

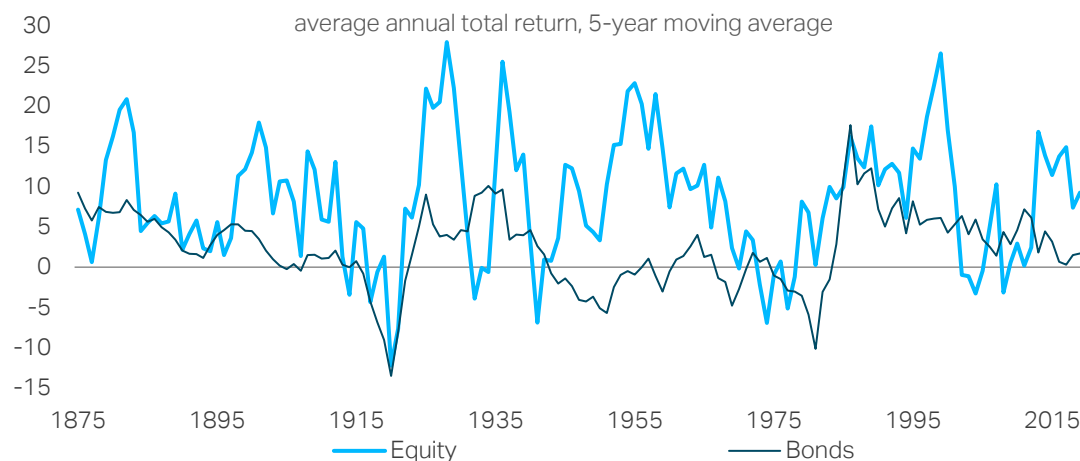


Macro Picture

RATE ESCAPES

Dario Perkins

With the Phillips curve broken, central banks are unable to 'normalize' interest rates. In the modern era, faster wage growth only erodes profit margins, causing recession. So what might end this secular period of extremely low real interest rates? We look at economic history for the answer, drawing lessons from the (late-1800s) Long Depression.

Chart 1: Long-term US returns

Source: The Return on Everything (Macrohistory database, TS Lombard)

FLAT CYCLE

Bond yields were supposed to grind higher through this expansion, as inflation recovered and central banks 'normalized' policy. Instead, they have bounced around at low levels. Wages are accelerating gradually in some countries but this is squeezing margins. Financial markets also seem unable to tolerate materially higher borrowing costs, generating powerful 'hysteresis'.

HISTORY LESSONS

While low real interest-rates are naturally 'sticky', current levels are not unprecedented. This means we can look at previous 'real rate depressions' for clues about what might cause the next secular reversal in bond markets. The historical record is not particularly comforting – large rate reversals have typically involved political catastrophes, war or other fundamental 'regime shifts'.

LONG DEPRESSIONS

Perhaps the clearest historical parallel is with the Long Depression of the late nineteenth century. This was also a time of deflation, rapid technological change, 'peak globalization', a slump in productivity, labour-market polarization, rising inequality and a surge in populism. But it also suggests a more optimistic path to 'rate normalization' – wider technological diffusion.

RATE ESCAPES

The last few years haven't exactly gone to plan for the world's policymakers. Most central banks were expecting inflation rates to recover and 'neutral' interest rates to rise, which would allow them to 'normalize' monetary policy. But only the Federal Reserve actually managed to achieve 'lift off' and it had to reverse course much earlier than officials had expected. The ECB, the Bank of England and the Bank of Japan remain stuck with interest rates lower than the rates they had at the start of the global expansion. Global bond yields also remain depressed, bouncing around at their lowest levels in recorded history. Once again, it seems people were premature to declare the end of the long bull-market in fixed income. One issue, of course, is that the Phillips curve hasn't operated the way many officials were expecting. The long economic recovery has reduced unemployment to generational lows but this has not fuelled inflation. To the extent wages are gradually picking up in some countries, this is causing a squeeze on profit margins, which threatens to undermine the cycle. The other issue is that global financial markets seem to struggle with moderately higher interest rates. Even a temporary spike in borrowing costs proves deflationary, if it undermines asset values and damages corporate balance sheets.

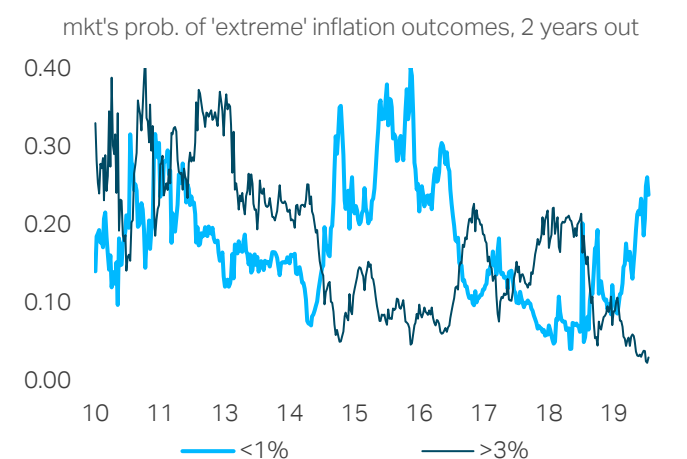
In the absence of inflation, low interest rates can become self-reinforcing – they exhibit a sort of 'hysteresis'. We agree with Larry Summers, who calls this a 'black hole'. Still, it is important to remember that the situation we see today is not unprecedented from a historical perspective. There have been a number of 'real rate depressions' in the past and these have all given way to large and aggressive selloffs in the bond market. Using long historical data, Bank of England researchers have identified eight previous 'real-rate reversals', which on average involved a spike in yields of more than 300bps over two years. So, with clients asking us how the current low-rate environment might eventually end, it makes sense to look at economic history for some answers. Unfortunately, the results of this exercise are not particularly comforting – as the BoE staff point out 'most of the eight previous secular real rate depressions were eventually disrupted by geopolitical events or catastrophes, with several – such as the Black Death, the Thirty Years War, or World War Two – combining both demographic, and geopolitical inflections'. While we would not want to predict such extreme scenarios today, perhaps the closest analogy would involve a 'war on climate change', massive fiscal spending designed to counter potentially extreme disruption to the global economy. Perhaps the MMT school has history on their side.

Bank of England staff also drew parallels with the Long Depression, which occurred late in the nineteenth century. After analysing this period in detail, we agree that there are rather striking similarities with the macro environment we see today. These include (i) Rapid globalization and technological change, which created powerful deflationary pressures; (ii) A slump in productivity, which was rather puzzling given there was no let-up in the Industrial Revolution; (iii) labour markets that were becoming increasingly 'polarized', with a collapse in the middle of the income distribution; (iv) average wages that failed to keep pace with productivity, reducing the labour share of income and widening social inequality; and (v) the onset of 'populism', which included widespread calls for protectionism and the creation of socialism and an early welfare state. Perhaps the more encouraging aspect of the Long Depression analogy is that it ended without the need for massive fiscal or monetary stimulus. Productivity growth eventually recovered and the gains from previous technologies became more widespread, reviving average living standards. This is a reminder that productivity has become increasingly uneven in recent times, but a quickening in technological diffusion is one potential path out of the New Mediocre.

1. FLAT CYCLE

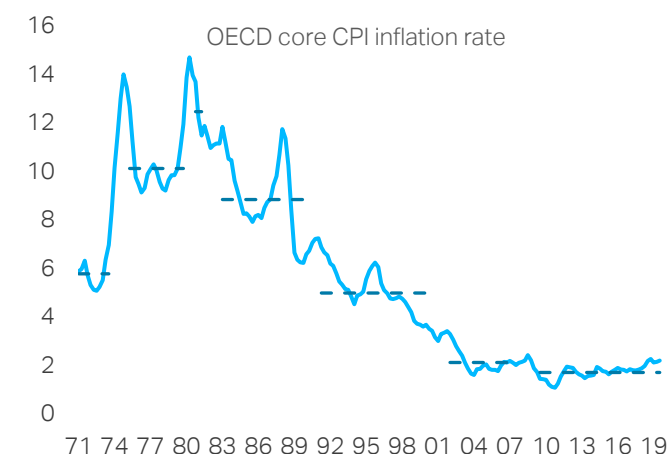
Through the current expansion, there have always been investors willing to entertain the idea that global inflation and bond yields will suddenly break higher. We can see this in Chart 2, which uses the Minneapolis Fed's decomposition of bond yields to estimate the market's probability of 'extreme' US inflation outcomes. On average through this expansion, fixed income investors have assigned a 20 per cent probability of US inflation rising above 3%. But the striking thing about Chart 2 is that the market seems to have abandoned this possibility since late 2018 and is now firmly skewed towards deflation risk. Currently, US yields are priced for a 25% chance of inflation dropping below one per cent in 2021, and a roughly zero probability of a reading above 3 per cent. We have noticed a similar shift during our regular interaction with clients. While in recent years there was always a minority of investors prepared to argue the case for a sustained outbreak of inflation, today it is hard to find anyone who holds that view.

Chart 2: Inflation capitulation



Source: Minneapolis Fed estimates

Chart 3: Inflation has barely budged



Source: OECD, TS Lombard

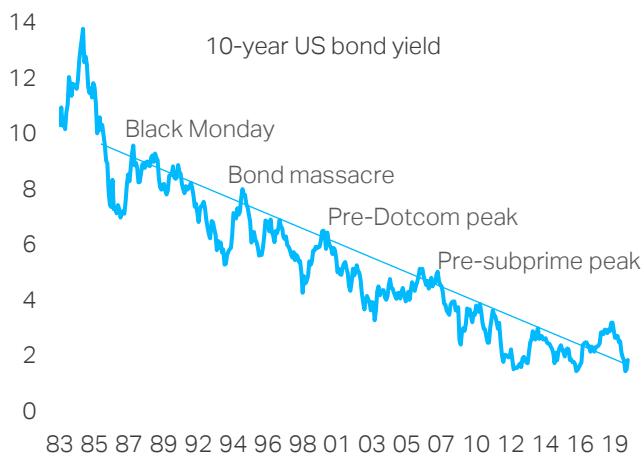
Inflation capitulation

Perhaps this current deflation bias has gone too far, especially if the consensus is wrong in its conviction about a US recession in 2020-21. Yields are again trying to move higher and the consensus does not have a good track record when it comes to predicting cyclical turning points. Even a modest improvement in global demand might prompt a reassessment. But it is easy to understand why many inflation-worriers have abandoned their hawkish views. Despite a decade of people worrying about a sudden inflationary breakout, there is still no real evidence of this in the data. Central banks continue to miss their targets and having repeatedly predicted faster price increases that didn't materialize, their credibility has steadily diminished. The underlying problem is that the models they use to forecast inflation seem to have stopped working, which means they have – like many investors – consistently overstated inflation risk.

Most central banks rely on some variant of the Phillips curve to predict consumer price trends, the idea that persistent declines in unemployment (or the elimination of an output gap) must eventually cause an acceleration in wages and prices. Yet unemployment has hit multi-decade lows across most major economies, while core inflation rates have barely budged. Worse, this has not just been a feature of the latest (post-2009) global expansion, it was also apparent in previous economic cycles. In fact, since at least the late 1990s, inflation has not behaved the way most central bankers were expecting. The most encouraging thing we can say about the

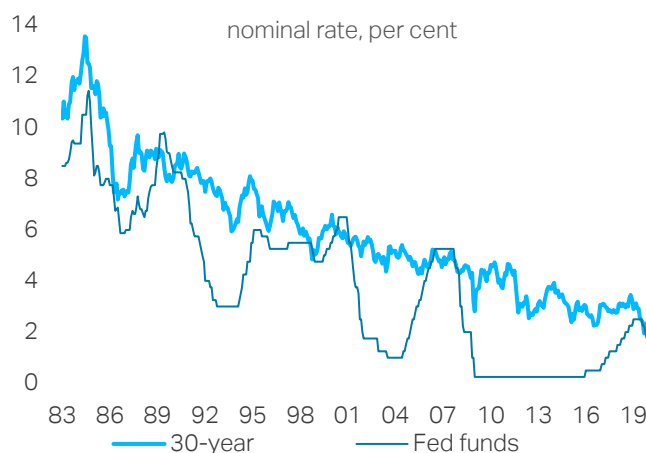
Phillips curve is that it works better for wages than consumer prices. Low unemployment has generated a modest acceleration in wages in some countries, but the corporate sector has not passed on faster labour costs to their customers – instead, they have absorbed them in their margins. This means the ‘late cycle danger’ from the Phillips curve has changed. Instead of ‘cost-push inflation’, which forces central banks to overtighten monetary policy, we tend to get a decline in corporate margins, which eventually undermines the expansion by discouraging employment. Ironically, this means faster wages can become a source of deflation (like oil hikes).

Chart 4: Fed can't break the trend...



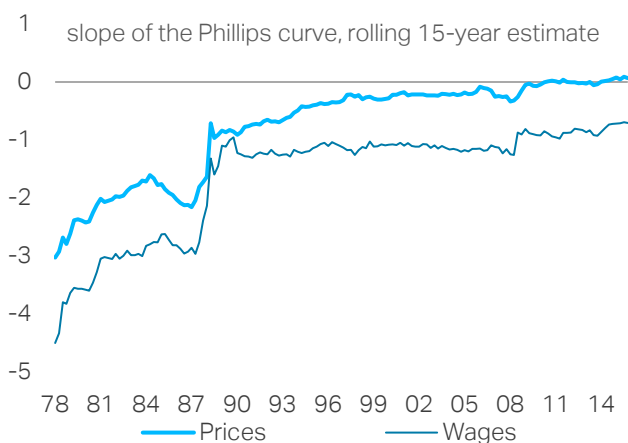
Source: Bloomberg

Chart 5: Or exceed the 30-year rate



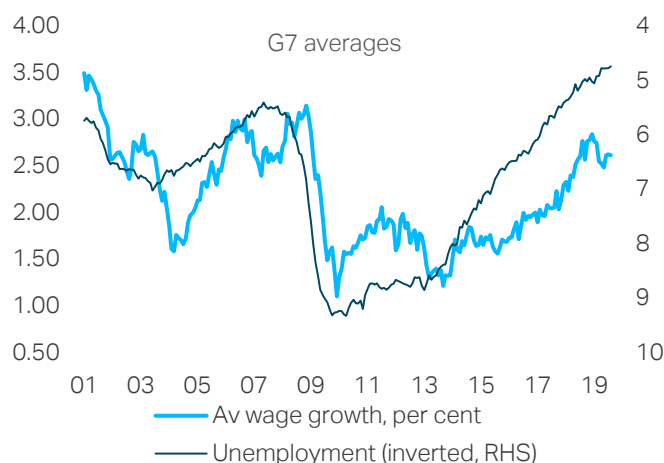
Source: Bloomberg

Chart 6: Phillips curve has disappeared



Source: BIS

Chart 7: Though wages still respond (sort of)



Source: Datastream, TS Lombard

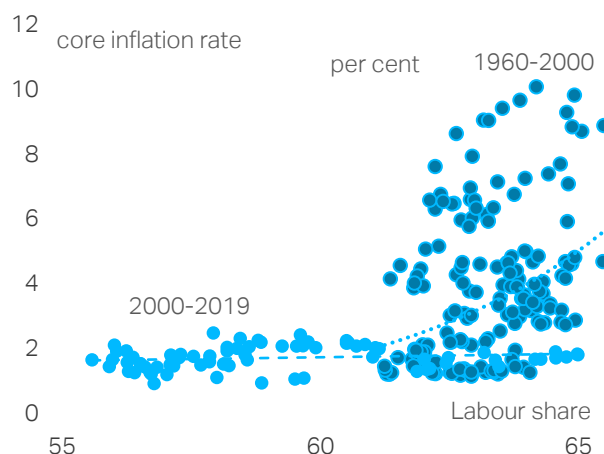
Wages are not inflationary

Chart 8 illustrates the breakdown of the Phillips curve another way, by running a simple rolling regression of US core inflation on unit labour costs (the difference between wages and productivity). In a tight labour market, we would expect average earnings to outstrip productivity, causing an acceleration in unit labour costs. The coefficient in Chart 8 captures the extent to which companies pass on this cost increase to their customers by raising their prices. As we

can see, the coefficient has dropped sharply over time and is now barely greater than zero. This means the 'wage-price spirals' that were common in the 1970s and 1980s, an experience that had such a powerful influence on modern central-bank practice, is no longer a feature of the modern economy. Chart 9 shows a scatter plot, which reveals the same trends. While in the past there was a clear positive correlation between the wage share and inflation – rising labour costs were associated with faster price increases between 1960 and 2000 – this is no longer the case. Since 2000, even large swings in the labour share have had no sustained impact on inflation.

Chart 8: No more wage-price spirals


Source: TS Lombard estimate

Chart 9: Inflation no longer responds to wages


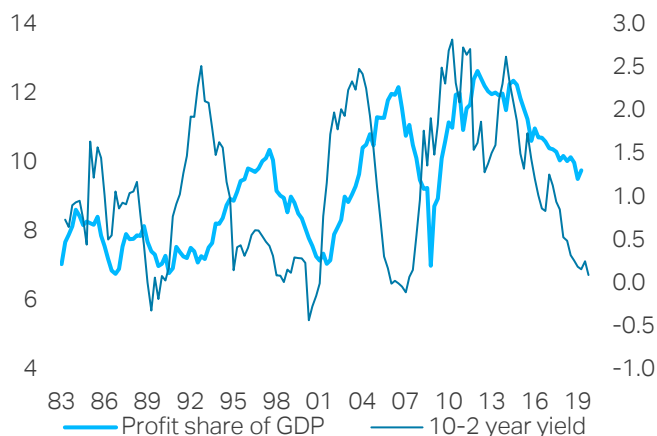
Source: BEA, BLS, TS Lombard

Markets cant handle higher rates

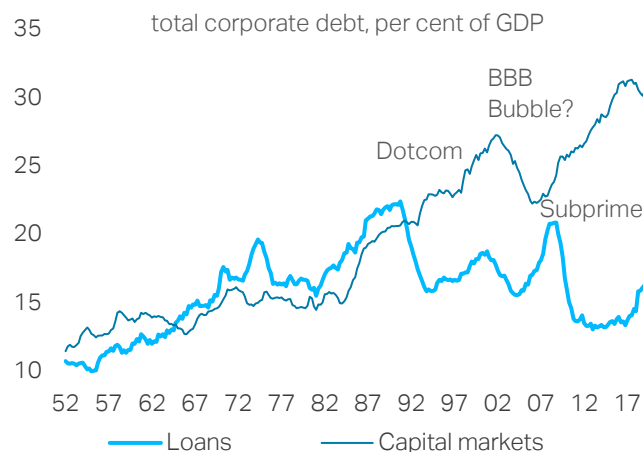
As the Phillips curve seems to be broken, inflation has remained (too) low throughout this cycle, which has meant there could be no 'normalization' in global interest rates. Bond yields have bounced around, prone to periods of overshooting (in both directions), but most economies now have long-term rates even lower than they were at the start of the global expansion. There has been no 'big reversal' in global interest rates and the long secular bull market in bonds, which started in the early 1980s, remains largely intact – confounding those pundits who have continuously predicted its imminent demise. In fact, one of the problems with trying to predict a secular bear-market in fixed income is that the world economy doesn't seem to cope too well with even modestly higher borrowing costs. Chart 4 shows something "bad" has happened every time interest rates have broken out of their 30-year moving trend. We saw this theme play out again in 2018, when the prospect of sustained 3 per cent yields caused a plunge in asset prices.

Low real interest rates seem to suffer from a sort of 'hysteresis effect', which means they feed on themselves. With nominal yields close to their lowest levels in centuries and some countries experiencing negative interest rates, investors have been forced into riskier securities in search of a positive return. This has created huge demand for corporate paper, particularly at the 'junk' and lower investment grade (BBB) level, which has provided cheap funding to many of the world's riskiest corporate borrowers. These trends have surely made the world economy more vulnerable to any rise in interest rates. Sharp increases in yields not only cause the search for yield to unwind, cutting off new funding, but they also make it more costly for companies to refinance their existing debts, which might even cause a recession. This means any rise in interest rates can prove unsustainable, simply compounding the deflationary environment.

Economic models have traditionally ignored these sorts of hysteresis effects, assuming interest rates and monetary policy are effectively 'neutral' in the long term ([see here](#)).

Chart 10: Profit share falls in late cycle


Source: Bloomberg, BEA, TS Lombard, yield spread on RHS

Chart 11: Bubbles cause rate hysteresis


Source: Federal Reserve, TS Lombard

2. HISTORY LESSONS

If the Phillips curve is broken and low real interest rates bring hysteresis effects, it is tempting to think we might be stuck with depressed bond yields for a long time to come. Yet history shows the macroeconomic situation we see today is not unprecedented and every previous 'real rate depression' eventually came to an end. A [recent Bank of England paper](#) provides some fascinating historical context, something that is often missing in the popular discussion about secular stagnation. To start, Bank staff have created an unrivalled database of economic statistics, which allows us to track inflation and interest rates all the way back to the 1300s (most of this info [is available online](#)). The BoE's headline series (Charts 12 and 13) splices together information from various countries and monetary eras to create a measure of the world's 'risk free' borrowing cost, based on which nation led the global economy at any particular point in time. It starts with data for northern Italian cities between 1314 and the early 1500s, before adopting Spanish data through the fourteenth century, Dutch data in the fifteenth century and British data from the late-1600s to the First World War. For the most recent part of the dataset, starting in the early 1900s, BoE researchers base their risk-free rate on the US Treasury market¹.

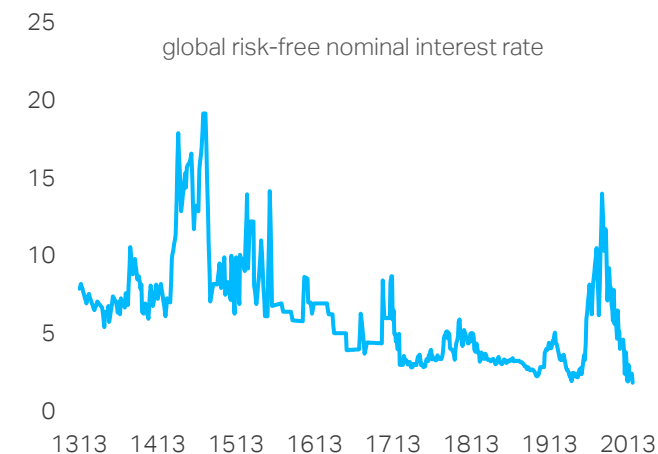
Lowest rates in history

What do we learn from this long historical dataset? A few points stand out: (i) the nominal interest rates we see today are the lowest in 700 years. The absolute trough, at below 1.5 per cent, actually occurred in 2016, though we retested those lows in 2019; (ii) The negative nominal yields we now see in Japan and Europe are particularly striking – there is no historical precedent in this dataset (no wonder [most investors find this situation puzzling](#)); (iii) the modern rate era is only slightly less impressive when we adjust the data for inflation. Global 'real' interest rates are not the lowest in history (those lows tend to occur during extreme historic events, such as major

¹ Actually the BoE series also includes a couple of brief interludes where they use German interest-rate data just before World War I and again in the 1960s.

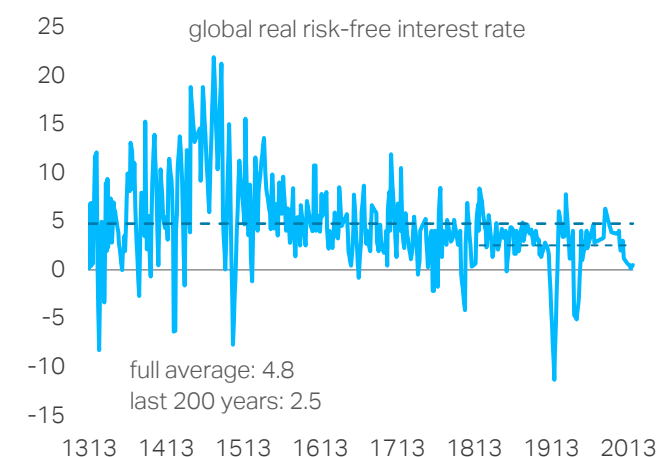
military conflicts), but they are certainly below any 'normal' range. The average historical risk-free rate – calculated over the entire sample – is 4.8%, but this drops to 2.5% over the last 200 years.

Chart 12: Nominal-rate depression



Source: Bank of England working paper no.686

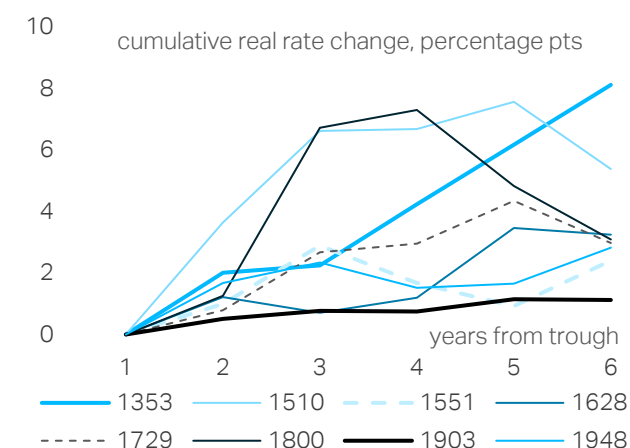
Chart 13: Real-rate depression



Source: Bank of England working paper no.686

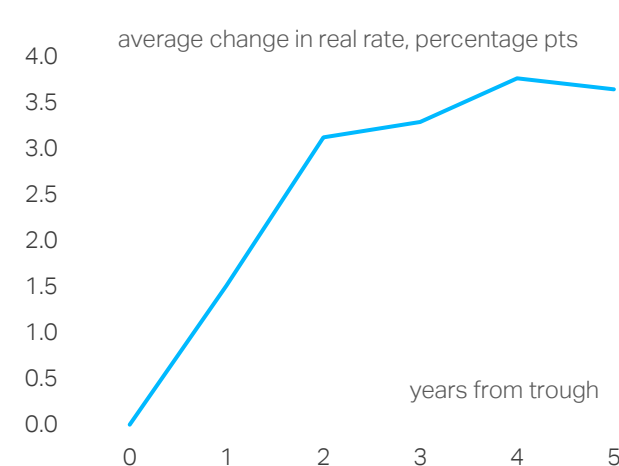
These statistics are remarkable but while the current (post-1981) bull-market in bonds is extreme by historical comparisons, it is not a total outlier. Defining a 'secular bull market' as an average annual decline in yields of 5 bps or more – which lasts for at least 10 years – Bank of England staff have identified at least eight prior secular trends that are comparable to what has happened recently. In fact, among these all-time greats, the current episode is 'only' the second longest bull-run in history, remaining behind the rally in yields that took place between 1471 and 1516 (after the discovery of New World gold, see below). While most economists naturally recognize the modern (Volcker Fed) peak in real yields that occurred in the early 1980s, they are not aware that this move is actually part of a super-cycle in rates that began in the mid-1400s.

Chart 14: Real-rate reversals



Source: Bank of England working paper no.686

Chart 15: Average historical reversal



Source: Bank of England working paper no.686

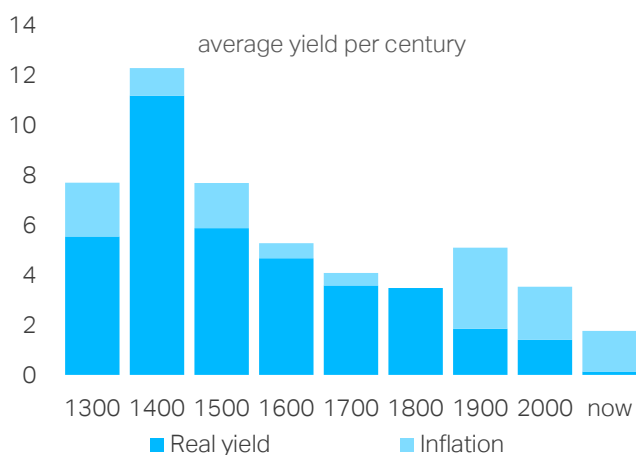
Table 1: The history of real rate reversals

	Ref country	Broad causes	Historical events
1353	ITALY	Mortality crisis	The Black Death hits Europe, wiping out large share of pop.
1510	SPAIN	Monetary, war	Massive extraction of gold from the New World
1551	SPAIN	Monetary, war	The Italian War, silver mines discovered
1628	NETH	War	The Thirty Year War – one of the most destructive in history
1729	UK	Mortality crisis (famine)	One of the most severe famines in British history
1800	UK	War, monetary	Napoleonic wars, Britain leaves the Gold Standard
1903	UK	Technology, populism	Industrial Revolutions, protectionism, income redistribution
1948	US	Demographics, Monetary	Post war-rebuilding, Baby Boom, start of Dollar Standard

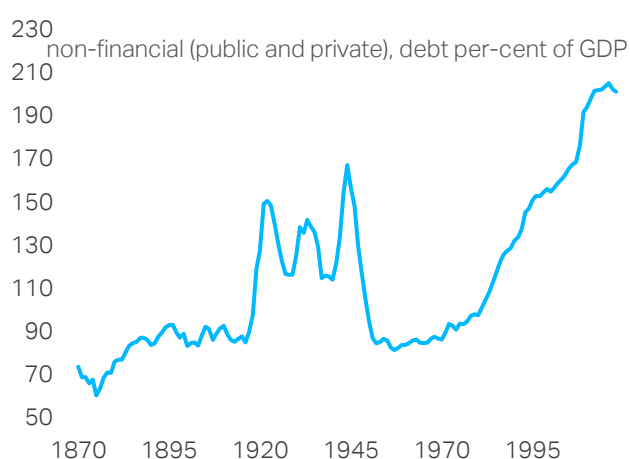
Bank of England historical database, Bank of England working paper no.686, TS Lombard

History of rate reversals

The historical data are interesting because they put the current situation in context, but they can also provide useful information about secular turning points. Chart 15 shows that previous 'real rate depressions' ended rather abruptly, giving way to sharp rebounds in yields. Though there is considerable variation across episodes, average inflation-adjusted interest rates jumped by around 300bps during the first two years of the subsequent bear market. Obviously, a similar move today would have serious repercussions and it is not clear global financial markets could cope with such a sudden spike in borrowing costs. Even more disturbing, especially if you are superstitious, all those previous rate-reversals coincided with extreme geopolitical events and catastrophes, such as the Black Death, multi-year famines, or major international wars and military conflicts. Table 1 provides a summary, linking each reversal to its historic 'trigger'.

Chart 16: Decomposition of nominal yields


Source: Bank of England working paper no.686

Chart 17: New era of 'financialization'


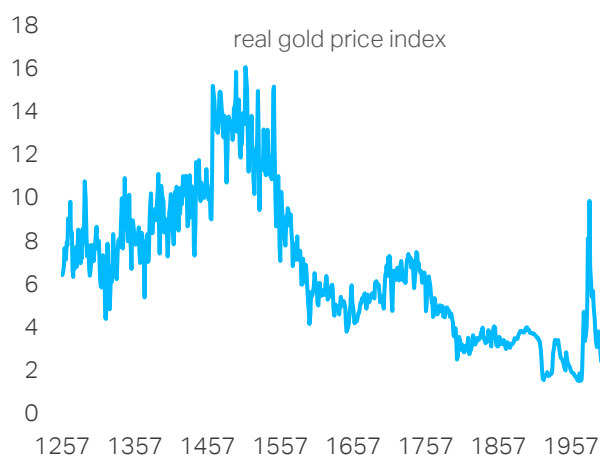
Source: MacroHistory database, TS Lombard

Monetary vs 'real' causes

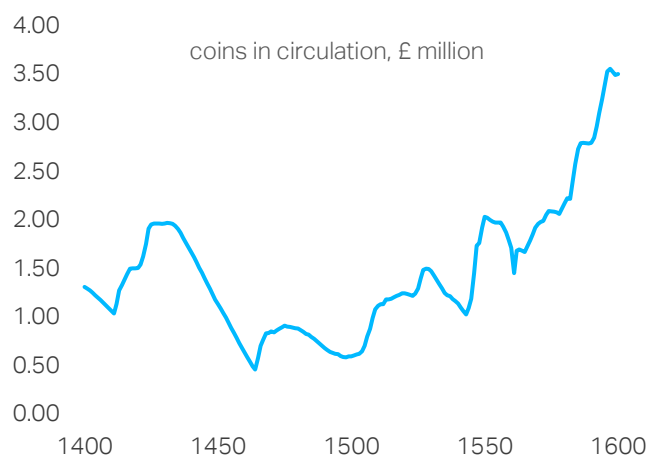
When analysing economic history, there is always a debate about the relative importance of monetary and 'real' forces (demographics, technology etc.). We even see this today in the debate about whether secular stagnation is a response to declining potential growth rates or overly-tight monetary policy. By focusing on secular declines in yields that lasted at least 10-years, we have ignored many of the gyrations in monetary policy that took place within the

business cycle. Yet there were clearly some periods in history where monetary forces played a dominant and persistent role. Before the mid-20th century, of course, global money creation was typically tied to the availability of precious metals such as gold. The mid-1400s, which produced the highest real interest rates in history, is infamous for its persistent gold shortages (the Great Bullion Famine), which occurred with the Ottomans' seizure of silver mines in the Balkans, and increasing European balance of payments deficits, which caused a continuous outflow of precious metals. These shortages ended with Spain's discoveries of gold in the New World, which allowed a massive worldwide easing in monetary conditions during the 15th century.

While large shifts in the availability of gold certainly had a bearing on real interest rates and the global economy, it is easy to overstate the historical importance of monetary policy. After all, money creation was tightly controlled most of the time, so inflation was essentially random 'white noise' and there was no sustained expansion in credit. In fact, some historians describe the pre-industrial era as essentially 'Malthusian' – agriculture and farming dominated most economies, so they could only grow as quickly as their food supplies allowed. Faster population would cause widespread famines, which would in turn would curb economic activity. This is presumably why demographic shifts and mortality crises, such as the Black Death and the 1729 famines, had such a persistent impact on real interest rates. These forces became less important in the industrial era, but another reoccurring 'demographic' challenge remained – war.

Chart 18: Massive monetary expansion, 1400s


Source: Measuringworth.com, TS Lombard

Chart 19: UK monetary expansions


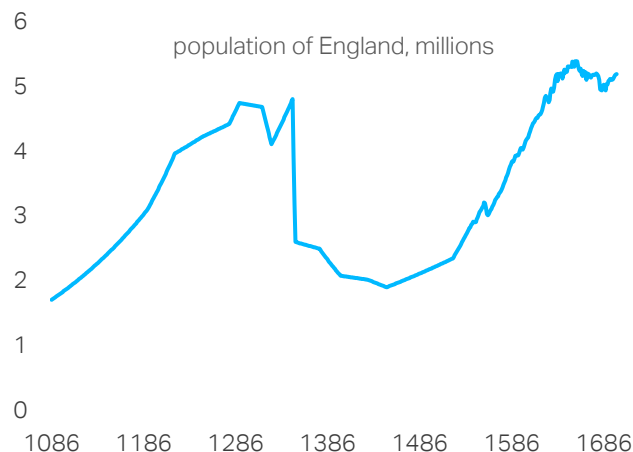
Source: Bank of England 'Millennium of data'

War – what is it good for?

Table 1 shows that military conflict has traditionally been one of the most common triggers for secular bond-market reversals. Real yields typically drop to historic lows during (and in the run-up to) major wars, before rebounding afterwards. This pattern is easy to explain. During military conflicts, the combination of massive risk aversion (or investors buying government securities for 'patriotic reasons') will typically depress nominal yields. Central banks may even provide explicit caps on nominal interest rates, a form of financial repression intended to keep the government's borrowing costs down. But, of course, wars are highly inflationary, a response to massive fiscal stimulus and widespread shortages of non-military goods and services. During the time of the Gold Standard, it was also common for central banks to suspend the convertibility of their currencies, which would lead to additional bouts of inflation. Even if the

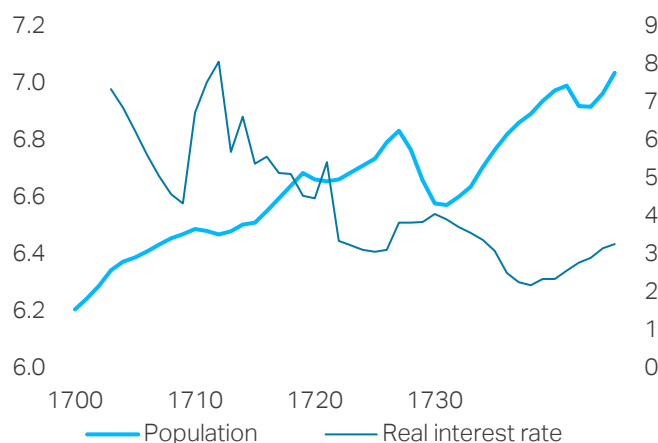
authorities are successful in getting these pressures under control once the conflict ended, massive post-war reconstruction was usually required – which would keep yields relatively high.

Chart 20: The Black Death



Source: Bank of England database

Chart 21: The 1729-30 famine

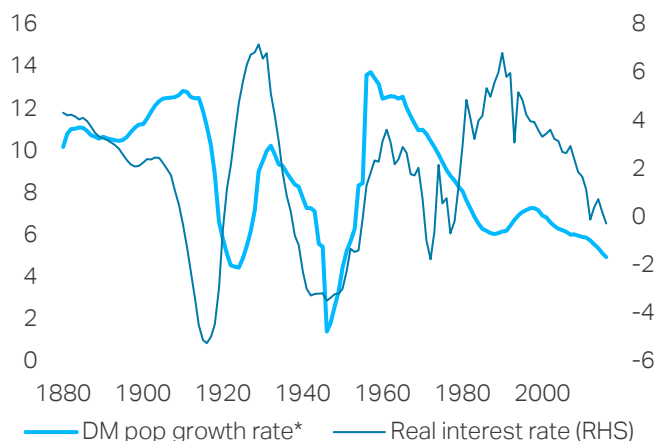


Source: Bank of England database

How is any of this relevant for the situation we face today? While the current period of secular stagnation is causing economic and financial 'fractures' in the global economy, we would not go as far as to say these trends will eventually lead to a major military conflict – even if the historical record points alarmingly in that direction! Yet there are still some economists who think we can learn valuable lessons from 'wartime economics', especially the use of large-scale fiscal stimulus and financial repression to put the world back on a stronger footing. They see important lessons from the 1930s, where – despite low real interest rates – monetary policy had proved ineffective as a solution to the Great Depression. US GDP only broke materially above its pre-1929 peak in 1938-40, in response to massive military spending. Politicians on the left have even identified a new 'enemy' for their war-without-the-actual-war: climate change. With environmental damage threatening to impose massive economic and social costs, there is a clear historical analogy here – a climate disaster combined with massive fiscal spending would not look out of place in Table 1!

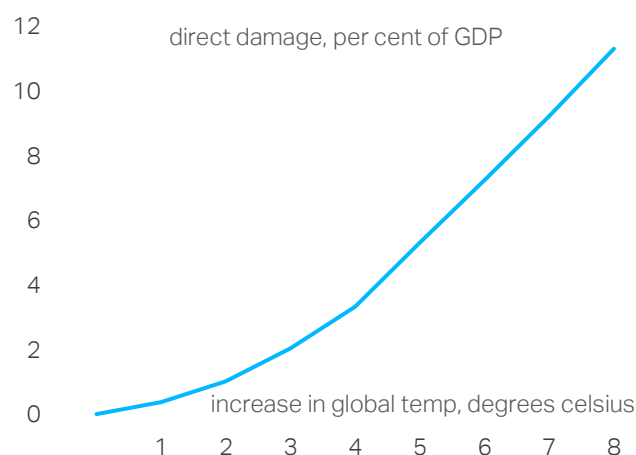
So, could a war on climate change or Green New Deal provide the basis for the next big real-rate reversal? There are certainly good reasons to think fiscal stimulus would be effective in the

Chart 22: Two world wars and one real rate



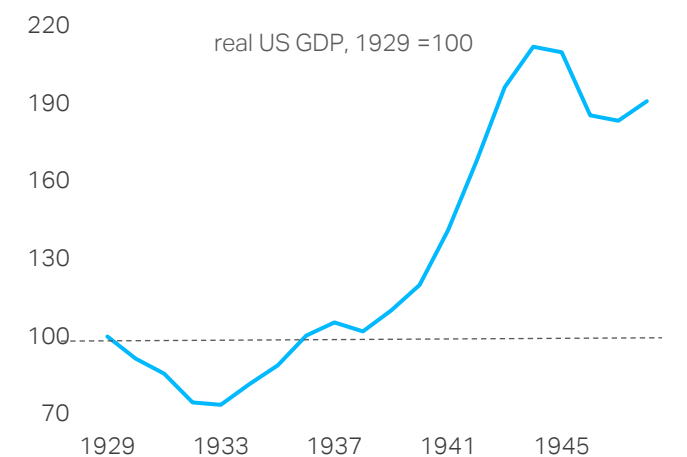
Source: MacroHistory database, TS Lombard, *10-year average

Chart 23: The costs of climate change

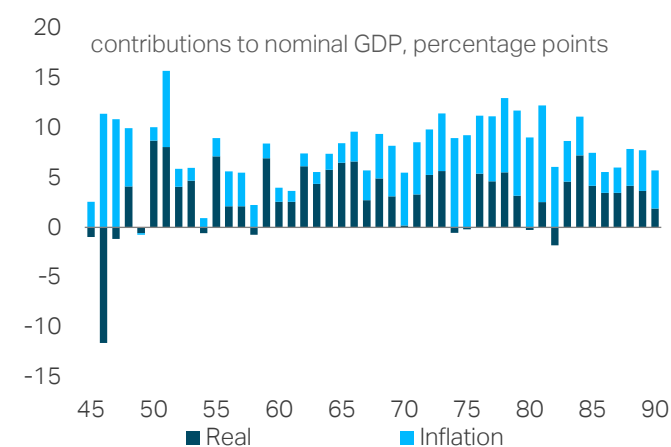


Source: [Hsiang, Kopp et al](#)

current environment, as fiscal multipliers tend to be large when real interest rates are as depressed as they are today. Yet the comparison with previous 'real-rate reversals' is tricky, especially those that involved actual military conflict. Would the world have seen decades of strong GDP after the 1940s without first incurring the massive destruction of the war itself? We are sceptical, especially as when we look at the post-WW2 boom in nominal GDP we see that it had a large 'real' component. This wasn't just about governments 'inflating away their debts', as some commentators claim, but rather it reflects a large reconstruction effort and a powerful demographic shift, especially the emergence of the Baby Boomers. Policymakers will struggle to recreate this secular boom today using just fiscal policy, especially as populations start to age.

Chart 24: World War Two ended the Depression


Source: MacroHistory, TS Lombard

Chart 25: But not because of inflation


Source: BEA, TS Lombard

3. LONG DEPRESSIONS

Much of the discussion about the current period of secular stagnation has focused on the potential role of fiscal policy and it seems increasingly likely that a fiscal response will eventually arrive, even if it takes another global recession to get this action. Yet there is another period in history that offers a more encouraging way out of the New Mediocre, even in the absence of further policy stimulus. This is the period now known as the Long Depression, a global episode of economic stagnation that occurred in the late nineteenth century (specifically the 1870s and 1880s). Again, it was the historians at the Bank of England that first made us aware of the similarities between the current environment and the late 1800s, but having looked into this period in detail we can confirm that the comparison is indeed rather compelling. At a minimum, the Long Depression reminds us that technology can also provide a powerful route back to rising prosperity – as long as the benefits are distributed more evenly in society.

Similarities with the late-1800s

The Long Depression started with a financial panic, which would go on to produce two decades of dismal productivity growth, deflationary price dynamics, stagnant incomes for the middle classes and a rise in global populism and protectionism. The panic of 1873, in fact, has been described as the first truly international crisis. It began in central Europe with the collapse of the

Vienna stock market, then spread to the United States after the failure of the banking house of Cooke and Co. over its investment in the Northern Pacific Railroad. This marked the end of the long railway boom, which revealed serious overcapacity in the sector (which by then was the largest employer in the United States). The failure of Cooke and Co. was quickly followed by the collapse of several major banking houses in the United States, leading to the temporary closure of the New York Stock exchange. Further rounds of panic struck later the same year, with a second wave of financial collapse in Europe. The fact that the Long Depression started with a financial crisis is an obvious parallel with the modern New Mediocre, but this is fairly common throughout history. It is the other similarities that provide the more convincing narrative:

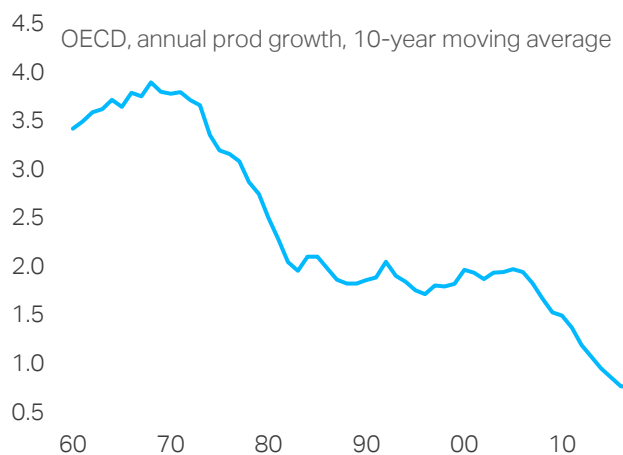
- (i) **A slump in productivity:** British productivity (England was still the leading economy at the time and provides the longest historical dataset) ground to a halt in the late nineteenth century. Chart 26 shows this is the only period in the last three hundred years that produced a downturn comparable to what has happened over the past decade. Yet, just as there are doubts about the accuracy of modern data, the late 1800s depression seems to contradict widespread evidence for continued rapid innovation. Writing in 1877, the influential economist Robert Giffen declared that the “common impression” of a slump of unprecedented severity “is wrong”. Even today, historians debate whether the Long Depression really deserves its name given that real GDP continued to rise and living standards improved (though, not per capita).
- (ii) **Rapid technological change:** Even as material living standards were stagnant, there was no real let-up in the Industrial Revolution. Economic historians tend to partition the growth timeline into two phases: the first industrial revolution, the era of steam engines and spinning jennies, which commenced in the middle of the eighteenth century; and the second, the era of mass industrialization, that runs through the second half of the nineteenth century. Many hugely important inventions occurred at the time of the Long Depression, including the telephone (1876), the lightbulb (1887), the first practical automobile (1885) and the diesel combustion engine (1892). And today, of course, many see the onset of a Second Machine (digital) Age, even if there is no compelling evidence for this in the macro data on productivity.

Chart 26: Historic productivity slump



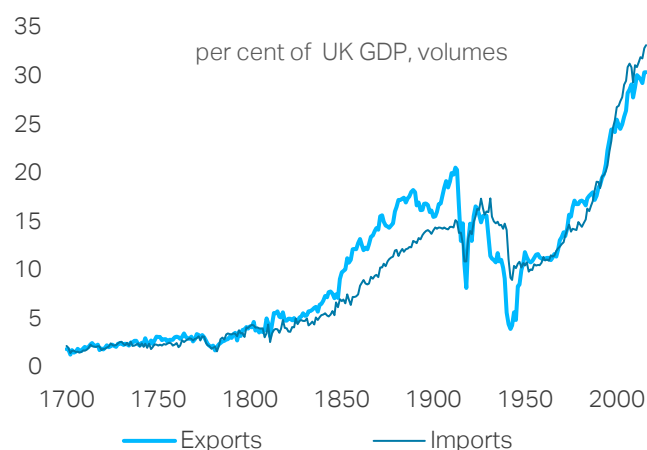
Source: Bank of England, TS Lombard

Chart 27: Common across the OECD

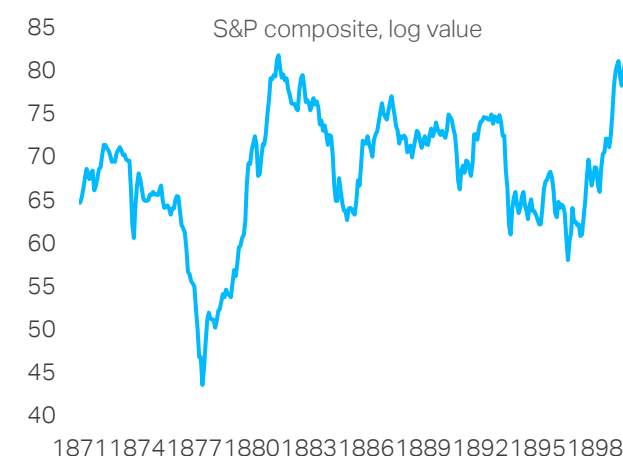


Source: OECD, TS Lombard

- (iii) **Globalization:** The 1800s had produced a new 'globalized' international economy. We see this clearly in Chart 28, which plots the UK's imports and exports as a share of GDP. Britain's 'openness' to trade had increased rapidly from the 1850s onwards, peaking at the start of the twentieth century. Industrialization plus huge advancements in transportation and communication allowed mass production and the shipping of wheat, agricultural products and cheap manufactured goods across international borders. Obviously, imperialism was also a big part of the story. After the First and Second Opium Wars, which opened up China to foreign trade, and the completion of the British conquest of India, the vast populations of these regions became ready consumers of European exports, while the conquest of new parts of the world yielded valuable natural resources such as rubber, diamonds and coal.
- (iv) **Deflationary dynamics:** Today it is widely accepted that the recent combination of globalization and rapid technological change has been an important 'structural' force flattening the Phillips Curve and keeping inflation down. These deflationary pressures were even stronger in the late 1800s, producing a sustained period of falling prices. UK inflation averaged -1.4% between 1873 and 1888. Chart 34 shows the Phillips curve was extremely flat in both periods. In fact, when we run a rolling Phillips coefficient over very long periods, we see that the steeper curve – which has provided the basis for much of modern central banking – was really just a feature of a specific period in history, the twentieth century. This takes us back to Charts 8 and 9, which showed that wage-price spirals are actually a historical aberration².

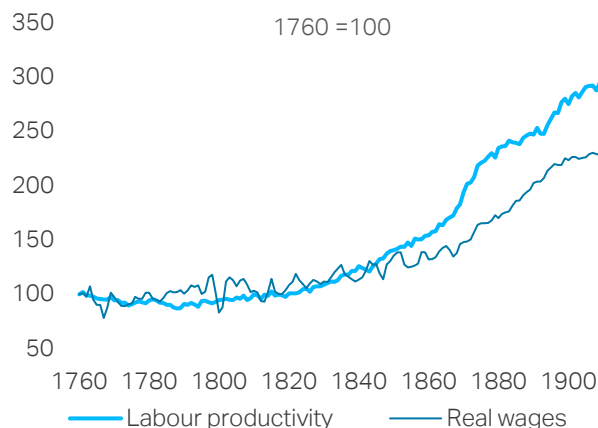
Chart 28: Two waves of globalization


Source: Bank of England, TS Lombard

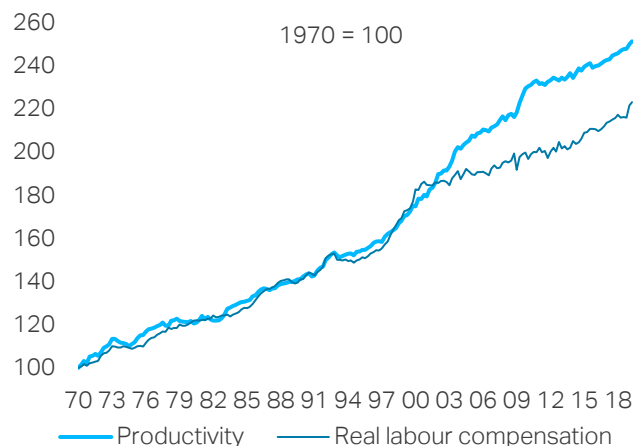
Chart 29: Asset prices rallied after 1870s


Source: Robert Shiller website

² Obviously the monetary system also matters. Before World War II the world operated according to a fairly strict metallic standard, with occasional large devaluations (typically during major conflicts). Inflation was largely white noise and the credit ratio was effectively zero. This ended in 1971 when President Nixon suspended gold convertibility.

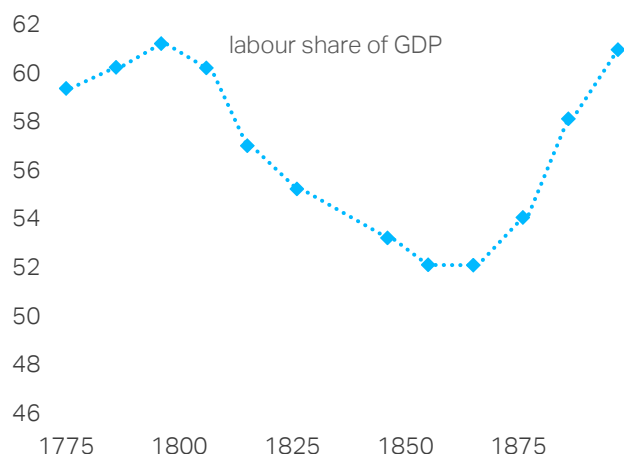
Chart 30: The second "Engels pause"


Source: Bank of England, TS Lombard

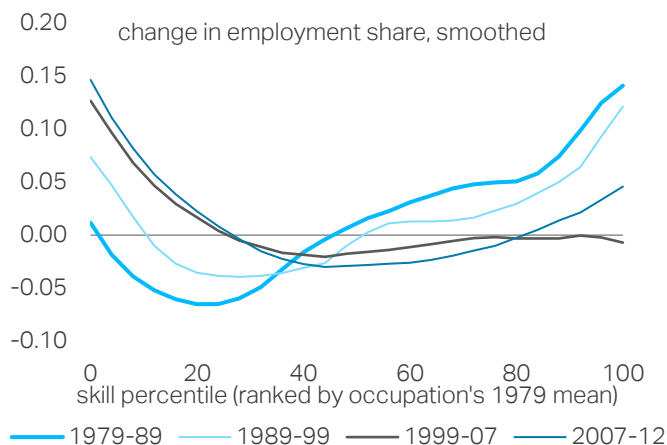
Chart 31: Familiar story


Source: BLS, BEA, TS Lombard

- (v) **Labour-market polarization:** Rapid technological change doesn't only flatten the Phillips curve, it can also cause wider income inequality and a 'hollowing out' of the labour market. Chart 30 shows that wages failed to keep pace with productivity during the second half of the 1800s, a theme that is all too familiar to economists today (Chart 31). New technologies bring both 'substitution' and 'income' effects. Machines replace workers but eventually lift real incomes, which creates demand for new goods and services. The Long Depression was a reminder that there can be extended lags in this process. Remember, the 1800s brought us both the Luddite movement and David Ricardo's warnings about 'technological unemployment'. The problem during the Long Depression was that the demand for both high-skilled and low-skilled workers was rising, while the middle of the distribution (the artisans³) was being squeezed. And with the supply of unskilled workers rising to meet demand (globalization), aggregate wages were depressed – the wage share declined.

Chart 32: Labour share in 1800s


Source: The Great Divergence in European Wages (Allen, 2001)

Chart 33: Modern labour polarization


Source: Why are there still so many jobs? David Autor

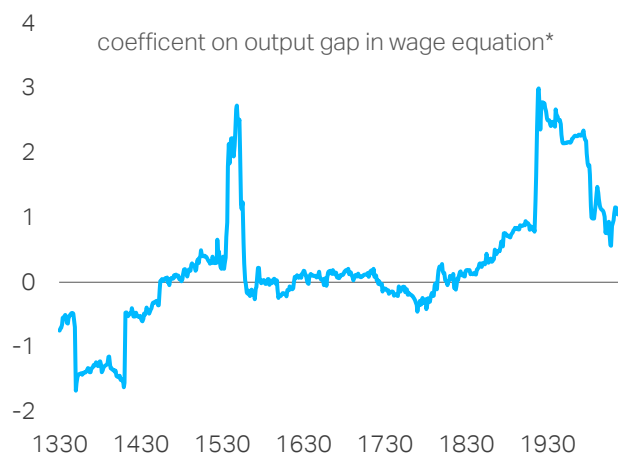
³ In a [recent speech](#), Bank of England Chief Economist Andy Haldane argues that modern working practices – such as the gig economy and rapidly rising self-employment – have effectively recreated the late 1800s Artisan system. He believes this has been one of the most important forces flattening the Phillips curve.

- (vi) **The birth of populism:** Given the other similarities we have identified between the two periods, it is not surprising the late nineteenth century also brought us populism. In fact, this word 'populist' first appeared in 1891, as the name for a dynamic movement launched by farmers and workers in the Midwestern and Southern United States. Most socialist parties were also founded in the late 1800s. Meanwhile, there was a powerful push for protectionism, with the contemporary consensus shifting back towards the mercantilist policies of the seventeenth and eighteenth centuries (i.e. the pre Adam Smith period). In the 1892 US election, the populist presidential candidate James Weaver received more than one million popular votes, though he was ultimately defeated. In 1896, the US elected the republican pro-business protectionist William McKinley to power. Sound familiar?

How did the Long Depression end?

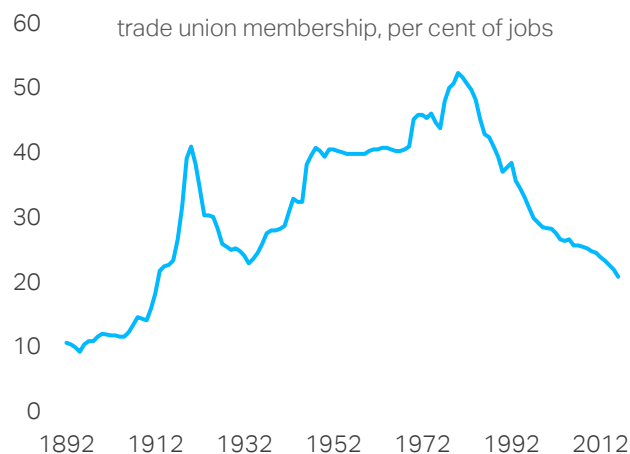
Monetarist economists, as always, like to blame tight monetary policy for the Long Depression. They argue it was the discovery of new gold supplies in the late 1890s that eventually alleviated the slump. Yet, a more reasonable assessment is that 'real' economic forces were responsible. There were certainly signs that productivity was improving even before the monetary stimulus. Just as important, there is also evidence that technological diffusion started to 'catch up'. Wages were accelerating, as the 'income' effects from previous technologies started to dominate the initial substitution effects. The gap between productivity and wages began to close. It is also possible that shifting politics and populism played a role, especially the development of the early welfare state and the organization of workers into trade unions etc.

Chart 34: The Phillips curve over time



Source: Bank of England, TS Lombard estimates, 50-year rolling

Chart 35: Did unionization play a role?



Source: Andrew Haldane speech on The Labour Share

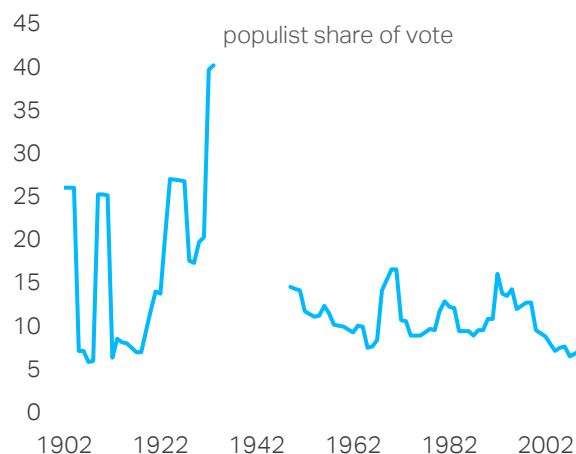
The late 1800s didn't produce a 'Marxist revolution', which disappointed those socialists who had hoped the capitalist system was on the brink of collapse⁴, but it does seem the combination of faster technological diffusion and the introduction of policies designed to alleviate income inequality eventually restored the leading economies to sustainably higher growth rates. This offers an important lesson today, especially as technological diffusion has slowed over the past decade and only a relatively few 'superstar' companies seem to be making the investments necessary to unlock modern digital technologies. While many investors find such a scenario unattractive, particularly if it involves any form of income redistribution, this is surely preferable

⁴ German socialist leader August Bebel wrote to Friedrich Engels "every night I go to sleep with the thought that the last hour of bourgeois society will strike" – Engels had to calm him down.

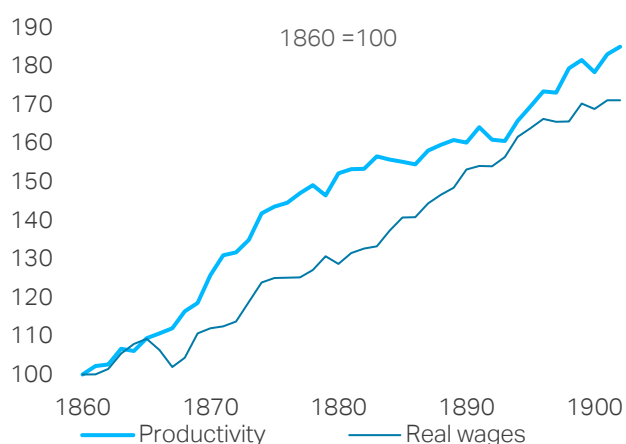
to history's other 'solutions' to real-rate depressions. Perhaps the most benign outcome is that modern digital technologies eventually live up to their hype, clearly boosting living standards.

Chart 36: Productivity revival through 1890s

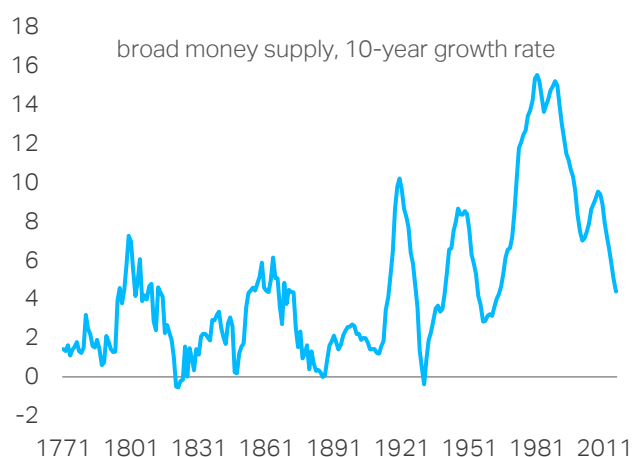

Source: Bank of England, TS Lombard

Chart 37: But too late to stop populism


Source: Bridgewater Associates

Chart 38: Wages caught up (eventually)


Source: Bank of England, TS Lombard

Chart 39: Monetary stimulus less important


Source: Bank of England, TS Lombard

Bottom line

Despite recent market gyrations, central banks have not managed to raise interest rates meaningfully during this cycle. The Phillips curve has not functioned the way they were expecting, so inflation has remained stubbornly low. After a decade of historically low yields it is hard to escape the idea that real interest rates are depressed for secular reasons. Yet, while the current multi-decade bull market in bonds looks extreme, it is not unprecedented. What will eventually cause a secular reversal in interest rates? History is not reassuring, since previous 'real rate depressions' usually ended in calamitous fashion. Yet the closest historical parallel is with the Long Depression of the late-1800s. This offers a less pessimistic escape route.

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