to bust cycle in China is small in light of the special nature of China's state capitalism. There are four underlying reasons provided in the report: (i) China has a low external indebtedness; (ii) private savings are trapped within China (financial repression); (iii) debts are largely owned within a broadly defined public sector so the problem disappears when netting debts out; (iv) banks are not in trouble because they are controlled by the government, well capitalised and profitable.

While these four reasons are certainly correct, none of them is a sufficient condition to prevent a debt crisis in China and to avoid the fallout from a collapse of the housing market. First, a financial crisis can occur in spite of a positive external asset position. For example, massive defaults of households will be very hard to contain under a severe downturn of the economy and the housing market in China. Second, many financial crises are aggravated by policy mistakes. The last big financial crisis was arguably worsened by the mishandling of the Lehman Brothers crisis and its knock-on effects.

Does China's autocratic state capitalism make policy mistakes more or less likely? Much of the political science literature points towards higher risks. The absence of meaningful public policy debate, the discouragement of internal dissent, and the marginalisation of expert opinions in favour of so-called 'strong leadership' all suggest a degraded policy quality.

State ownership itself does not attenuate internal conflict. In China, many state-owned enterprises are de facto controlled by very powerful families and factions within the Communist Party. There is as much rivalry and internal strife within the Communist Party as there is between Democrats and Republicans in the US Congress. Thus, policy outcomes are highly unpredictable, and may differ starkly from any economic first best. The simple consolidation of the state sector as one unit does not pay attention to the complexity of Chinese politics.

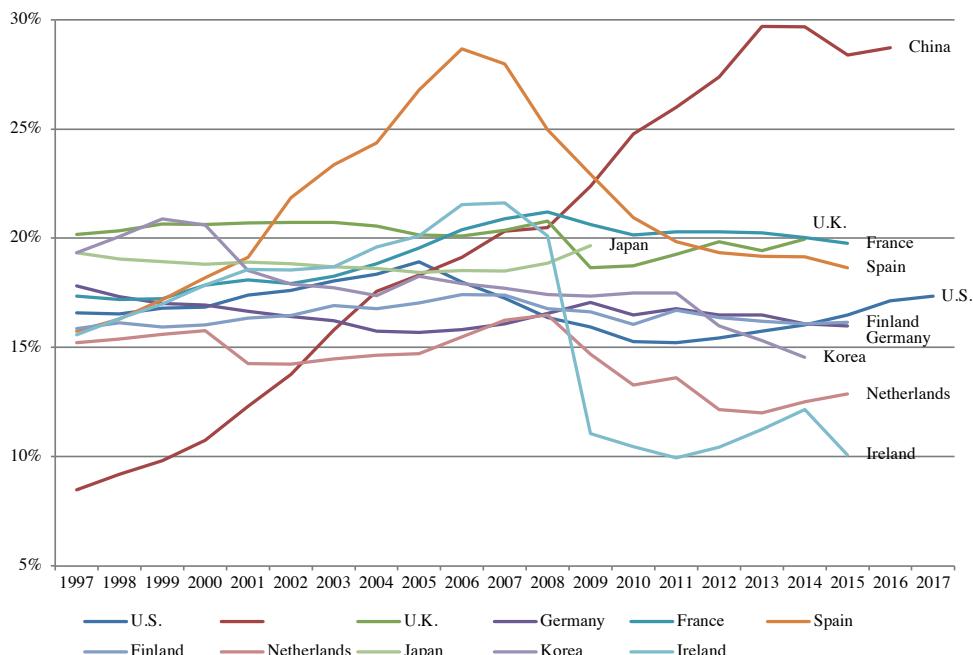
The Communist Party's long-term policy goal is a desirable transition towards a less leveraged and more responsible financial structure in the real estate sector. But the policy path itself conflicts with short-term stability objectives. For example, restricting corporate debt financing and subjecting it to market pressures increases the risk of default. Rebalancing the economy away from real estate and infrastructure spending shuts down a major growth engine and may create widespread unemployment among low-skilled workers. Introducing taxes on real estate looks sensible, but may also worsen any downturn in real estate markets.

There is strong evidence that the very size of the real estate sector is unsustainable. Rogoff and Yang (2020) indicate that housing accounts for roughly 30% of GDP. The only other comparable example is Spain in 2006 before the collapse of the national real estate sector, as shown in Figure 1. All warning signs of a housing bust in China are also there: vacancy rates are increasing, price-to-income ratios are extremely high, household leverage is high, and mortgage rates are high. Solvency often seems to depend on future capital gains on the investment.

Much of the analysis in Rogoff and Yang focuses on country aggregates, even though housing markets are local markets. But the picture looks even more dramatic in certain cities, as shown in Figure 2. Clearly, the level of outstanding bank credit to GDP is extremely heterogeneous across the cities depicted. National banks have been systematically feeding credit into cities with the largest real estate booms. Aggregate statistics thus underestimate the true extend of bank exposure to specific real estate markets.

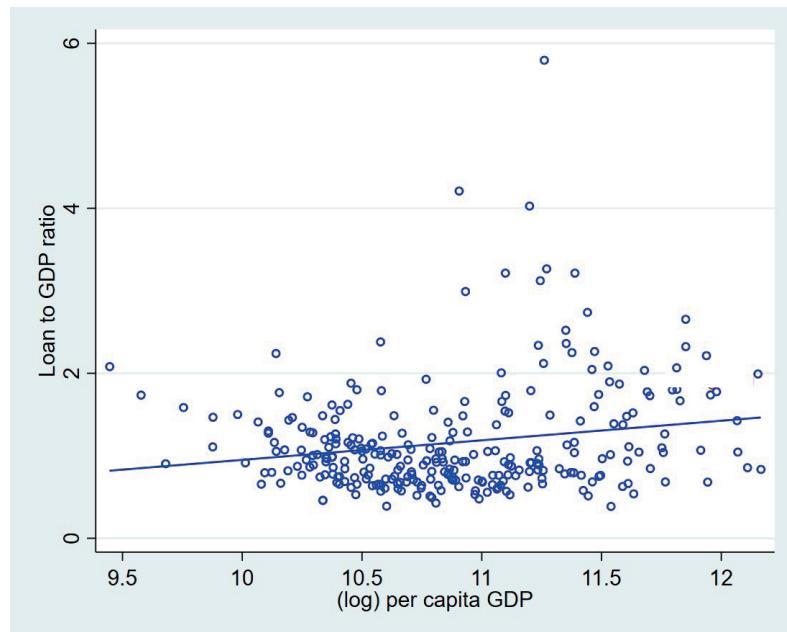
Finally, China is different from other countries in terms of its extreme wealth concentration in real estate. Figure 3 shows that 80% of Chinese wealth is in housing wealth compared to only 30% in the United States. If 30% to 40% of it is destroyed in a sharp downturn, this will generate a massive negative income shock. Moreover, the construction sector employs 55 million workers in China, most of whom are low-skilled workers. The social consequences of a housing bust cycle will be difficult to manage.

FIGURE 1 REAL ESTATE RELATED ACTIVITIES' SHARE OF GDP BY COUNTRY



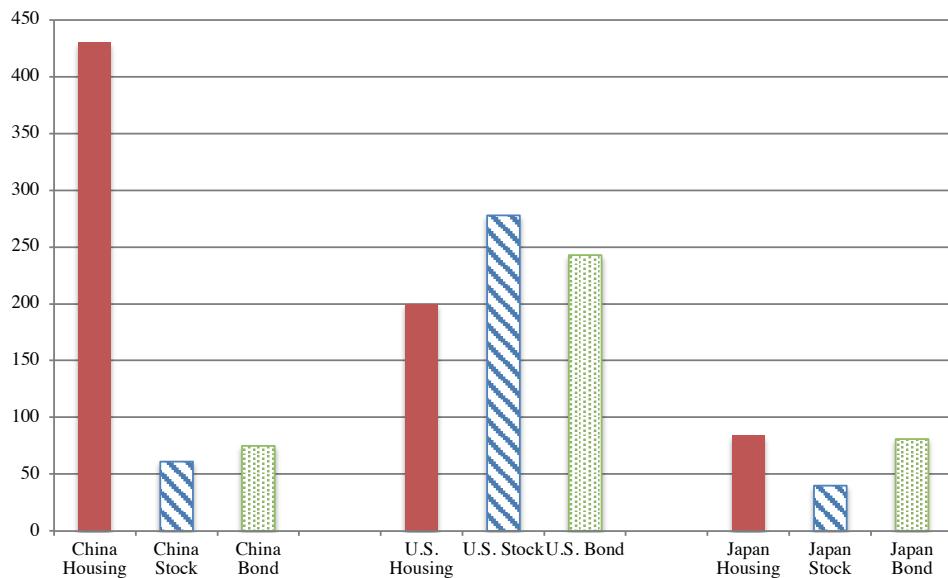
Source: Rogoff and Yang (2020), Figure 24.

FIGURE 2 LOAN-TO-GDP RATIOS AND GDP PER CAPITA IN THE MAJOR CHINESE CITIES IN 2018



Source: China's City Statistical Yearbook. Loans are total outstanding loans held by financial institutions in a city.

FIGURE 3 VALUATION OF DIFFERENT ASSET CLASSES IN 2017 (TRILLION YUAN)



Source: Rogoff and Yang (2020), Figure 8.

I return to my initial question: is the report's optimism about China justified? I doubt it is. Many indicators suggest that China's past growth trajectory, with its extreme reliance on real estate and infrastructure investment, is coming to an end. However, it is less clear how swift and brutal the sectoral adjustment process will be.

The party state has pinned much of its legitimacy on China's economic performance and persistent high growth. This means that the wider political ramification of any potential financial crisis far exceeds the economic domain.

Claudio Borio, Bank for International Settlements

I have been invited to discuss the chapter on inflation. If the conclusion of the chapter is that an increase in public sector debt is neither a necessary nor a sufficient condition for high inflation, then no more needs to be said.

But one other way of interpreting what the authors are saying is that inflation is not worrying in either the short or the long run. The current spike is temporary, owing to exceptional macroeconomic conditions. And the authors do not have any concerns about the build-up of government debt over the long run for a number of reasons. I tend to agree with the first proposition, but I have reservations about the second.

Concerning the first proposition, the prospects for inflation were discussed in detail in the *BIS Annual Economic Report* that came out in June. The conclusion was that the surge was largely temporary, in the sense that it would not lead to a de-anchoring of inflation itself.

Since then, inflationary pressures have indeed proved more persistent than expected. But this does not change the conclusion fundamentally. The reason is that the situation is truly unprecedented, as it is the result of an artificial suppression of activity in order to deal with a health emergency. The current increase in inflation is probably best seen as reflecting the confluence of three factors: (i) a strong rebound in demand, lately in part owing to a very large fiscal expansion (especially in the United States); (ii) major sectoral dislocations; and (iii) supply restrictions, notably induced by lingering health policies (especially in Asia). The manifestation of this is a rise in inflation that stems largely from idiosyncratic changes in prices, and not only in the most hard-hit sectors.

Put differently, supply has been unable to keep up with the sudden rebound in demand, which has surged once the lid on activity was lifted. Disruptions in global value chains are one symptom. Strong spikes in energy prices – for example in gas, in the midst of a perfect storm – are another.

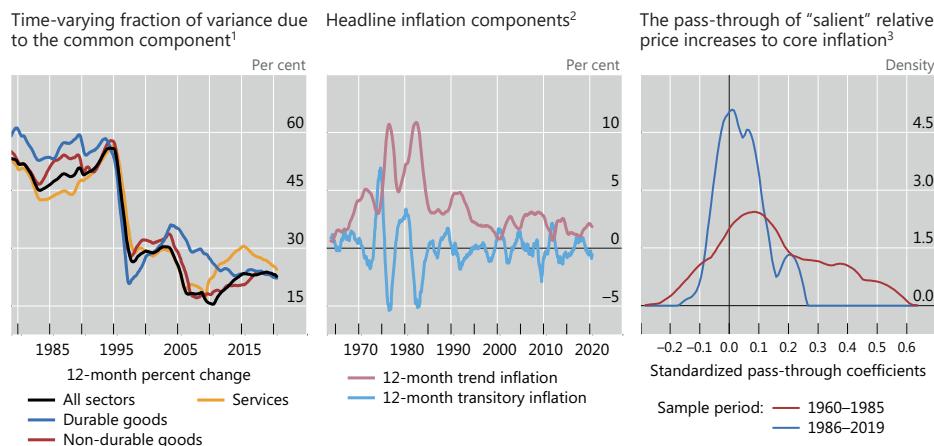
My sense is that, as long as there are no strong inflationary pressures in China, which I still consider the marginal producer in the world, a de-anchoring of inflation is unlikely. The secular disinflationary pressures that have been at work over the past two decades or so, keeping inflationary pressures in check, are still playing out – globalisation and technology.

In a recent paper with colleagues (Borio et al., 2021), we explore the de-anchoring issue in more detail. In particular, we examine how the inflation process changes once inflation becomes enduringly low. We do so by looking at US data for 131 finely defined expenditure categories. We find that, in such a regime, there is a clear tendency for inflation to remain range-bound.

More specifically, we reach three conclusions (Figure 1). First, as inflation falls a lot, the common component of inflation decreases relative to the sector-specific or idiosyncratic one, which in turn becomes dominant (left panel). This common component, of course, is the more closely linked to the theoretical definition of inflation. Second, the pass-through of price changes to core inflation becomes much smaller (right panel). Finally, the transitory component of inflation dominates the trend component (centre panel).

All these factors have been at work in the recent experience. This provides some comfort – although not complete – that the recently observed surge in inflation will have to battle a number of headwinds in order to break through.

FIGURE 1 THE COMMON COMPONENT OF INFLATION DROPS



Source: Borio et al. (2021).

Let me now turn to the long-run prospects for inflation.

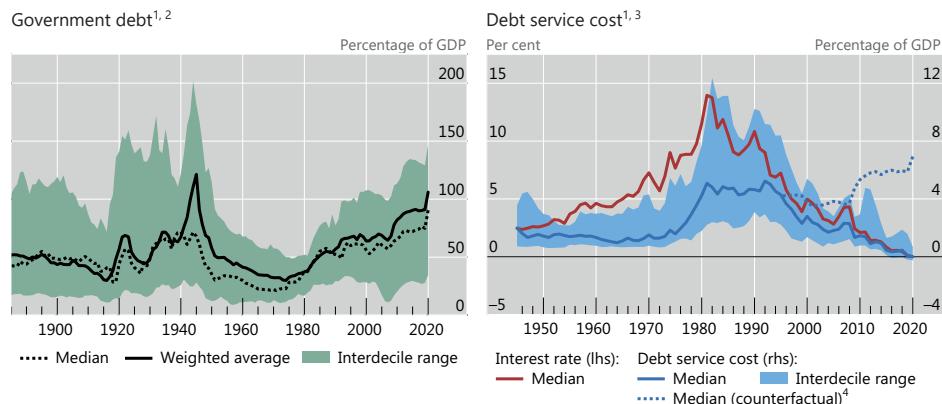
The authors are relaxed about the impact of fiscal policy on inflation. From my understanding of the report, they do not say that fiscal policy is irrelevant in the short run; rather, they argue that the Phillips curve is flat and that the fiscal impulse will be reversed. As regards the long run, they are not particularly concerned about the rise in debt and the risk of fiscal dominance.

I have more reservations about the impact of the strong increase in debt on long run inflation prospects. One could even wonder whether inflation may not be the endgame of the trajectory that the global economy has been on for over three decades now. Here, the link between monetary and fiscal policies is important.

In order to understand this, it is useful to consider the current condition of monetary and fiscal policies in a broad historical context. The picture is truly unprecedented. Nominal interest rates have never been so low since historical records began; indeed, as we have now grown accustomed to, in some cases they have been even negative. Real interest rates have never been negative for as long as they have been in recent years, not even during the exceptional Great Inflation era. In all likelihood, this means since records began, too. Central bank balance sheets have only been as high during wars. The unprecedented picture applies also to government debt and debt-to-GDP ratios. Looking at these ratios globally, they have only been as high as they are now at the time of World War II – their historical peak (Figure 2, left panel).

As a result of all this, despite the fact that debt-to-GDP ratios are so high, service costs have never been as low, i.e., the debt burden has never felt so light (right panel).

FIGURE 2 RISING DEBT BUT DEBT SERVICE COST AT A HISTORICAL TROUGH: NO REASON TO WORRY?



1 Sample of 19 AEs and five EMEs. 2 General government debt at nominal value, latest available quarter for 2020. 3 Debt/GDP multiplied by the simple average of short- and long-term interest rates. 4 Median debt service if nominal interest rates had stayed at the 1995 level.

Source: Borio (2021b).

People like to describe the situation as the ‘New Normal’. But I would put it to you that there is hardly anything normal about it from a historical perspective. The concern that I have is that this belief in the New Normal is probably the surest way of generating problems going forward – of generating a kind of debt trap (Figure 3).

FIGURE 3 THE DEBT TRAP



Source: Borio (2021c).

Why? The belief that interest rates will remain low as far as the eye can see is bound to encourage the further build-up of public debt as well as that of private debt. I do not think that governments need any encouragement to do that. And they are actually getting plenty of it, and not just from the markets. As a result, it will be harder to raise interest rates without damaging the economy. This is the kind of process whereby low rates can beget lower rates.

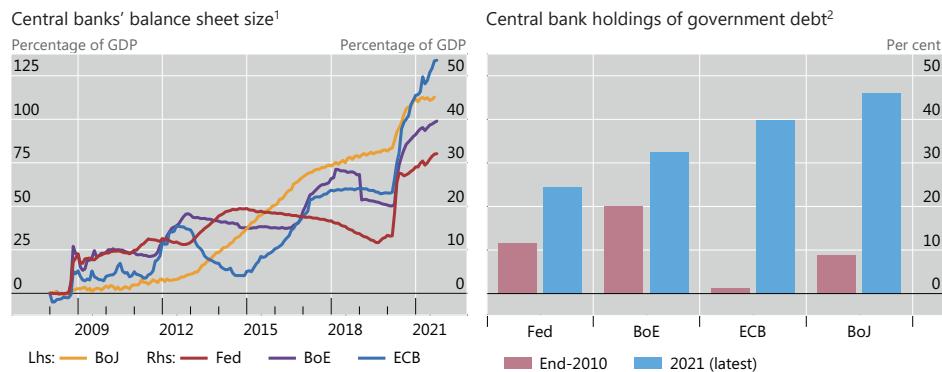
To give a sense of how delicate the situation is, consider what would happen if interest rates were to go back to the mid-1990s levels – a period after inflation had already been conquered, so that those levels were reasonable from a historical perspective. If interest rates did that, debt service costs would go back to their World War II historical peaks. This shows just how sensitive debt service burdens are to higher interest rates.

In addition, when it comes to the speed at which these things can happen, one should consider the implications of the huge central bank balance sheets, owing to the large purchases of long-term government debt mentioned in the report (Figure 4, left panel).

Here, I do agree with the authors that excess reserves are effectively a very close substitute for debt. Thus, I do not really buy the view that increases in reserves would increase inflation because reserves are ‘money’.

But the hidden impact of higher interest rates on debt service costs is another matter. The impact becomes visible only once we consider, as we should, the consolidated public sector balance sheet, which combines those of the government and the central bank. It then becomes clear that, for the largest central banks in the world, around 30–50% of long-term debt has effectively been turned into overnight debt – interest-bearing bank reserves (right panel). The sensitivity of fiscal positions to higher interest rates is much greater than it appears when you look only at the government portion of the debt.

FIGURE 4 CENTRAL BANKS' LARGER 'FISCAL' FOOTPRINTS



Notes: 1 Cumulative changes in total balance sheet size since 1 January 2008, as a percentage of four-quarter moving sum of quarterly GDP. 2 Holdings of total debt securities issued by the central government as percentage of the total outstanding. For the BoE, holdings of gilts as a percentage of total outstanding gilts. For the ECB, securities held under the Pandemic Emergency Purchase Program (only public sector securities), Public Sector Purchase Programme (only sovereign bonds) and the Securities Market Programme as a share of total debt securities issued by the central government. 3 For ECB, as of July 2021; for BoJ and Fed, August 2021 and for BoE, Q1 2021.

Source: Borio (2021b).

Of course – and I fully agree with the authors on this – high government debt is not sufficient to generate inflation. The report makes the point about Japan and I think that this is a very telling story. But high government debt does provide fertile ground for an increase in inflation. I think that the risk of economic fiscal dominance should not be underestimated. We have seen plenty of these problems in emerging markets.

Consider two reasons for this. The first is the flat Phillips curve. If it became necessary, a large increase in interest rates would be necessary to counteract inflation pressures, which may have a snowball effect on fiscal policy. The second is that, as we found in the Borio et al. (2021), monetary policy has been operating through a remarkably small set of prices since inflation has been low. This would require a further increase to bring inflation under control.

What are the necessary conditions to generate a high-inflation regime? Such a regime requires a favourable environment for wage-price spirals – the very essence of inflation. Both workers and firms would need to regain the pricing power they have lost over the past 30 years or so, notably because of globalisation.

I think that it will take a change in the policy regime for this to happen, although I do not really know whether it will happen. The change would involve a bigger role of the state in the economy and deglobalisation. In this case, given the exceptionally high current debt levels, and their likely further increase (especially in the public sector), the environment would generate both the incentives and the means to generate inflation. This would help deal with the debt, by eroding its real value, supported by some form of financial repression. We saw such episodes in the post-war period.

To conclude, I do not think that inflation is dead, it is more like hibernating. If so, this current winter may well be a long one. And while I do not know how long it will be, it will just be a winter after all.

Floor discussion

Joachim Fels (PIMCO) expressed his gratitude to Harald Hau and Claudio Borio for their highly useful comments. Regarding China, he agreed with Hau's suggestion to look also at disaggregated data. Indeed, he pointed out that it is quite likely that default rates will rise both at the local government level and within the corporate sector in the coming years. This is what the government wants to see as part of the deleveraging campaign and to reduce moral hazard. However, he does not believe that the government would allow the situation to spiral into a systemic crisis that could undo the overall economy.

A major burst in house prices could certainly create problems, but it is unclear what could trigger this. The situation is not comparable to the one in the United States before the global financial crisis, where there was a major acceleration of subprime lending at adjustable interest rates and where loan-to-value ratios were very high. The situation is not anywhere close to this situation in China. (Fels indicated that Hau's comments should be addressed in the next version of the report and some of those data should be shown.)

The Chinese situation is very different: Chinese people buy their apartments to a large part out of their savings, with down-payments ranging between 30% and 70%. The household saving rate is very high in international comparison. A lot of that money is funneled to the property market. Fels indicated that it is hard to see a situation where there would be a very sharp decline in home prices.

To go back to the United States before the global financial crisis, given that there was this expansion of subprime mortgages of adjustable interest rates, what really undid the housing market were the many rate hikes by the Federal Reserve (started by Greenspan and continued by Bernanke), which pushed rates significantly above neutral back in 2005–06.

This is not a likely situation in China. The People's Bank of China is unlikely to make a similar mistake because it is very well aware of the problem. Regarding Hau's reference to Rogoff and Yang's (2020) study, it is true that the property sector is a large part of the economy. Rogoff and Yang measure it at 30%; other estimates are closer to 25%. The share in GDP is very high, but it is worth noting that the growth contribution has already come down. The share of construction in GDP has been flat-lining or even come down since 2015. The story that there is a big building boom that will lead to bust is already five years too late. This is one reason why Evergrande got into problems: the property market has not been up for quite some time. That is not great news, but at least it means that it is unlikely to lead to a big bust caused by the property sector, because the sector has not contributed to GDP growth for several years now.

Patrick Zweifel (Pictet Group) followed up on the housing issue and the large share this sector has in the Chinese economy. It was shown that there has been an increase in household debt, with mortgages at 34% of GDP and even 60% for the entire household sector. Household debts have rapidly increased in the last years (20% over the past five years, with a 15% increase in the years before). This increase is above the classical BIS 10% threshold, which generally triggers either financial recession or classical economic recession. Is that a risk that should be considered?

Joachim Fels agreed that there is a risk. There is no debating that higher debt levels increase vulnerabilities. However, to proceed to a bust one would have to assume some kind of major macroeconomic shock, be it an interest rate shock or a growth shock, and both seemed quite unlikely given the many tools the Chinese government and the central bank have at their disposal.

Nicolas Véron (Bruegel and Peterson Institute for International Economics) asked Joachim Fels about his perception of Chinese growth in the medium run. The report pictures China as not having financial stability risk but having dragon growth from the absorption of the debt overhang. It is suggested that the future growth will be slower than what we have seen in the recent years. Is there an estimate of how low that growth would be?

Joachim Fels indicated that the difficulty lies in knowing accurately the actual past and current growth path. Given there are doubts about the quality of Chinese GDP statistics. On most of the alternative measures of economic growth in China, the true growth rate is already significantly lower than what is observed in the official data (close to 8% growth in 2021). It depends on the measure discussed. If one takes the current measures at face value, the 8% for this year obviously reflects the rebound that started last year; most growth forecasts for next year are somewhere around 5–5.5%.

Looking at the demographic trends and at the slowdown observed in productivity growth in China, it is easy to imagine that over the next five to ten years, trend growth will slow to around 2.5–3%. It will be a relatively controlled process, as China still has a lot of fiscal space. The central government recently started (in the past few months) to become more active in fiscal policies again.

Stability of growth is a policy imperative in China. It is essential for the survival of the Communist Party. Fels indicated that the Communist Party would probably be able to control this. This is not great: there is misallocation happening, which could weigh even more on potential growth further out. However, when looking for a source of major instabilities in the world, then one needs to look elsewhere, not at China.

Patrick Zweifel raised the various possible interpretations of Chinese growth depending on the base taken. That is crucial for 2021 and 2022: 8% for this year means 3% growth Q4 over Q4, but 5% next year for China means 7% growth Q4 over Q4. On an annual average it seems that China is decelerating, but the sequential growth shows different results.

Angel Ubide (Citadel) asked the authors of the report about the level of public debt in developed countries. Putting together the discussion of the morning and the afternoon, the report indicated that it matters for growth where the debt is (risky if in hands of households as the recoveries are shallower; about neutral if in the hands of corporates; nothing is said if it is in the hands of governments). Then, the report argues that China's debt is fine, mostly because it is in the hands of the government. It also argues that neutral rates are lower because there are too much savings. Putting those things together and assuming that low neutral rates are suboptimal because they limit the policy space, Ubide's overall conclusion from the report would be that there is not enough public debt in the developed world. Would the authors agree?

Joachim Fels indicated that he agrees with this perception because he is a strong believer in the private sector saving glut (households, corporate), and saving gluts are more likely to increase after the experience of the pandemic. If the private sector wants to save more, somebody has to dissave, and that somebody must be the public sector. Of course, it would be desirable to have the public sector to do productive things with the debt... What is productive or not can be debated, but that is a different topic.

Oscar Jordà (UC Davis and Federal Reserve of San Francisco) followed up by adding that the public sector has to integrate intergenerational thinking into public debt issues. It is useful to think about what has happened in the past 20 years in terms of a 'lost generation'. People in this generation came onto the job market around the early- to mid-2000s, were hit by the Great Recession, and now by the pandemic. The job market instability generated by these two major economic events meant that these individuals had no opportunity to create the amount of wealth that was characteristic of a family or a household in the previous 20 years, for example. As a result of these two crises, there will be a great dislocation in the income and wealth distributions, specially the latter. The public sector needs to think about how to help the lost generation make up for this loss. Left on their own, this generation will likely never be able to catch up to their parents' status.

A lot of the discussion has also tiptoed around the issue of what we think the neutral rate of interest, or R^* , is. Emphasis was put on demographics, but less on productivity. At a very basic level, R^* is determined by the economic prospects expected in the future. Since the Great Recession, the economies appear to be mired in a low productivity environment.

It is possible that some innovations, such as in artificial intelligence, in biology and so on, will kick the economy to a higher gear. Yet, up to this point, it is very unclear whether productivity is about to pick up. It is unlikely that central banks' balance sheets are the main explanation behind a low R^* . In fact, work by Jordà and Taylor indicates that the way to think about R^* is globally. This neutral interest rate is not determined solely at the domestic level, but rather by economies around the world since capital is nowadays very mobile and hence global.

Note that over the past 20 to 30 years, the amount of synchronicity in the business cycles has increased to a staggering degree. Business cycles all over the world happen at about the same time. And this is not an artifact of how the data are detrended. Using simulations, Jordà and Taylor determined that business cycle synchronicity would be essentially zero after detrending if it was not there to begin with.

What can central banks do and what is the link to inflation? There is a sense that the hands of the central banks are tied, not just because R^* is low. One could think that the main takeaway of the past few years is that monetary policy is highly asymmetric. The last decade was spent struggling to bring inflation up to target. Balance sheets exploded and yet inflation has remained, at least in the United States, below target for ten years straight. Thus, it is good to have a little bit of inflation to recover some balance. Along the same lines, if interest rates are raised in order to control inflation, one of the things that Taylor and Jordà have discovered as well is that there can be a hysteresis effect on the economy. It is very different to lower than to raise interest rates. Interest rates can actually reduce the productive capacity of the economy over the long run. So, talking about the issues of R^* , thinking about long term productivity is very important.

To close on inflation and its link with R^* . One striking observation about inflation is that over the last 35–40 years, inflation has come down globally: it has come down in emerging markets, and in many countries that do not have independent central banks, or do not follow Taylor rules or any of the modern perspectives common in advanced economies' central banking. It goes back to this issue of globalisation. The average inflation rate before the pandemic in emerging economies (with a few exceptions like Argentina and Brazil) was around 2%. Inflation may have to be thought of in a very different way than it was commonly thought of before, mainly as a global phenomenon rather than being exclusively driven by domestic conditions.

Moritz Schularick highlighted that perceptions on public deficits are hard to change. Just one observation from Germany. There is a widespread macroeconomic view that can be summarised in two points: (i) interest rates are too low; (ii) fiscal deficits are too high, and so we must reduce fiscal deficits

Schularick indicated that he struggles to explain to people that these two are interlinked and decreases in the deficit reinforce the low interest rate environment. It is a valid point that might require more analysis, probably in the report as well.

Alan Taylor replied to comments that struck him regarding a potential major policy mistake. One of the big caveats is that a policy mistake could upend all the optimism of the report. It ends up being the narcissism of small differences: debt may not be a problem, but if policymakers screw up then it will be a problem. In the report, an average path is shown which is not properly conditioned on whether it is a recession where the policymakers made a sensible response versus a recession where they made a bad response. The report is not yet in a position to conclude, grounded in any firm evidence, on whether or not policymakers have made things worse.

Angel Ubide's point is linked to the more secular aspect of policy response, and Oscar Jordà mentioned the sort of hysteresis argument. Why does it matter that R^* is low? On some level, it is just R^* ... Does it matter? Yes, for an indirect reason: it makes monetary policy irrelevant. Furthermore, another discussion regarding whether π^* should be raised in order to have more room of action can be held. There might be trade-off, with people saying that they do not like inflation so that there are more constraints. Then the situation is back to $R^* = \pi^* + \text{growth-driven component}$. Then, growth trajectories are either accidentally or deliberately messed up. The report indicates that more public debt is required but should be used for something useful, as Joachim Fels said. One has the sense that the lost generation is not just saying, "we got bad luck on the growth draw, we screwed up on investments that we did not do".

Here, this can be related to an infrastructure bill of many trillions in the United States. Even Germany has been underinvesting in physical capital. What happened to government investment in public infrastructure and so on has been tailing off. Maybe even (physical) K/Y is lower than it has been in our lifetime. It is not an abstract concept. That has real consequences for the standard of living, growth and potential to grow through endogenous growth.

Joachim Fels agreed with most of Claudio Borio's comments [on inflation]. Inflation may well be the end game if governments feel encouraged by the pandemic experience that spending can be increased permanently while interest costs remain low. This is not his main case, but the risk is there.

Given high debt levels, this would mean that central banks would be more constrained. So fiscal dominance would be the state of play, as Borio mentioned. There is a country that made this experience over the past 20 years, and it is Japan. Where is inflation? One may respond "well that was during a globally disinflationary period and with China being the neighbour exporting deflation, inflation was kept down". Another factor is that Japanese households offset much of what the government was doing by saving more – they were very Ricardian. A fiscal dominance scenario that does not guarantee higher inflation might be a new normal. Even then, we may end up in a situation where private sector thrift offsets much or all of the government's fiscal profligacy.

References

Abiad, A., E. Detragiache and T. Tressel (2010), “A new database of financial reforms”, *IMF Staff Papers* 57(2): 281-302.

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Acemoglu, D., U. Akcigit, D. Hanley and W. Kerr (2016), “Transition to clean technology”, *Journal of Political Economy* 124(1): 52-104.

Acharya, V.V. and S. Steffen (2020), “The risk of being a fallen angel and the corporate dash for cash in the midst of Covid”, *The Review of Corporate Finance Studies* 9(3): 430-471.

Acharya, V.V., M. Crosignani, T. Eisert and C. Eufinger (2020), “Zombie credit and (dis-)inflation: evidence from Europe”, NBER Working Paper No. 27158.

Alesina, A., C. Favero and F. Giavazzi (2019), “Effects of Austerity: Expenditure- and Tax-based Approaches”, *Journal of Economic Perspectives* 33(2): 141-162.

Alesina, M.A., D. Furceri, G. Ciminelli and G. Saponaro (2021), “Austerity and Elections”, IMF Working Paper No. 2021/121.

Amaglobeli, M.D., H. Chai, M.E. Dabla-Norris, M.K. Dybczak, M. Soto and A.F. Tieman (2019), “The future of saving: The role of pension system design in an aging world”, IMF Staff Discussion Note No. 01.

Andrews, D. and F. Petroulakis (2019), “Breaking the shackles: Zombie firms, weak banks and depressed restructuring in Europe”, ECB Working Paper No. 2240.

Andrews, D., C. Criscuolo and P. Gal (2016), “The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy”, OECD Productivity Working Paper No. 5.

Auclert, A., H. Malmberg, F. Martenet and M. Rognli (2021), “Demographics, Wealth, and Global Imbalances in the Twenty-First Century”, NBER Working Paper No. w29161.

Banerjee, R. and B. Hofmann (2018), “The rise of zombie firms: causes and consequences”, *BIS Quarterly Review*, September.

Banerjee, R. and B. Hofmann (2021), “Corporate zombies: Anatomy and life cycle”, manuscript.

Bank of England (2021), Key elements of the 2021 Biennial Exploratory Scenario: Financial risks from climate change.

Baron, M., E. Verner and W. Xiong (2021), “Banking crises without panics”, *The Quarterly Journal of Economics* 136(1): 51-113.

Bartsch, E., A. Bénassy-Quéré, G. Corsetti and X. Debrun (2020), *It's All in the Mix: How Monetary and Fiscal Policies Can Work or Fail Together*, Geneva Reports on the World Economy 23, ICMB and CEPR.

Batini, N., M. Di Serio, M. Fragetta, G. Melin and A. Waldron (2021), "Building Back Better: How Big Are Green Spending Multipliers?", IMF Working Paper 2021/087.

Bauluz, L., F. Novokmet and M. Schularick (2022), "The Anatomy of the Global Wealth Boom," University of Bonn, unpublished.

Bernanke, B. (2005), "The global saving glut and the U.S. current account deficit", speech at the Sandridge Lecture, Virginia Association of Economists, Richmond, VA, 10 March.

Blanchard, O.J. and L.H. Summers (2020), "Automatic stabilizers in a low-rate environment", *AEA Papers and Proceedings* 110: 125-30.

Blanchard, O.J., J. Felman and A Subramanian (2021), "Does the New Fiscal Consensus in Advanced Economies Travel to Emerging Markets?", PIIE Policy Brief No. 21-7.

Bom, P.R. and J.E. Lighthart (2013), "What have we learned from three decades of research on the productivity of public capital", *Journal of Economic Surveys* 28(5): 889-916.

Borio, C. (2021a), "Is Inflation Dead or Hibernating?", SUERF Policy Brief No. 41.

Borio, C. (2021b), "Monetary and fiscal policies at a crossroads: New Normal or New Path?", panel remarks at Latvijas Bank Economic Conference, 20 September.

Borio, C. (2021c), "Back to the future: intellectual challenges for monetary policy", speech at the David Finch Lecture, University of Melbourne, 2 September.

Borio, C., P. Disyatat, D. Xia and E. Zakrajšek (2021), "Monetary policy, relative prices and inflation control: flexibility born out of success", *BIS Quarterly Review*, September.

Botta, E. (2019), "A review of 'Transition Management' strategies: Lessons for advancing the green low-carbon transition", OECD Green Growth Paper No. 2019/04.

Burke, M., S. Hsiang and E. Miguel (2015), "Global non-linear effect of temperature on economic production", *Nature* 527(7577): 235-239.

Burke, M., W. Davis and N. Diffenbaugh (2018), "Large potential reduction in economic damages under UN mitigation targets", *Nature* 557(7706): 549-553.

Buti, M. and P. van den Noord (2004), "Fiscal policy in EMU: rules, discretion and political incentives", European Economy Economic Paper No. 206, European Commission.

Caballero, R.J., T. Hoshi and A.K. Kashyap (2008), "Zombie lending and depressed restructuring in Japan", *American Economic Review* 98(5): 1943-77.

Caballero, R.J., E. Farhi and P.-O. Gourinchas (2017), "The Safe Assets Shortage Conundrum", *Journal of Economic Perspectives* 31(3): 29-46.

Calvino, F., C. Criscuolo and R. Verlhac (2020), “Declining business dynamism: Structural and policy determinants”, OECD Science, Technology and Industry Policy Paper No. 94.

Carvalho, C., A. Ferrero and F. Nechio (2016), “Demographics and real interest rates: Inspecting the mechanism”, *European Economic Review* 88: 208-226.

Causa, O., J. Browne and A. Vindics (2019), “Income redistribution across OECD countries: Main findings and policy implications”, OECD Economic Policy Paper No. 23

Cerra, V., B. Eichengreen, A. El-Ganainy and M. Schindler (eds) (forthcoming), *How to Achieve Inclusive Growth*, Oxford University Press and IMF.

Chateau, J., R. Bibas and E. Lanzi (2018), “Impacts of Green Growth Policies on Labour Markets and Wage Income Distribution: A General Equilibrium Application to Climate and Energy Policies”, OECD Environment Working Paper No. 137.

Clements, M.B.J., M.K. Dybczak, V. Gaspar, M.S. Gupta and M. Soto (2015), “The fiscal consequences of shrinking populations”, IMF Staff Discussion Note No. 15/21.

Crivelli, E., S. Gupta, C. Mulas-Granados and C. Correa-Caro (2016), “Fragmented politics and public debt”, IMF Working Paper No. 190.

D’Arcangelo, F.M., A. Johansson, I. Levin, A. Pagani and M. Pisu (forthcoming), A framework to decarbonise the economy: Designing and monitoring strategies to achieve climate change targets while boosting growth”, OECD Economics Department Policy Paper.

Davis, J., C. Fuenzalida and A.M. Taylor (2021), “The Natural Rate Puzzle: Global Macro Trends and the Market-Implied r ”, NBER Working Paper No. w26560.

Debrun, X., J.D. Ostry, T. Willems and C. Wyplosz (2019), “Public Debt Sustainability”, CEPR Discussion Paper No. 14010.

Dechezleprêtre, A., R. Martin and S. Bassi (2016), “Climate change policy, innovation and growth”, Policy Brief, Grantham Research Institute on Climate Change and the Environment and Global Green Growth Institute.

Dell’Anno, R. and B.E. Dollery (2014), “Comparative fiscal illusion: A fiscal illusion index for the European Union”, *Empirical Economics* 46(3): 937-960.

Dreger, C. and H.E. Reimers (2016), “Does public investment stimulate private investment? Evidence for the euro area”, *Economic Modelling* 58: 154-158.

Dynan, K. (2012), “Is a Household Debt Overhang Holding Back Consumption?”, *Brookings Papers on Economic Activity*, Spring.

Eichenbaum, M.S. (2019), “Rethinking fiscal policy in an era of low interest rates”, *Macroeconomic Review*, April, Monetary Authority of Singapore.

Eichengreen, B., R. Feldman, J. Liebman, J von Hagen and C. Wyplosz (2011), *Public Debts: Nuts, Bolts and Worries*, Geneva Reports on the World Economy 13, ICMB and CEPR.

Falato, A., D. Kadyrzhanova, J. Sim and R. Steri (2020), “Rising intangible capital, shrinking debt capacity, and the US corporate savings glut”, *Journal of Finance* (forthcoming)

Fatás, A., M.A.R. Ghosh, U. Panizza and M.A.F. Presbitero (2019), “The motives to borrow”, IMF Working Paper No. 101.

Fournier, J.M. (2016), “The positive effect of public investment on potential growth”, OECD Economics Department Working Paper No. 1347.

Fuest, C., K. Gründler, N. Potrafke and F. Ruthardt (2021), “Read My Lips? Taxes and Elections”, CESifo Working Paper No. 9401.

Furlanetto, F., A. Lepetit, Ø. Robstad, J. Rubio Ramírez and P. Ulvedal (2021), “Estimating hysteresis effects”, Finance and Economics Discussion Series 2021-059, Board of Governors of the Federal Reserve System.

Furman, J. and L. Summers (2020), “A Reconsideration of Fiscal Policy in the Era of Low Interest Rates”, mimeo, Congressional Budget Office, mimeo.

Gagnon, E., B.K. Johannsen and D. Lopez-Salido (2016), “Understanding the new normal: The role of demographics”, Finance and Economics Discussion Series 2016-080, Board of Governors of the Federal Reserve System.

Gechert, S. (2015), “What fiscal policy is most effective? A meta-regression analysis”, *Oxford Economic Papers* 67(3): 553-580.

Goodhart, C. and M. Pradhan (2020a), “Future imperfect after coronavirus”, VoxEU.org, 27 March.

Goodhart, C. and M. Pradhan (2020b), *The Great Demographic Reversal*, Springer International Publishing.

Gourinchas, P.-O. and H. Rey (2019), “Global real rates: A secular approach”, BIS Working Paper No. 793.

Guillemette, Y. and D. Turner (2021), “The Long Game: Fiscal Outlooks to 2060 Underline Need for Structural Reforms”, OECD Economics Department Policy Paper No. 29.

Hall, G.J. and T.J. Sargent (2011), “Interest rate risk and other determinants of post-WWII US government debt/GDP dynamics”, *American Economic Journal: Macroeconomics* 3(3): 192-214.

Hendren, N. and B. Sprung-Keyser (2020), “A unified welfare analysis of government policies”, *The Quarterly Journal of Economics* 135(3): 1209-1318.

IEA – International Energy Agency (2021a), *Net Zero by 2050*.

IEA (2021b), *World Energy Outlook 2021*.

Ignaszak, M. and P. Sedlacek (2021), “Productivity, Demand, and Growth”, working paper.

Ikeda, D. and M. Saito (2014), “The effects of demographic changes on the real interest rate in Japan”, *Japan and the World Economy* 32: 37-48.

IMF – International Monetary Fund (2017), “The Effects of Weather Shocks on Economic Activity: How Can Low-Income Countries Cope?”, Chapter 3 in *Seeking Sustainable Growth: Short-Term Recovery, Long-Term Challenges, World Economic Outlook, October 2017*.

IMF (2019), *Macroeconomics of Aging and Policy Implications*.

IMF (2020), Fiscal Monitor Update, October 2020.

IMF (2021a), Fiscal Monitor Update, January 2021.

IMF (2021b), “Reaching Net Zero Emissions”, G20 Background Note.

IMF (2021c), “Tailoring Fiscal Responses”, *Fiscal Monitor April 2021*.

IMF (2021d), *World Economic Outlook, October 2021*.

IMF and OECD (2021), *Tax Policy and Climate Change*, Report for the G20 Finance Ministers and Central Bank Governors.

Jordà, Ò. (2005), “Estimation and inference of impulse responses by local projections”, *American Economic Review* 95(1): 161-182.

Jordà, Ò., M. Schularick and A.M. Taylor (2013), “When credit bites back”, *Journal of Money, Credit and Banking* 45(s2): 3-28.

Jordà, Ò., M. Schularick and A.M. Taylor (2015), “Leveraged bubbles”, *Journal of Monetary Economics* 76: S1-S20.

Jordà, Ò., M. Schularick and A.M. Taylor (2016a), “Sovereigns Versus Banks: Credit, Crises, and Consequences”, *Journal of the European Economic Association* 14(1): 45-79.

Jordà, Ò., M. Schularick and A.M. Taylor (2016b), “The great mortgaging: housing finance, crises and business cycles”, *Economic Policy* 31(85): 107-152.

Jordà, Ò., M. Schularick and A.M. Taylor (2017), “Macrofinancial history and the new business cycle facts”, *NBER Macroeconomics Annual* 31(1): 213-263.

Jordà, Ò., M. Kornejew, M. Schularick and A.M. Taylor (2020), “Zombies at large? Corporate debt overhang and the macroeconomy”, NBER Working Paper No. 28197.

Jordà, Ò., B. Richter, M. Schularick and A.M. Taylor (2021a), “Bank capital redux: solvency, liquidity, and crisis”, *The Review of Economic Studies* 88(1): 260-286.

Jordà, Ò., S. Singh and A.M. Taylor (2021b), “The longer-run economic consequences of pandemics”, *Covid Economics* 1.

Kahn, M.E., K. Mohaddes, R.N. Ng, M.H. Pesaran, M. Raissi and J.C. Yang (2021), “Long-term macroeconomic effects of climate change: A cross-country analysis”, *Energy Economics* 104: 105624.

Kopecky, J. and A.M. Taylor (2020), “The Murder-Suicide of the Rentier: Population Aging and the Risk Premium”, NBER Working Paper No. 26943 (revised in 2022).

Kuvshinov, D. and Z. Zimmermann (2020), “The Expected Return on Risky Assets: International Long-run Evidence”, available at SSRN 3546005.

Lane, E. (2021), “The Future of the EU fiscal governance framework: a macroeconomic perspective”, panel intervention at the European Commission webinar on “The future of the EU fiscal governance framework”.

Lian, C. and M. Yueran (2021), “Anatomy of corporate borrowing constraints”, *The Quarterly Journal of Economics* 136(1): 229-291.

Lisack, N., R. Sajedi and G. Thwaites (2017), “Demographic trends and the real interest rate”, Bank of England Working Paper No. 701.

Maravalle, A. and L. Rawdanowicz (2020), “How effective are automatic fiscal stabilisers in the OECD countries?”, OECD Economics Department Working Paper No. 1635.

Mauro, P. and J. Zhou (2020), “r minus g negative: Can We Sleep More Soundly?”, IMF Working Paper No. 20/52.

Mauro, P. and J. Zilinsky (2016), “Reducing government debt ratios in an era of low growth”, PIIE Policy Brief No. 16-10.

MetLife Investment Management (2021), “Emerging Markets: Market Review and Outlook”, 31 March.

Mian, A. and A. Sufi (2009), “The consequences of mortgage credit expansion: Evidence from the US mortgage default crisis”, *The Quarterly Journal of Economics* 124(4): 1449-1496.

Mian, A. and A. Sufi (2010), “The Great Recession: Lessons from microeconomic data”, *American Economic Review* 100(2): 51-56.

Mian, A., K. Rao and A. Sufi (2013), “Household balance sheets, consumption, and the economic slump”, *The Quarterly Journal of Economics* 128(4): 1687-1726.

Mian, A., A. Sufi and E. Verner (2017), “Household debt and business cycles worldwide”, *The Quarterly Journal of Economics* 132(4): 1755-1817.

Mian, A.R., L. Straub and A. Sufi (2021), "What Explains the Decline in r^* ? Rising Income Inequality Versus Demographic Shifts", Becker Friedman Institute for Economics Working Paper No. 2021-104, University of Chicago.

Müller, K. and E. Verner (2021), "Credit Allocation and Macroeconomic Fluctuations", available at SSRN 3781981.

O'Reilly, P. (2018), "Tax policies for inclusive growth in a changing world", OECD Taxation Working Paper No. 40.

OBR – Office for Budget Responsibility (2021), *Fiscal risks report – July 2021*.

OECD – Organisation for Economic Co-operation and Development (2014), "Recommendation of the Council on Principles for Independent Fiscal Institutions, OECD Network of Parliamentary Budget Officials and Independent Fiscal Institutions (PBO).

OECD (2021a), *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2021*, OECD Publishing.

OECD (2021b), *OECD Economic Outlook*, Volume 2021, Issue 2, OECD Publishing.

OECD (2021c), *Taxing Energy Use for Sustainable Development: Opportunities for energy tax and subsidy reform in selected developing and emerging economies*, OECD Publishing.

Orszag, P., R. Rubin and J. Stiglitz (2021), "Fiscal resiliency in a deeply uncertain world: The role of semiautonomous discretion", PIIE Policy Brief No. 21-2.

Peek, J. and E.S. Rosengren (2005), "Unnatural selection: Perverse incentives and the misallocation of credit in Japan", *American Economic Review* 95(4): 1144-1166.

Perotti, R. (2013), "The 'Austerity Myth': Gain without Pain?", in A. Alesina and F. Giavazzi (eds), *Fiscal Policy after the Financial Crisis*, University of Chicago Press.

Persson, T. and G. Tabellini (2004), "Constitutional Rules and Fiscal Policy Outcomes", *American Economic Review* 94(1): 25-45.

Pettersson-Lidbom, P. (2001), "An Empirical Investigation of the Strategic Use of Debt", *Journal of Political Economy* 109(3): 570-583.

Pina, Á. (2016), "Making public finances more growth and equity-friendly in the euro area", OECD Economics Department Working Paper No. 1316.

Pisani-Ferry, J. (2021), "21-20 Climate policy is macroeconomic policy, and the implications will be significant", PIIE Policy Brief No. 20.

Rachel, L. and L. Summers (2019), "On Secular Stagnation in the Industrialized World", NBER Working Paper No. 26198.

Ramey, V. (2019), "Ten years after the financial crisis: What have we learned from the renaissance in fiscal research?", *Journal of Economic Perspectives* 33(2): 89-114.

Rawdanowicz, Ł., M. Hammouch and M. Kasai (2017), "The fall in real long-term government bond yields: Disentangling different drivers", OECD Economics Department Working Paper No. 1398.

Rawdanowicz, Ł., S. Turban, J. Haas, D. Crowe and V. Millot (2021), "Constraints and demands on public finances: Considerations of resilient fiscal policy", OECD Economics Department Working Paper No. 1694.

Reis, R. (2021), "The constraint on public debt when $r < g$ but $g < m$ ", working paper.

Rogoff, K.S. and Y. Yang (2020), "Peak China Housing", NBER Working Paper No. 27697.

Sahm, C. (2019), "Direct stimulus payments to individuals. Recession Ready: Fiscal Policies to Stabilize the American Economy", in H. Boushey, R. Nunn and J. Shambaugh (eds), *Recession ready: Fiscal policies to stabilize the American economy*, Brookings Institution.

Schivardi, F., E. Sette and G. Tabellini (2017), "Credit misallocation during the European financial crisis", Bank of Italy Temi di Discussione (Working Paper) No. 1139.

Schnabel, I. (2021), "Unconventional fiscal and monetary policy at the zero lower bound", speech at the Third Annual Conference organised by the European Fiscal Board on "High Debt, Low Rates and Tail Events: Rules-Based Fiscal Frameworks under Stress", 26 February.

Schularick, M. and S. Steffen (2020), "A Protective Shield for Europe's Banks", mimeo.

Schularick, M. and A.M. Taylor (2012), "Credit booms gone bust: Monetary policy, leverage cycles, and financial crises, 1870-2008", *American Economic Review* 102(2): 1029-61.

Schularick, M., L. Ter Steege and F. Ward (2021), "Leaning against the wind and crisis risk", *American Economic Review: Insights* 3(2): 199-214.

Stevenson, A. and J. Dong (2021), "As China's Property Crisis Spreads, Beijing Says There's Nothing to See", *New York Times*, 10 November.

Stock, J. (2021), "Driving Deep Decarbonization", *Finance and Development*, September, IMF.

Storz, M., M. Koetter, R. Setzer and A. Westphal (2017), Do we want these two to tango? On zombie firms and stressed banks in Europe", ECB Working Paper No. 2104.

Vollrath, D. (2019), *Fully Grown: Why a Stagnant Economy Is a Sign of Success*, The University of Chicago Press.

Wiltermuth, J. and K. Haunss (2019), "Yellen warns of corporate distress, economic fallout", Reuters, 27 February.

Woo, J. (2003), “Economic, political, and institutional determinants of public deficits”, *Journal of Public Economics* 87(3-4): 387-426.

Yared, P. (2019), “Rising government debt: Causes and solutions for a decades-old trend”, *Journal of Economic Perspectives* 33(2): 115-40.

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The world economy is awash in debt. The debt levels of households, companies and sovereigns are at historical highs relative to output. The 24th Geneva Report on the World Economy explores the geo-economic risks entailed by levels of overall debt not seen in the history of humankind. Debt and credit are closely linked to financial crises, the evolution of the business cycle, and to the likelihood of negative tail events. Financial vulnerability is endemic in a highly leveraged world. In a time of such record-high debt, it is difficult not to be pessimistic about our future economic, financial, social and political stability.

As alarming as this sounds, a deeper understanding of the secular causes that got us here is needed. Taking a longer view, public and private sector debt in advanced and emerging market economies had already surged to unprecedented highs in the past four decades, before rising further in the Covid-19 pandemic. This debt boom is, mechanically, the flip side of the surge in gross savings and the multiplication of financial wealth experienced in recent decades. If we look at the asset side of balance sheets, we find that, relative to their income, households have never been wealthier. The trends behind the oversupply of credit will likely continue for a long time.

Against this background, the report studies the outlook for public, household and corporate debt. Special chapters deal with the outlook for the Chinese economy and inflationary risks. The overall picture that the report paints is not one of doom and gloom. Fears about zombification of corporates in advanced economies are likely overblown. Households in many rich countries have deleveraged after the 2008 crash. With a turn in the global interest rate cycle imminent, the largest risks are concentrated in emerging economies where household and corporate debts have risen sharply. China's transition from financial boom to bust is a particular risk factor. Policymakers in Beijing and elsewhere are facing enormous challenges, and mistakes could happen and spill over onto innocent bystanders in a globalised economy.

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