The Great Demographic Reversal: An Introduction to our New Book

By C. Goodhart and M. Pradhan

The rise of China and demography created a 'sweet spot' that has dictated the path of inflation, interest rates and inequality over the last three decades. But the future will be nothing like the past- and we are at a point of inflexion, accelerated by the Coronavirus pandemic. As that sweet spot turns sour, the multi-decade trends that demography brought about are set for a dramatic reversal.

Many of our conclusions are controversial. Neither financial markets nor policymakers are prepared for a significant rise in inflation and wages, or a rise in nominal interest rates. Our other predictions are more benign – productivity will rise and labour will reclaim a greater share of national output, reducing the inequality that has led to so much social and political upheaval.

Regardless of whether we are right or wrong, the effects of the 'Great Demographic Reversal' will be pervasive across finance, health care, pension systems, and both monetary and fiscal policies.

Our book was written before the Coronavirus pandemic struck, but, as we add in a postscript, this latter will have the effect of accelerating the change in trends that we emphasize, especially the decline in globalisation, the resultant rise in costs and greater complications in handling explosive debt ratios. This view further magnifies our differences with most current mainstream analysis. We believe that the mainstream view of the longer-term future is plain wrong.

Of one thing we are sure, the future will be nothing like the past.

The Demographic 'Sweet Spot': How the Fundamental Forces of Demography, China and Globalisation Shaped Our Economies in Recent Decades

The Rise of China…

The single most important economic development over the years from 1990 to 2018 has been the rise of China and its integration into the global trading economy. Chairman Deng Xiaoping reversed Mao Zedong's disastrous policies during the 1980s by combining socialist ideology with an opening to pragmatic market economics, using the slogan 'socialism with Chinese characteristics'-that led to Chinas eventual inclusion in the World Trading Organization (WTO) in 1997. The integration of China into the global manufacturing complex by itself more than doubled the available labour supply for the production of tradeable products among the advanced economies (AEs). So we start the rest of this book with a Chapter on China.

The increase in the working age population (WAP, aged 15-64) in China outstripped the combined increase in Europe and the USA from 1990 to 2017 over fourfold-China saw an increase of over 240 million while in the latter two W AP increased by less than 60 million and mostly in the USA. The participation of the working age population also tilted the scales heavily in Chinas favour. On the one hand, workers migrated aggressively from rural to urban China-the latter's share of total population increased by over 23 percentage points (pp hereafter), or 370 million between 2000 and 2017. In the USA meanwhile, the participation rate (share of labour force to population) declined by over 4pp during the same time-had it stayed steady, the unemployment rate would have been higher before the pandemic struck.

…and the Re-integration of Eastern Europe

But there was yet another boost to the world's effective labour supply, arising from the collapse of the USSR, following the fall of the Berlin Wall in 1989. This brought the whole of Eastern Europe, from the Baltic States, through Poland down to Bulgaria, also into the world's trading system. The population of working age in Eastern Europe rose from 209.4 million in 2000 to 209.7 million in 2010 and is now projected to be 193.9 million in 2020.

These two politico-economic developments, the rise of China, and the return of Eastern Europe to the world trading system, provided an enormous positive supply shock to the available labour force in the world's trading system. The opportunity to take advantage of such newly available workers was reinforced by a general acceptance of economic liberalism during these decades, reducing barriers to international trade, with the trade rounds in Uruguay in 1986 and Doha in 2001. As a result, globalisation surged ahead, with trade flows over the years 1990 until 2017 growing by 5.6% per annum, compared to the growth of world GDP of 2.8%. In 2004, the share of world manufacturing output produced by China was 8.7%; by 2017, it had reached 26.6%.

But the integration of China and Eastern Europe was not the only factor leading to a dramatic rise in the availability of labour. The global supply of labour was further boosted by two other demographic features, both domestic in origin in the advanced economies (henceforth AEs).

Benign Demography in the AEs

The first of these demographic features is the continuing fall in the dependency ratio during these years, i.e. a rise in the number of workers, defined as those 15 to 64, relative to dependents. And the second is the rise in the proportion of women in the working age group taking paid jobs.

The dependency ratio improved because the birth rate, which had soared after World War II, then began to decrease quite sharply during the 1950s and onwards. Life expectancy, on the other hand, only began its long upwards trend rise rather later. The baby boomers were an important part of this dynamic as they began entering the labour force from the late 1960s onwards and only started to retire in the decade following 2010. During the period 1970-2010, the decline in the number of young relative to the working force outweighed the rise in the number of retirees (Table 1), except in Japan and the UK. At the same time, a number of social and economic developments raised the proportion of women working in the labour force (Table 2, USA, UK, France, Germany, Japan).

Table 1: Percentage of young and retirees in the population

	USA	UK	Germany	Japan	China
Young					
1970	28	24	23	24	40
2010	20	17	14	13	19
Change 1970–2010:	−8	−7	−9	−11	−21
2010	20	17	14	13	19
2019	19	18	14	13	18
Change 2010–2019:	−1	1	0	0	−1
Retiree					
1970	10	13	24	7	4
2010	13	17	21	22	8
Change 1970–2010:	3	4	3	15	4
2010	13	17	21	22	8
2019	16	19	22	28	11
Change 2010–2019:	3	2	1	6	3

Source UN Population Statistics

Table 2: Participation of woman in the labour force

	USA	UK	Germany	France	Japan
1990	56.2	52.0	45.2	46.3	50.1
2010	57.5	55.5	52.8	50.9	48.7
2019	55.8	57.1	55.3	50.2	51.4
Change: 1990–2019	−0.4	5.1	10.0	3.9	1.3

Source World Bank

Combining these two factors, the rise of China, globalisation and the reincorporation of Eastern Europe into the world trading system, together with the demographic forces, the arrival of the baby boomers into the labour force and the improvement in the dependency ratio, together with greater women's employment, produced the largest ever, massive positive labour supply shock. The effective labour supply force for the world's advanced economy trading system more than doubled over these 27 years, from 1991 to 2018 (Diagram 1).

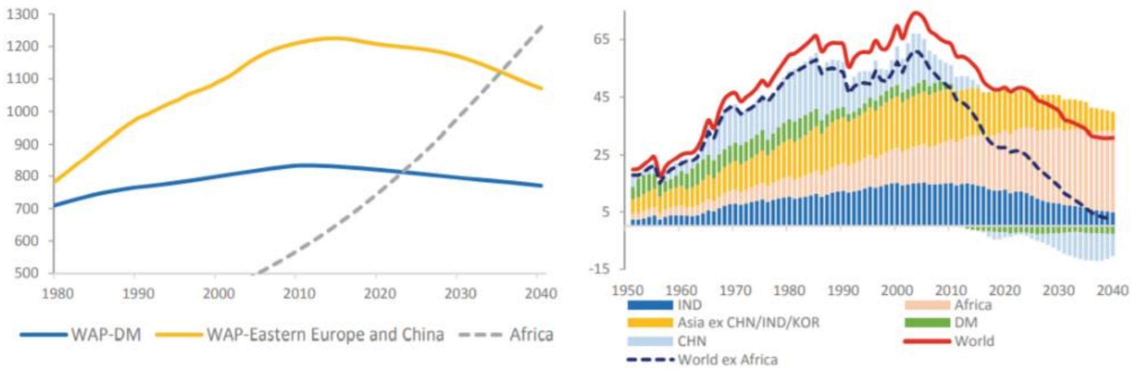


Diagram 1: An ageing world: working age population (Mil) is falling; working age population growth (yearly increase) is slowing (*Source* UN Population Statistics)

The Economic Effects Have Been Dramatic

The last 30 odd years from the beginning of the *1990s* to the present have been extraordinary for the global economy. When such a positive supply shock to labour occurs, the inevitable result is a weakening in the bargaining power of the labour force. Especially in advanced countries, a fall in real wages has seen the economic position of unskilled labour as well as semi-skilled labour suffer relative to capital, profits and managerial and skilled labour remuneration.

Both a symptom of labour's declining bargaining power and a further cause of it have been the steady decline in private sector trades union membership. This has been a common factor in most AEs. Diagram 2 gives the data on this for the major AEs.

No wonder that the deflationary forces have been so strong. During these 28 years, prices of durable manufacturing goods tended to fall regularly in most advanced economies, though perhaps slightly less so in more recent years. In contrast, services inflation in developed market economies, having initially fallen quite sharply in the *1980s,* tended to stabilise from the *1990s* onwards at nearer 2%, though perhaps declining slightly in the last few years. Obstfeld (2019) displays a diagram similar to our Diagram 3 in his 'Global Dimensions of US Monetary Policy.

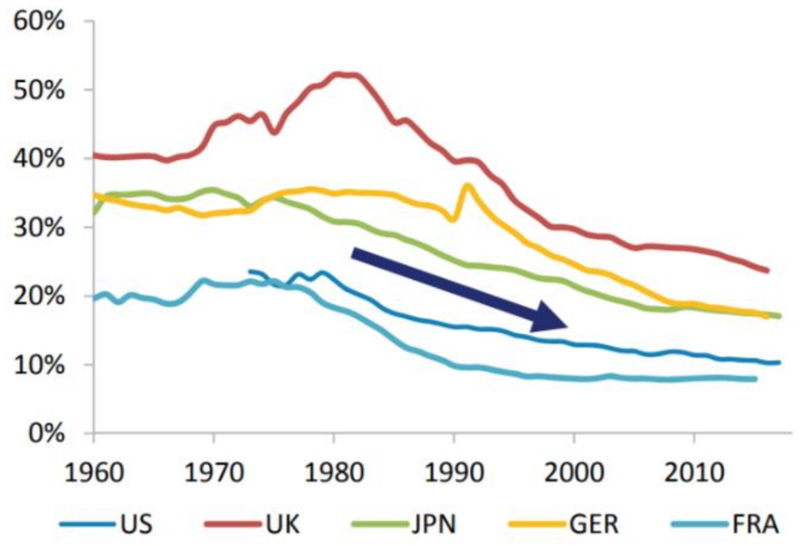


Diagram 2: Trade union density has been falling for decades now (*Source* OECD)

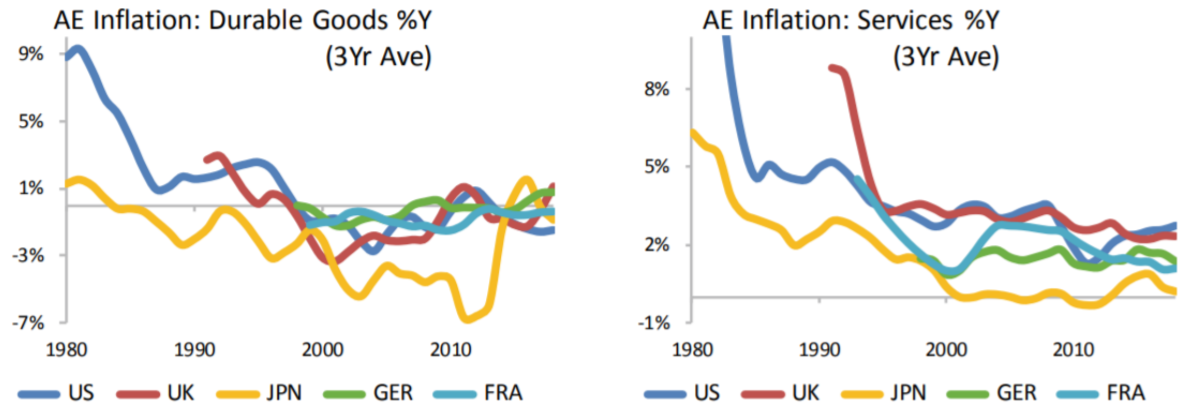


Diagram 3: Advanced economies inflation: Durable goods and services (year on year = %Y, averaged over 3 years = 3Yr Ave) (*Source* BLS, ONS, national sources)

These deflationary forces have been so aggressive that they have caused inflation to remain at, or more recently below, Central Bank targets, mostly set at about 2% over the decades from 1990 onwards. Even massively expansionary monetary policies and fiscal policies which have resulted in the largest and most persistent rise in public sector debt ratios ever during periods of general peacetime (apart from Germany-see Table 3 and Diagram 4) have had little success in reflating the global economy.

Table 3: General government debt to Gross domestic product ratio

	1990	2000	2010	2017
USA	62.0	53.1	95.7	105.2
UK	27.2	37.0	75.6	87.5
Germany	41.0	58.9	80.9	63.9
France	35.4	58.6	85.1	96.8
Japan	64.3	137.9	207.9	237.7
China	N/A	22.8	33.7	47.0

Source IMF Global Debt Database

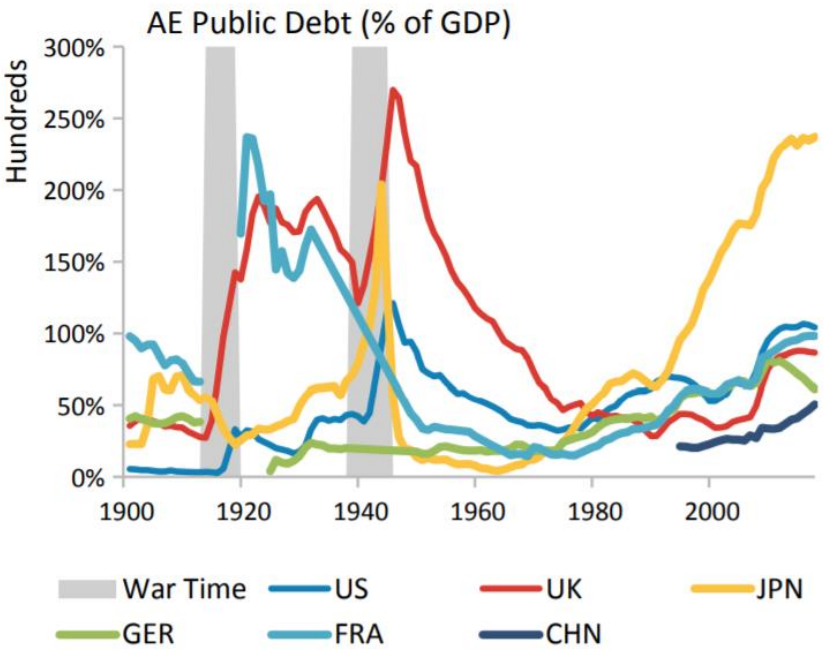


Diagram 4: Advanced economies public debt (% of Gross Domestic Product) is going to rise even further (*Source* IMF)

Finance has recorded some of the strongest effects of demographic change. Interest rates have trended steadily downwards, at least until about 2017/2018 (Diagram 5). With inflation remaining low, this has meant that real interest rates, i.e. after adjustment for the current inflation rates, have also been falling. Falling interest rates have led to rising asset prices. Despite some interruption from the Great Financial Crisis (GFC) over 2008/2009, this too has been happening, notably with equity and housing prices.

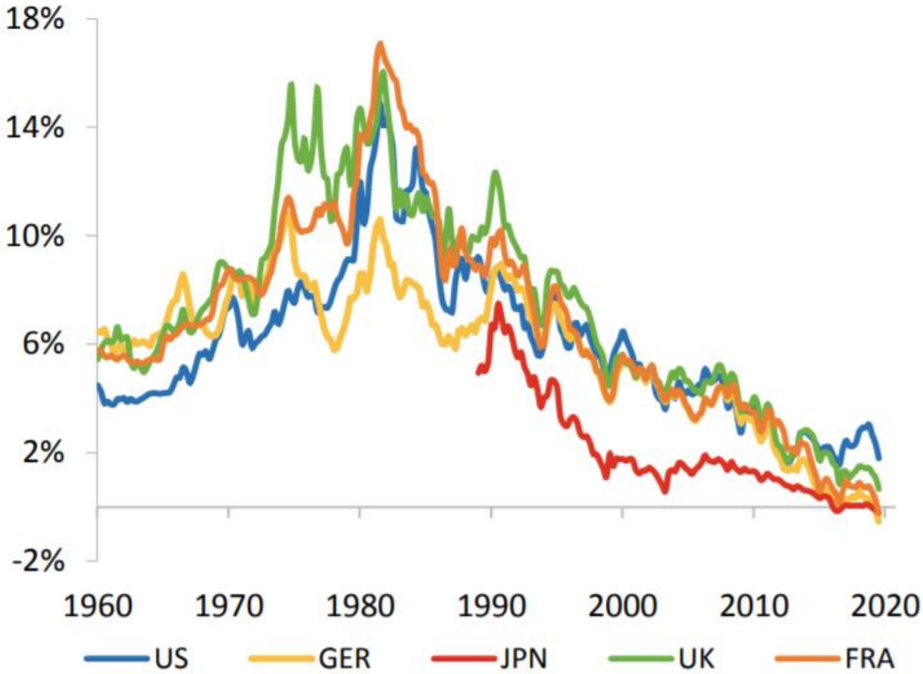


Diagram 5: Long-term government bond yields: 10-year maturity (*Source* Federal Reserve Economic Database – FRED hereafter)

Social Effects: Winners, Losers and Inequality

The gainers from all this have been those with capital, both embodied and human in the advanced countries, and workers in China and Eastern Europe. Thus, the ratio of the wages of an American worker to a Chinese worker, and of a French to a Polish worker, have been narrowing sharply, as shown in Table 4. There are many more Chinese than Americans, so, just as income inequality *within* particularly the advanced countries has tended to worsen, income inequality *between* countries and in the world as a whole has been improving. Inequality, as measured by the ratio of the income of the top 10% to the bottom 90%, has tended to worsen within most countries, as has wealth inequality.

Table 4: Ratio of the wages of workers: USA/China; France/Poland

	USA/China	France/Poland
2000	34.6	3.9
2001	30.6	3.3
2002	27.4	3.5
2003	25.0	4.0
2004	22.9	4.2
2005	20.4	3.8
2006	18.1	3.7
2007	15.2	3.5
2008	12.2	3.0
2009	10.8	3.7
2010	9.7	3.3
2011	8.4	3.3
2012	7.5	3.4
2013	6.7	3.4
2014	6.3	3.3
2015	6.0	3.4
2016	5.9	3.4
2017	5.6	3.2
2018	5.1	2.9

Source National Sources

The rise in income and wealth inequality, and the slow rate of growth of real wages among the less skilled, had led an increasing proportion of voters in many advanced countries to lose faith in their political institutions, and to believe that the elite has ceased to care about them. For the first time since World War II, many, perhaps most, of the populations in our countries do not see any strong likelihood of an improvement in either their or their children's economic well-being over future decades. For this bleak outlook, they largely blame globalisation and competition from abroad, including the offshoring of manufacturing production, competition from immigrants taking up unskilled jobs in their own countries, and the failure of the elite to respond to their concerns. The result has been a rise in political populism and a crisis of economic liberalism.

There was no political backlash before the GFC in 2008 because rising inequality within countries was offset by the general economic well-being of these years, often described as the 'Great Moderation'. Indeed, in many ways, these were the best 15 (plus) years for general economic success in the history of the world. Growth was steady, unemployment was low, inflation was stable and more people taken out of poverty than in any prior equivalent period. As Mervyn King stated (2003), these were the NICE years (Non-Inflationary with Continuous Expansion). Naturally, this counterbalanced the worsening developments in inequality within the advanced countries.

But once the GFC hit, the benign offset disappeared. Worsening inequality was reinforced by an actual drop in real wages in most AEs. The population tended to mistakenly perceive the bail-outs of banks and the effect of expansionary monetary policy on asset prices as examples of the elite looking after their own, and not responding to the worsening conditions of the majority of workers.

If the rise of China and massive positive labour shock that the world has had to absorb seem as compelling to you as they do to us, why is this focus not commonly highlighted in general macroeconomic analysis? A basic problem is that most financial, macroeconomic and policy discussion relates to forecast developments over the course of the next two, or at the most three, years. During such a relatively short time period, the underlying trends, as represented by demographic factors and the effects of globalisation, generally move too slowly and steadily to affect the key features of the short-run, cyclical forecasts. Except in rare cases, such underlying trends become dominated by short-run shocks and policy responses.

A related failing is that the factors that dominate short-term forecasting are then given too large a role when it comes to constructing a long-term view, while the slow-moving factors like demographics that surely dominate long-term change are still given too small a role.

The Great Reversal Is Now Starting – The Sweet Spot Turns Sour

But, regardless of the shortcomings of the literature, these long-run trends end up dominating the underlying fundamental conditions for our economies. Globalisation and demographic shocks have led to an extraordinarily deflationary trend over the last 30 years. The decades from the 1970s to 2000 saw the baby boomers swell the ranks of the labour force, while demographic trends improved the dependency ratio.

But the future will not be like the past. Indeed, in many crucial respects there will be a major reversal of past trends.

The Sweet Spot Is Turning Sour

Over the next three or four decades, the steady decline in birth rates, starting in the 1950s in many advanced economies, notably in Europe, to below the rate at which the population is self-sustaining, will bring about a sharp reduction in the growth of the labour force in many countries. There will be an absolute decline in the labour force in several countries-in the key economies of Japan, China and most of North Asia as well as several in continental Europe, such as Germany, Italy, Spain and Poland. Meanwhile, extensions to the expectation of life, with improvements in morbidity and mortality rates, will lead to a rapid increase in the number of retirees over 65.

Care for the Aged Raises Economic Costs Dramatically

We are particularly enthusiastic about our attempt to address a shortcoming of the literature by introducing a cross-disciplinary study of demography that integrates the medical perspective on ageing with the economics of the sharply increasing incidence of physical dependency and dementia. We explore the medical progress in, and estimates of, the cost of detection, treatment of and caring for those afflicted by dementia. An exercise recently replicated in a Special Report in *The Economist*, (August, 2020).

Unlike the dominant diseases of our age, dementia does not curtail lifespans. Rather, it incapacitates those who are afflicted and therefore involves a large use of resources to care for them. Whereas medical science has made remarkable steps in treating cancer and cardiovascular diseases, both of which tended to kill quite quickly, there has been very little improvement in the treatment of dementia. Nor is the care of the old a field in which the new technological advances, of robotics and AI, are likely to be of great help. Of course, all this could change, and it is almost certain that governments will shift the balance of research funding of medicine towards the treatment of mental decay. But at the moment, if we try to extrapolate past trends into the future, the outlook for health expenses, care homes and carers is worrying. The fiscal implications of the worsening dependency ratios are severe and concerning (Diagram 6).

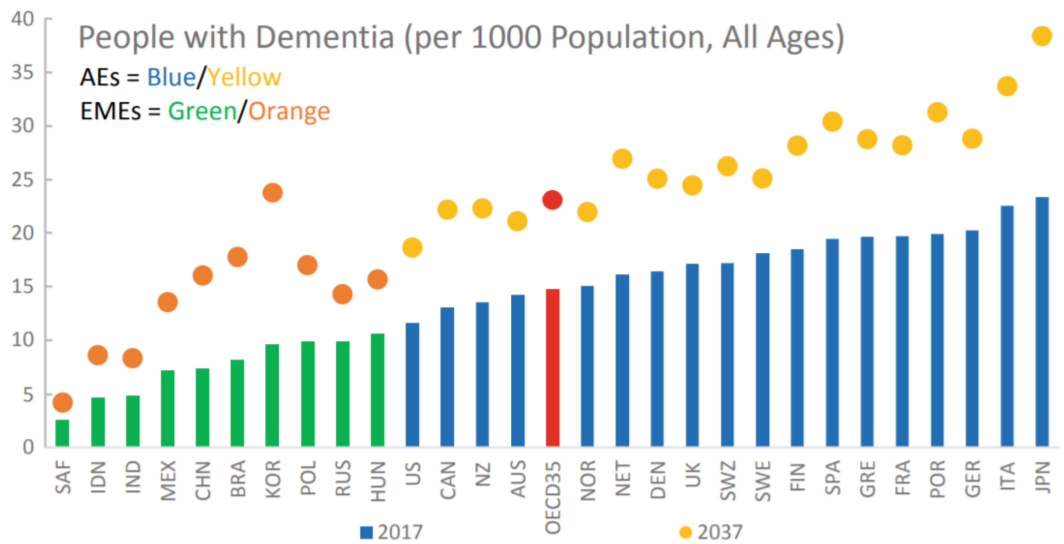


Diagram 6: The number of people with dementia (per 1000 population, all ages) will rise sharply across the advanced economies (*Source* OECD Health Statistics 2017)

Slowing Globalisation

The further slowing of globalisation will reinforce ageing just as globalisation energised falling dependency ratios in the past. Globalisation is likely to slow because of two headwinds.

First, China faces not only a sharp decline in the number of those entering the labour force, but is also reaching the end of internal migration from the farming community in the western provinces to the manufacturing sector in the east. Moreover, globalisation in the guise of enhanced cross-border flows of goods and services, the migration of people, and capital flows is under increasing political threat as resurgent nationalism becomes politically more popular.

Second, while manufactured goods and some services can be produced elsewhere and then 'shipped' to their destination, this is virtually impossible when it comes to looking after the elderly. Advanced nations will therefore be increasingly reliant on their own resources, particularly the shrinking pool of their own labour force.

Economic Effects

In our book we then go on to explore first the broad economic effects, and then the effects on inflation, real interest rates, and inequality.

What, then, are the main economic effects?

First, the declining growth rate of the labour force will necessarily reduce the growth of real output, unless there is an unexpected and quite remarkable surge in productivity. Growth rates generally cannot be expected to recover, if at all, beyond the disappointingly slow levels of the years since the GFC.

Second, our highest conviction view is that the world will increasingly shift from a deflationary bias to one in which there is a major inflationary bias. Why? Put simply, improvements in the dependency ratio are deflationary, since workers produce more than they consume (otherwise it would not be profitable to employ them in the first place), while dependents consume but do not produce. The sharp worsening in the dependency ratios around the world means that dependents who consume but do not produce will outweigh the deflationary workers. The inevitable result will be inflation.

With the supply of labour shifting down, standard economics suggests that their bargaining power will increase, and that real wages and the relative income share of labour will start rising again. While this will have beneficial effects on inequality within countries, it will be inflationary as unit costs rise. Add on top of this an increasing tax burden on workers (which we explain below), and they may well raise their wages demands in order to secure a desired real wage *after taxation.* While Milton Friedman (e.g. 1968) and other eminent economists argued that workers would not be subject to money illusion (i.e. that they would bargain for a desired level of real wages in the light of their expectations of future inflation), will this also apply to taxation? If tax rates should have to rise significantly to finance pensions and medical expenses, will workers start to bargain for post-tax real wages? We would think so, and if we're right, it would lead to yet further upwards pressures on inflation.

Third, real, inflation-adjusted interest rates, particularly at the longer end of the yield curve, may rise because of the behaviour of ex-ante (expected) savings and investment. That the elderly will dissave is not controversial. Those who believe real interest rates are likely to fall or stay low clearly believe that investment will fall even further below savings – we disagree. There are (at least) two reasons to believe that investment will remain more buoyant than many believe. First, the demand for housing will remain relatively steady as the elderly stay in their houses and new households create demand for new construction. Second, the corporate sector is likely to invest in capital in a way that raises the capital-labour ratio, in order to boost productivity. In net terms, we believe savings are likely to fall by more than investment, raising the real interest rate.

As in the case of inflation, financial markets are not pricing in much by way of nominal interest rates rising over the next decade and more.

Finally, we believe that inequality will now fall. As the wave of populism and the success of nationalist right-wing parties have demonstrated, inequality within economies has risen to critical levels, even though inequality across nations has actually fallen thanks to the rise of China and Asia. We consider four explanations for the trend of rising inequality: (i) ineluctable trends of the kind that Piketty (2014) and others have espoused, (ii) technological change, (iii) concentration and monopoly power and (iv) globalisation and demography. We disagree the most with the first and find more merit in the other arguments. The most fundamental explanation for the rise in inequality can be traced back to the global surge in labour – and hence its reversal will also lead to a decline in inequality.

So, more and more of us will live longer lives, but where are the resources which will enable the aged to consume after retirement going to come from, even if we abstract from the extra medical burden? There are three main alternatives.

The first is that the age of retirement should be raised a lot, with people in future expected to work into their 70s. But there is no sign of retirement ages yet being significantly increased (with the exception that women's retirement ages are being raised into line with those of men). Moreover, there are quite a large number of more manual occupations where physical strength declines to an extent that makes continuing to work past a particular age inappropriate, e.g. firemen, policemen, construction workers, etc. Though against that, one may remark that farming is a physical activity, and many farmers continue to be active well into their 70s.

The second alternative is that workers finance their own retirement by saving more. This latter depends on the expected generosity of state pensions and the myopia of those in work. It is very difficult at age 25 to envisage oneself surviving to (say) 85 and visualise the consumption needs of an aged person, and yet the likelihood of doing so is high. Certainly, the less the expected generosity of state pensions and the longer the expected duration of retirement, the greater individual savings rates will tend to be. Again, an important example is China, where the absence of a welfare state and the collapse of reliance on younger family members (as a result of the one-child family, where there is one grandchild for every four grandparents), has led in the past to very high personal savings rates. But in the West there has been relatively little sign, yet, of personal savings rising to meet the need to smooth lifetime consumption rates, even though the difference between life expectancy and retirement age has risen dramatically. Perhaps this is due to an expectation that the state will provide, or perhaps it is due to myopia.

An added complication is that the age of having children has increased in many advanced countries. With children remaining at home for longer, the years during which workers can save for their retirement, with no children to support, will decrease. The hope is that the savings that the children incur on what they would have otherwise paid for rent can then form part of household savings in the future – whether that pans out remains to be seen.

The third channel is for the state to tax workers, and use the funds to transfer the resources to the old, both for medical support and pensions. A key question is how the state will see the balance between higher taxes on those currently working, including workers of all levels of skill, managers, rentiers and capitalists, and the generosity of pensions. If one should assume that tax rates will remain constant at present levels, then the massive rise in the numbers of the old would mean that the relative generosity of pensions would have to decrease sharply, partially balanced by increased savings rates from those of working age. We do not believe that this is the right assumption to make, though it lies behind the assumption of interest rates remaining low over future decades in several other related studies of long-run demographic outcomes. Instead, we think that a better assumption is that pensions will go up in real terms in line with the rate of growth of real GDP, with the implication that the tax burden arising from pensions will rise in line with the ratio of aged to the total population. There are several reasons why we prefer this assumption to that in which tax rates are held constant. First, the pensions of the aged have generally been protected despite the slow growth of real output in recent years. Second, the old represent a major voting bloc, and they are more likely to vote than the young. The rising share of elderly voters in the electorate will provide a potent constituency for keeping pensions rising in line with real output. Note that promises to maintain or increase pensions have often been a significant part of the manifestos of populist political parties, e.g. in Italy in 2018. If we are correct in assuming that pension levels will rise with real GDP, and thus become an increasing fiscal burden, as the number of aged increase, then the tax burden on workers will inevitably have to increase.

Where Could We Be Wrong?

We are fully aware that our conclusions and projections are controversial. Quite naturally, they have been questioned along many different dimensions. We take these very seriously.

First, we discuss two counterarguments that are often put forward to rebut our view. The more prominent of these is that such a decline in the labour force has already been in evidence in Japan for over a decade, and that there have been no signs yet of any upwards pressure of wages, inflation or real interest rates there. Many consider Japan to be the blueprint for ageing and are therefore sceptical that our conclusions will hold for the global economy if none of them were in evidence in Japan. The second is that the recent relationship between unemployment and wage, or price, inflation, commonly known as the Phillips curve, has not yet shown any tendency for wage rates to rise as unemployment falls, in a large number of advanced economies. Indeed, unemployment has declined in many of our countries to the kind of levels that would have probably generated wage inflation in the last century, but there is as yet little sign of any resultant upsurge in wages. The Phillips curve has recently seemed flat, i.e. as unemployment falls, nominal wage growth remains more or less constant at low levels. In many countries, it is not much higher than 2%, though the USA and the UK are seeing wage growth around 3 and 4% respectively, but only when labour shortages are already apparent in sectors like construction.

In the case of Japan, we argue that the decline in the Japanese labour force occurred at a time when the rest of the world was swimming in labour. Japanese businesses took advantage of the growing pool of labour overseas to offshore production to China and other parts of Asia. In other words, the 'true' available labour supply in Japan was Asian or even global, rather than purely Japanese. When seen through an overseas lens, the behaviour of Japan Inc. is quite dynamic and measured to maximise productivity. Our view stands contrary to the conventional view of a dormant corporate sector weighed down by deleveraging. What *is* in stark contrast is the scenario that confronts the world today. As the labour market tightens in China and the bulk of the global economy, such offshoring will become more difficult.

More generally we argue that the huge positive labour supply shock to the global economy has made labour so weak that their bargaining power has been significantly reduced. This has meant that the level of unemployment at which inflation starts to accelerate has probably declined quite sharply by several percentage points. To use a technical term, the non-accelerating inflation rate of unemployment (NAIRU) has gone down significantly. For example, the proportionate membership of trade unions in the private sector has declined sharply in most countries. But as labour becomes scarce again, it will recover its mojo. How quickly and how sharply this reversal may occur is yet to become clear.

Milton Friedman (e.g. 1968) popularised the concept of the Natural Rate of Unemployment (NRU). But the NRU is not constant. Perhaps the best definition of it is the rate that makes labour willing to accept that rate of growth of real wages that its own increasing productivity makes available. It then follows that the weaker is labour's bargaining power, the lower will be the NRU. As labour power, and TU membership, has fallen, so has the NRU.

The declining bargaining power of labour then goes a long way to explain the falling labour share of income in AEs and the stagnant nominal and real wages there, as also argued in Krueger (2018) (Luncheon Address on 'Reflections on Dwindling Worker Bargaining Power and Monetary Policy', at August, 2018, Jackson Hole Conference, pp. 267-282), also see Diagram 7.[1]

[1] While it is generally accepted that the share of corporate value going to labour has been steadily declining in recent decades (see Schwellnus et al. 2018; IMF 2017), Gutierrez and Piton (2019), state that this is not so for four main European countries (France, Germany, Italy, UK). Here, unlike the USA where the downwards trend remains clear, they claim that, after appropriate statistical adjustments, the labour share has remained roughly constant.

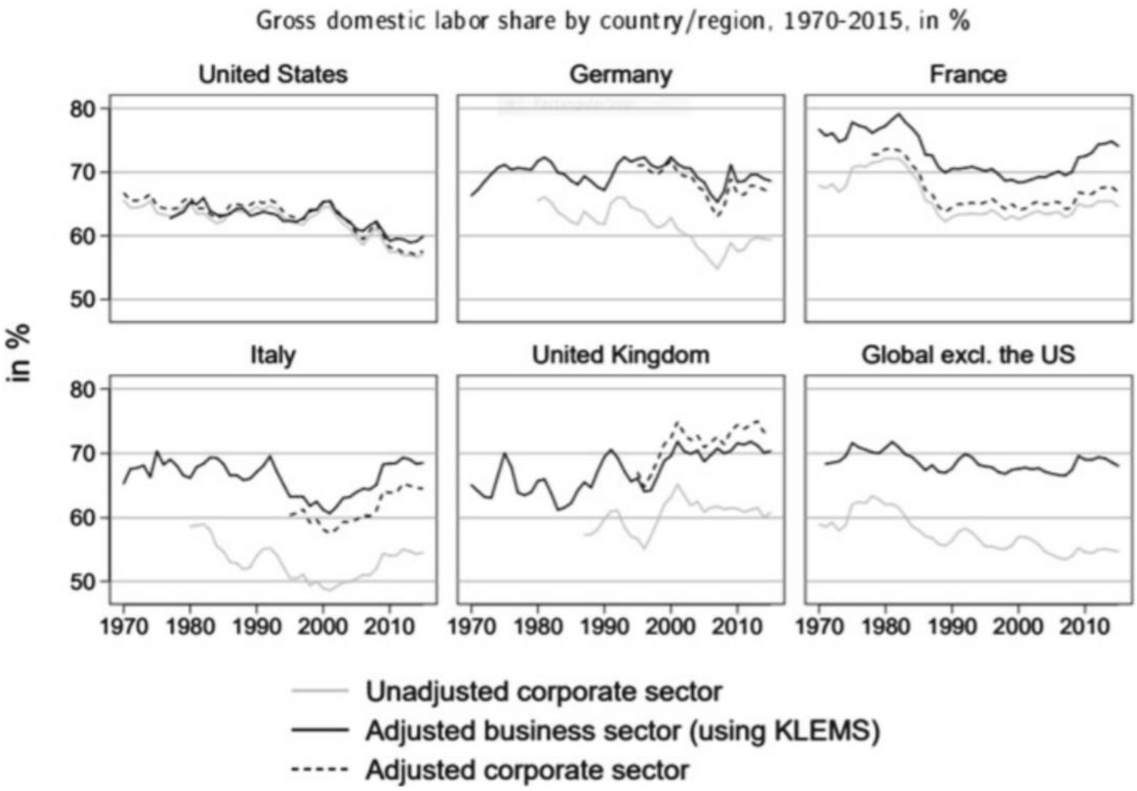
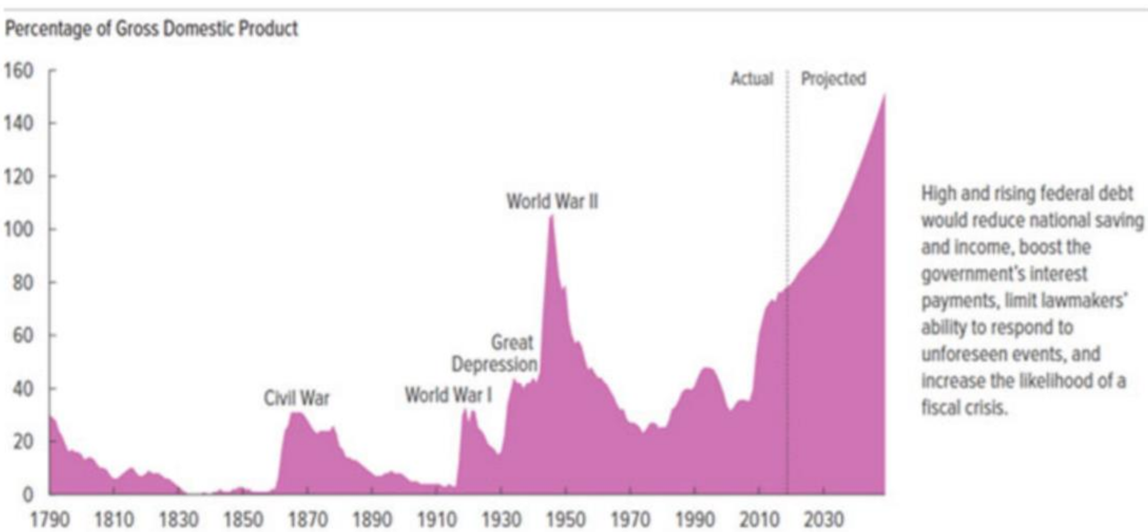


Diagram 7: Labour share of income in advanced economies (*Source* Bank of England Staff Working Paper No. 811)

Others, rather than arguing against our results, have suggested that they may be much weaker in net terms because of other mitigating dynamics. There are, of course, several mitigants to our view that the reversal of demographic factors will shift global trends from deflation to inflation over the next thirty years. We have already mentioned two of these, notably the possibility of a considerable further rise in retirement ages, and the possibility that the relative generosity of state pensions will decline in future, in order to limit an otherwise rise in tax burden. But in that same chapter we discuss another possible mitigant, which is that, rather than reversing, globalisation could take another turn. While birth rates have been going down sharply in most of the advanced countries, this has not been so in much of the Indian subcontinent, and particularly not so in Africa. There will be a massive rise in the available working population in these parts of the world. Just as the production of goods was shifted from the West into China over the last three decades, could a similar shift lead to the production of goods moving to the Indian subcontinent and, particularly, to Africa, where the rate of growth of the working population in countries like Nigeria and the Congo will be quite remarkable over the next few decades? There is also, of course, the possibility of further waves of migration from these poor countries into the richer countries in America, Europe and Asia. But the political, social and economic problems caused by mass migration are so severe, that the only viable alternative would be to take capital and management to the workers in these poor countries, rather than having them migrate to the rich countries. We argue that while such a new direction for globalisation is possible, we nevertheless think it somewhat unlikely.

Ironically, very few use a line of argument that we do believe is a potent and immediate roadblock, but one that will have to be dealt with in one way or another-the debt trap and how to get out of it. The deflationary bias over recent decades, reinforced by the Global Financial Crisis (GFC), has led to massively expansionary monetary policies, with interest rates, both nominal and real, coming down to historically exceptionally low levels. This has, as was intended, led to a dramatic increase in debt ratios, both in the public and private sectors. The main exception in recent years has been the reduction in the leverage ratios of banks, whose dangerous level in 2007/2008 was a major factor in causing the GFC, and household leverage in countries where this sector has gone through a housing crisis. Although debt ratios have risen dramatically, there is not enough concern about leverage. That's because debt service ratios have not risen along with debt ratios, thanks to an almost exact inverse correlation between rising debt ratios and declining interest rates.

At the same time, these low interest rates have, naturally, enhanced asset prices. Sometimes the monetary policies of Central Banks have been accused of exacerbating inequality. But if Central Banks had not expanded, other policies being held constant, unemployment would have been worse, which normally hurts the poorest most. So Central Bank policies have, on balance, probably reduced income inequality. The alternative policies that some suggest would have been greater reliance on expansionary fiscal policies. But not only have public sector debt ratios grown faster over recent decades than in any other previous peacetime period, especially during the Coronavirus epidemic, but also the outlook for expenditures relating to health and pensions is such that projections of future budgetary conditions are worrying, to say the least, *see* Diagrams 8 and 9.



The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those baseline projections for the rest of the long-term period (in this case, through 2049).

Diagram 8: US federal debt held by the public was projected to rise sharply even before the pandemic (*Source* Congressional Budget Office)

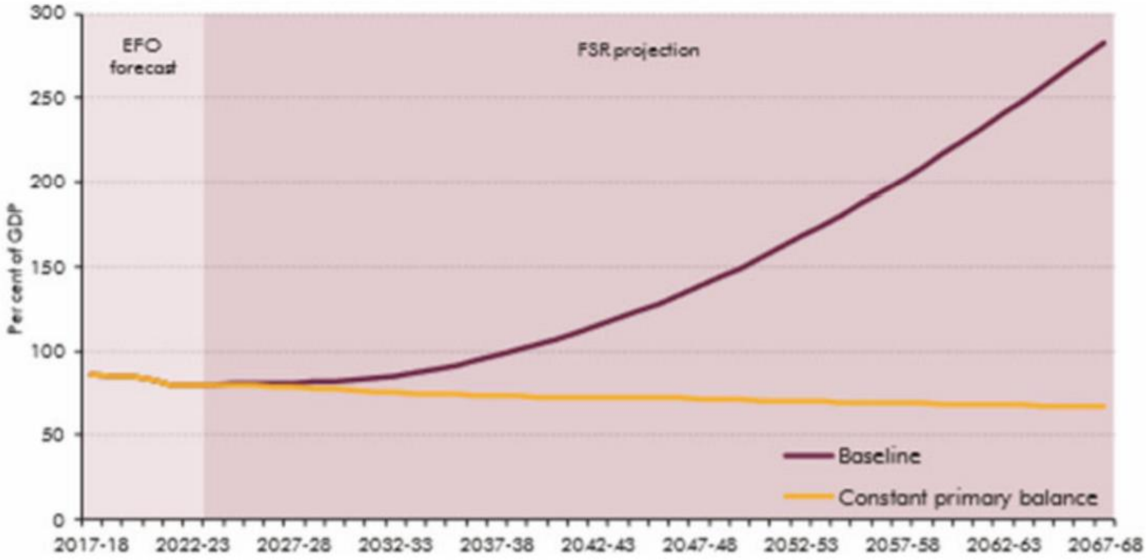


Diagram 9: Projections of UK public sector net debt, made before the pandemic struck (*Source* The Office for Budget)

And, if we are right, future inflationary pressures will drive up interest rates, adding yet further to fiscal problems.

In effect, we are in a debt trap. Debt ratios are so high that increases in interest rates, especially at a time in low growth, may drive exposed borrowers into an unsustainable state. As a result, the monetary authorities cannot raise interest rates, either sharply or quickly, without running into the danger of provoking another recession, which itself would make everything worse. But that will leave interest rates, and the accompany flood of liquidity, sufficiently expansionary (accommodating, in Central Bank speak) that debt ratios are likely to increase even further.

The inevitable question then is, how do we escape this debt trap? We discuss a variety of mechanisms for escaping the debt trap, notably growth, unexpected inflation, default, jubilee debt cancellation, debt restructuring or a shift away from debt finance towards equity finance. We demonstrate that all these alternatives have problems, except for growth, which, alas, is likely to remain sluggish at best. Of course, what would be nice would be to raise productivity, but its growth has been disappointingly weak during the period since the GFC, for reasons that remain unclear. The idea that there are available structural supply-side policies that could painlessly raise productivity is, alas, a fantasy. If robotics and AI and other tech wizardries can help to improve productivity per head, so much the better. The concerns about the world running out of jobs are likely to be unfounded-there will be more than enough jobs looking after the old!

How Could All of This Leave Policy and Policymakers Unscathed?

Over the last few decades, central bankers have been the best friends of Ministers of Finance, while central bankers themselves have achieved rock star status. As the Ministers of Finance have presided over continuing deficits and rising debt ratios, the interest burden has been held down by simultaneous falls in interest rates. Central Bank policy has eased the path for politicians. No wonder that Central Bank independence has not been subject to much serious criticism, except in relation to their more unconventional monetary policies, which have seemed to blur the boundaries between monetary and fiscal policies.

Central Banks have been in the driver's seat thus far. Before the onset of the GFC, Central Banks gave their inflation targeting regimes most of the credit for the persistent disinflation. After the crisis, Central Banks have been criticised for not being able to raise inflation, but their unconventional measures have helped raise asset prices to the benefit of investors and home-owners. If we are right in our thesis, then much of the disinflation of the prior decades should be attributed to demographics, putting the efficacy of monetary policy in dictating the path of inflation into even greater question than it has been in the post-crisis period.

The main thesis of our book is that the great demographic reversal will shortly raise inflation and interest rates. With public sector debt ratios at high levels, and continuing worsening pressures from demography, the aims and objectives of Ministers and Central Banks may soon cease to be comfortably aligned and may come into conflict. Moreover, the effect of quantitative easing (QE) has been drastically to shorten the average duration of public sector debt (including the cash liabilities of the Central Bank). The implication of this is that when interest rates go up, this will have an even quicker effect in raising the interest burden that the Minister of Finance has to face. So, Central Bank independence (CBl) will come under even greater threat in the future than it has been recently.