

RISK&OPPORTUNITIES

Société Générale Economics & Sector Studies

COVID-19 and Secular Stagnation

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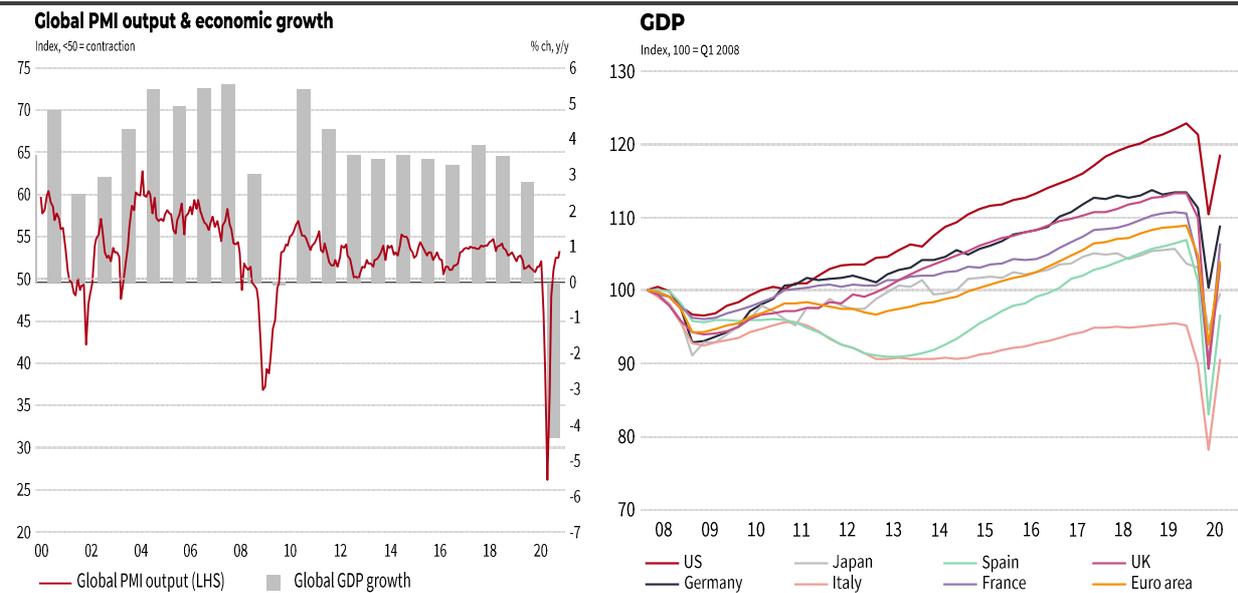
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Despite extraordinary fiscal and monetary policy support, the COVID-19 pandemic, along with the measures taken to contain it—including unprecedented lockdowns and economic shutdown—has plunged the world economy into the deepest recession in modern history. In addition to its toll on public health and momentous short-term output losses, the pandemic has already left an indelible mark on the global economy.

This paper suggests that, absent a more audacious policy action plan, the COVID-19 shock will leave deep and lasting scars on the global economy by exacerbating pre-existing vulnerabilities, eroding potential output, and strengthening the forces of “secular stagnation”. This is partly because of an anticipated long-term shift in behaviours and beliefs. Indeed, the COVID-19 shock is likely to trigger a structural increase in risk aversion in the private sector that will operate both to raise precautionary household savings and to reduce business investments, leading to a chronic deficiency of aggregate demand that will prevent economies from fulfilling their potential. Moreover, the pandemic is giving a tremendous boost to the digital transition, which will contribute to widening social inequalities, themselves a force of secular stagnation in that they lead to the increased propensity of populations to save.

The COVID-19 pandemic, together with the measures taken to contain it—including unprecedented lockdowns and economic shutdown—and spontaneous reductions in activity by many consumers and companies, has tipped the global economy into a recession with no parallel in modern times. This is a truly global crisis, with per capital incomes shrinking in the largest number of countries since 1870. Early in the crisis, some analysts anticipated a “V-shaped” recovery—a rapid upswing after the collapse of the economy, with a return to a near pre-crisis level of activity once lockdown measures were lifted. The economic rebound from the pandemic-induced recession was generally dramatic, but it quickly faded, before taking a second hit amid the wave of new restrictions and lockdown measures to slow the renewed surge in virus infections. Less than a year into the crisis, there are signs of lasting damage, reminiscent of the grinding recovery process that dragged on for a full decade after the Great Recession of 2008.

COVID-19 scars will be long lasting



Source: Refinitiv.

This paper suggests that, absent a more audacious policy action plan, the COVID-19 shock may well be a tipping point for the world economy as the risk of sinking into a prolonged period of sluggish growth increases substantially, for three main reasons: first, the Great Recession of 2008-9 will have lasting consequences on potential output, mainly through lower private investment and significant damages to human capital; second, the coronavirus shock will likely trigger structural changes in households' and businesses' behaviour patterns, including savings habits, which are liable to strengthen the forces of "secular stagnation" in advanced economies¹; third, the

¹ The term "secular stagnation" was coined in the late 1930s by the economist Alvin Hansen, who suggested that the Great Depression might herald a new era of persistent economic depression. Back then, Hansen pinpointed demographic factors as a major cause of secular stagnation: a declining birth rate, he argued, meant low investment demand that was causing an oversupply of savings. In the years that followed WW2, the secular stagnation hypothesis lost its relevance as the baby boom altered the population dynamics and the massive increase in government spending, which effectively put an end to concerns about insufficient demand. But in November 2013, after several years of disappointing growth in many developed economies in the wake of the Great Recession of 2008-9, Lawrence Summers revived the concept of secular stagnation at a presentation he gave at the IMF Research Conference. Summers defines secular stagnation as a situation in which the natural rate of interest—which balances savings with investment at full employment of resources—is negative, leading to the ineffectiveness of standard monetary policy. See, for example, Lawrence Summers (2014), "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", Keynote Address at the NABE Policy Conference, 24 February, and Lawrence Summers (2015), "Reflections on the 'New Secular Stagnation Hypothesis'", in C Teulings and R Baldwin (eds), *Secular Stagnation: Facts, Causes and Cures*, a VoxEU.org eBook, pp. 27-48. Also see Barry Eichengreen (2015), "Secular Stagnation: The Long View", *American Economic Review: Papers & Proceedings* 2015, 105(5): 66-70, and Ben Bernanke (2015), "Why are interest rates so low, part 2: Secular Stagnation", Ben Bernanke's Blog, Brookings, 31 March.

pandemic is giving a tremendous boost to the digital transition, which will contribute to widening social inequalities, themselves a force of secular stagnation.

However, secular stagnation may not be a foregone conclusion, as policymakers do have tools and policies, most notably fiscal policy, at their disposal to combat it. And just as crucially, a return to sustained growth could arise from a technological shock that would deliver a new upswing in productivity. As Erik Brynjolfsson and Andrew McAfee (2014)² argue, smarter and smarter machines are going to radically transform the economy. The digitization of just about everything could mean, as they believe, that the global economy is on the cusp of a dramatic growth spurt with productivity on a sharply upward trajectory. Since technological progress is the key force driving productivity—and thus economic growth—in the medium- to long-term, the future of productivity is the subject of heated debate. There are a large number of views ranging across the whole spectrum from the so-called techno-optimists, exemplified by Brynjolfsson and McAfee, to the techno-pessimists, best personified by Robert Gordon (2016)³. At this stage, the jury is still out on how the new digital economy will alter the course of productivity⁴.

1. Hysteresis

We estimate that the world economy tumbled by 4.3% in 2020, with a contraction of 5.8% in the developed world, amid an unprecedented collapse of production, trade, and employment. Large falls in output are rare in economic history, at least in industrialized countries. The swift and massive shock of the coronavirus pandemic, along with the shutdown measures taken to contain it, is easily the greatest example of economic dislocation in a century or so. According to conventional textbooks in macroeconomics, a recession—in which actual output drops below potential output⁵—is followed by a recovery period, in which actual output returns to potential without that potential being affected significantly by the recession. This principle, however, has been challenged by a great deal of empirical evidence showing that deep recessions can do lasting damage to major macroeconomic variables (e.g.,

² See Erik Brynjolfsson and Andrew McAfee (2014), *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, Norton. 306 pp.

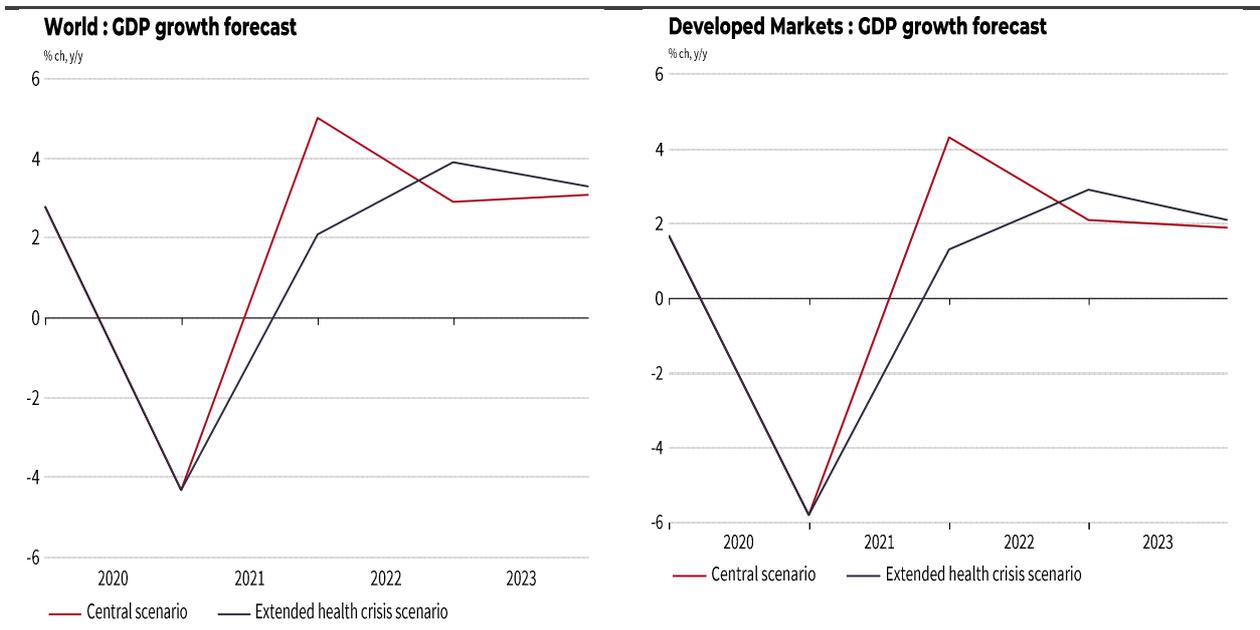
³ See Robert Gordon (2016), *The Rise and Fall of American Growth: The US standard of living since the civil war*, Princeton University Press, coll. “The Princeton Economic History of the Western World”, 768 pp.

⁴ A discussion on the many ways in which the digital transformation may reduce or increase the efficiency with which the economy utilizes its inputs is especially complex and beyond the scope of this paper.

⁵ Potential output is the normal level of production that an economy can produce if it is using all of its resources, which include technology, equipment, natural resources, and employees.

gross domestic product, productivity, unemployment) even after the initial shock has fully dissipated⁶.

The worst peacetime recession in modern times



Source: SG Economic and Sector studies.

The persistence of economic damage, not just to the level of GDP, but also to the trend and growth of GDP, has been borne out by experience since the global financial crisis—the most recent major economic shock prior to the pandemic. After breaking out in 2008 in the US banking sector, the financial crisis went on to unleash the deepest global recession since the Great Depression of the 1930s. But no advanced economy experienced a V-shaped recovery, as might have been expected after such a severe downturn. Despite near-zero policy interest rates, the adoption of unconventional monetary policies, and rising public debt, post-financial crisis growth in the major developed economies has been unusually sluggish, falling far

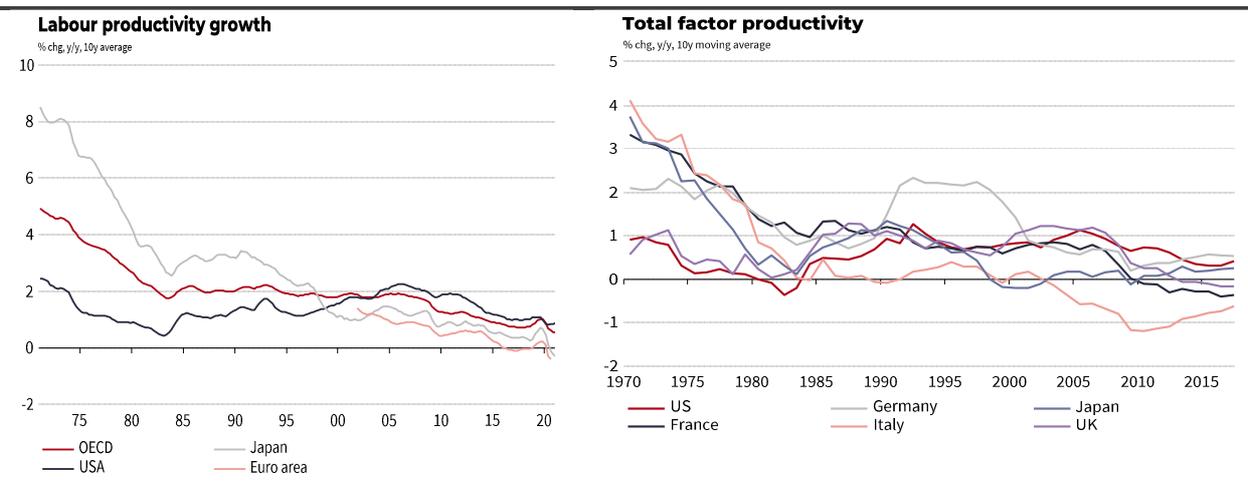
⁶ Historical evidence shows that recessions commonly cause lasting damage to output in subsequent years. Blanchard et al. (2015), for example, find that about two-thirds of the 122 recessions they have studied over the past 50 years in 23 countries were followed by lower output relative to the pre-recession trend even after the economy recovered. What is more, in about one-half of those cases, the recession was followed not just by lower output, but by lower output growth relative to the pre-recession trend. See Olivier Blanchard, Eugenio Cerutti, and Lawrence Summers (2015), “Inflation and activity—Two explorations and their monetary policy implications”, IMF Working Paper, WP/15/230, November. Also see Cerra Valérie and Saxena Sweta Chaman (2008), “Growth dynamics: the myth of economic recovery”, 98(1) American Economic Review: 439 – 457; International Monetary Fund (2009), “What’s the damage? Medium-term output dynamics after financial crises”, in World Economic Outlook, IMF, Washington, DC:121-50; Reinhart Carmen M. and Rogoff Kenneth S. (2009), “The aftermath of financial crises”, 99 (2) American Economic Review: 466-472; Cerra Valérie and Saxena Sweta Chaman (2017), “Booms, Crises, and Recoveries: A New Paradigm of the Business Cycle and its Policy Implications”, IMF Working Paper No. 17/250, 16 November.

short of longer-term growth trends⁷. An explanation of the lasting effects of severe economic downturns on output has been provided by the concept of hysteresis, which essentially implies that deep recessions tend to do long-term damage to growth potential that does not automatically unwind as the economy recovers.

A permanent reduction in an economy's growth potential can be caused by several factors:

- The scars left on workers who lose their jobs, which may result in some of them eventually becoming unemployable or dropping permanently out of the job market, with an ensuing rise in structural unemployment and declining labour participation.
- A decline in capital accumulation (e.g. due to bankruptcies, firms' weakened balance sheets, grim economic prospects, debt overhangs, etc.) liable to lead to a long-term decline in productive capital stock.
- Disruptions in economic activities, potentially including those that produce technological progress, and cuts in firms' research and development outlays, with an adverse impact on productivity growth.

A long-term decline in productivity growth



Source: Refinitiv.

We expect the Great(er) Recession of 2020 to have highly persistent effects on output given the heavy toll it will exact on capital accumulation and human capital. Hence, the necessity of determined policy action.

⁷ Laurence Ball (2014) finds that the loss in potential output from the recession of 2008-09 has been significant in most countries, though its severity has varied across countries. See Laurence Ball (2014), "Long-term damage from the Great Recession in OECD countries", European Journal of Economics and Economic Policies: Intervention, Edward Elgar Publishing, vol. 11(2), pages 149-160, September.

Unlike a war, the coronavirus pandemic has caused no damage to physical capital stock. But firms won't invest in expanding capacity until they are confident that the pandemic has been brought under control and that their businesses will recover. It is also clear that the effects of COVID-19 will lead to the premature obsolescence of part of the existing productive capital stock in, for example, the travel and hospitality sectors, which will be reflected in a rising depreciation rate and lower capital accumulation. Moreover, firms' weakened balance sheets, along with cascading bankruptcies, will destroy organizational and informational capital.

Also, COVID-19 mortality, which disproportionately affects the elderly, has largely spared the labour force⁸. However, the mass unemployment that will result from a rash of bankruptcies is a serious concern for workers' longer-term employability and productivity. Many workers finding themselves unemployed will be impacted for life, as their skills and expertise may soon become obsolete, especially at a time when new information and communication technologies are rapidly developing. Impaired productivity will be reflected in lower wages, which may occur not just during the recession, but possibly over people's entire working lifetimes. High unemployment rates, possibly combined with psychological traumas, could discourage some unemployed people from seeking new jobs and encourage them to leave the workforce, leading to declining rates of labour force participation.

History suggests that the longer people are unemployed, the harder it is for them to return to the workforce. The deeper and the longer the recession, the more extensive its consequences on unemployment, and the greater the loss to human capital with its consequent damage to an economy's productive capacity. All else being equal, the Great(er) Recession of 2020 is expected to have lingering repercussions on labour productivity and potential output that will exacerbate the multi-decade trend of slowing potential growth and productivity growth.

2. The long shadow cast by the 2008 financial crisis

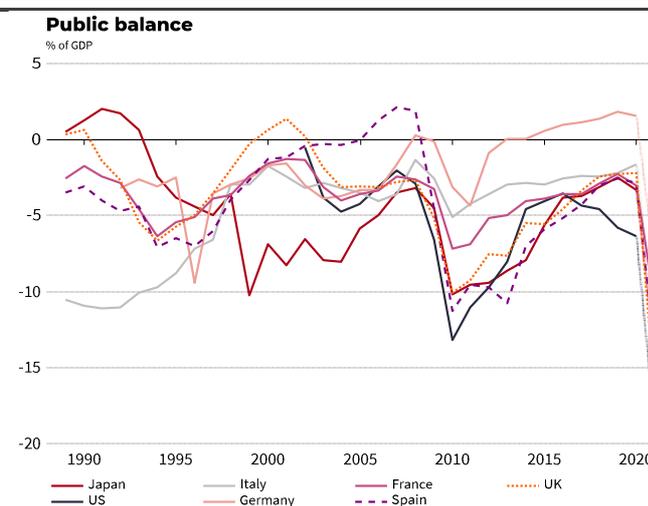
Unlike previous episodes of post-war downturn, the recession of 2020 was not triggered by major macroeconomic and/or financial imbalances or by a jump in oil prices. But several economies, especially advanced ones, have entered this crisis in a vulnerable state, with sluggish growth, interest rates at record lows and overall debt levels at record highs. This partly reflects the enduring legacy of the global financial crisis of 2008, which triggered unprecedented monetary and fiscal easing across the globe to stabilize dysfunctional financial markets and shore up aggregate demand. Interest rates were cut to near zero. Liquidity was pumped into the system

⁸ This stands in sharp contrast to many previous pandemics, going back to the Black Death in the 1300s, which occurred at times when virtually no one survived to old age.

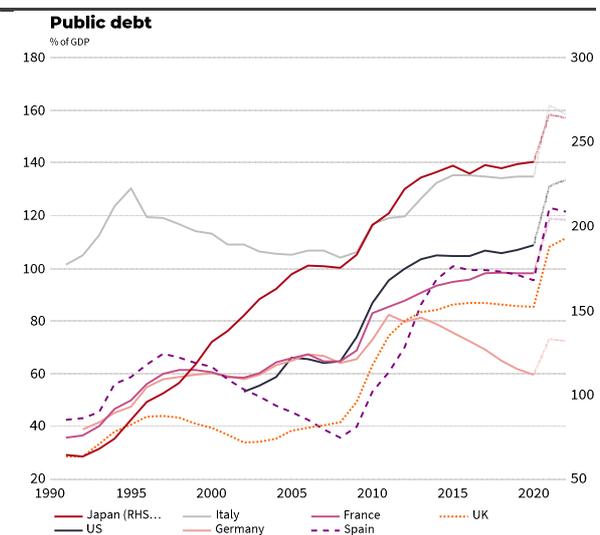
with quantitative easing. Banks that were deemed too big to fail were bailed out⁹. A harsh recession, along with fiscal stimulus packages, pushed government debt to unprecedented highs.

However, the stimulus programmes of 2008-09 pale in comparison to the coronavirus financial support packages recently implemented worldwide. Commensurate with the scale and speed of the COVID-19 shock, policymakers across the globe have provided unrivalled support to households, firms, and financial markets. Major countries have implemented trillions of dollars of deficit-funded government spending, while the Federal Reserve and other central banks have injected an extraordinary amount of cash into the economy to prevent the crisis from spreading to the financial system and becoming even more severe. This has come on top of the policy actions, unprecedented at the time, that were taken across the world more than a decade ago to cope with the global financial crisis.

The biggest fiscal boost on record



Public debt explosion



Source: Refinitiv, IMF WEO.

21. Zero or near zero interest rate policy

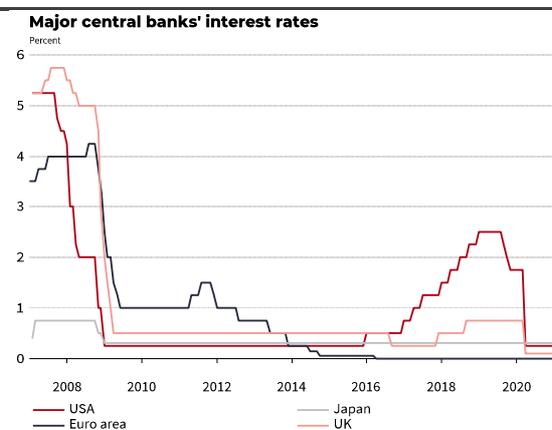
The onset of the global financial crisis in 2007-08 prompted central banks worldwide to cut their policy rates aggressively: the US Federal Reserve reduced its short-term interest rate from 5.25% to 0%, while all other main central banks quickly reached

⁹ Central banks were keen to avoid the errors of the Great Depression of the 1930s, when the Fed's policy was restrictive during the two periods of sharp downturn, first in 1930-33 and later in 1937-38. Indeed, the key lesson from the Great Depression of the 1930s was that central banks should respond vigorously to financial crises to prevent or mitigate financial panics and ward off a collapse of the money stock and prices that would cause a devastating blow to the real economy and jobs.

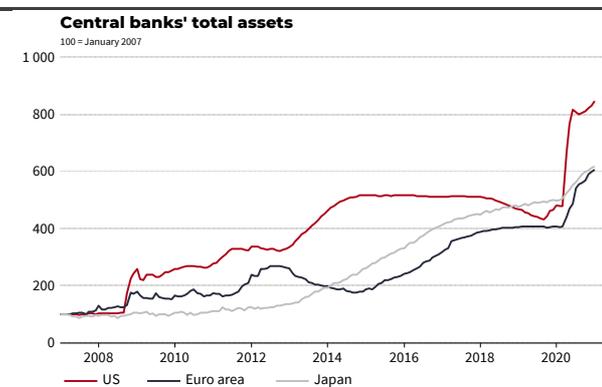
their lower bound (at zero or effective) on nominal interest rates¹⁰. Some central banks, such as the European Central Bank (ECB) and the Bank of Japan (BoJ), pushed rates slightly below zero.

However, when short-term interest rates reach zero, further monetary easing becomes difficult, as the scope for rate cuts is limited by the fact that interest rates cannot fall (much) below zero. This is because people always have the option of holding cash, which pays zero interest, rather than negative-yielding assets. As it takes significant interest rate cuts to fight a recession, the effective lower bound (ELB) on short-term interest rates constrains monetary policy significantly by leaving central banks with much less firepower to insulate their economies against shocks.

Low interest rate policy...



... and large-scale liquidity injections



Source: Refinitiv.

22. Debt and wealth effects in support of growth

With monetary policy *de facto* constrained by the ELB, central banks, in the wake of the global financial crisis, have designed a variety of novel monetary policy tools—referred to as “unconventional” monetary policies—to further ease financial conditions and provide extra stimulus to the economy. These new policies have taken two main forms: (i) “Forward guidance”¹¹; (ii) Large-scale purchases of unconventional assets (also referred to as “Quantitative Easing” or QE), either long-

¹⁰ Economists also talk about nominal interest rates having a “zero lower bound” (ZLB), but we now know that the lower bound on interest rates is not exactly zero but slightly below zero. This is because holding liquidity has a cost for the public as it involves storage, insurance, handling, and transportation fees. As a result, people will be willing to hold the negative yielding deposits (that is, to pay a charge to banks) to the extent that banks can guarantee that their holdings of money will effectively be safe and available for transactions. The cost of holding cash is what actually defines the effective lower bound on policy interest rates.

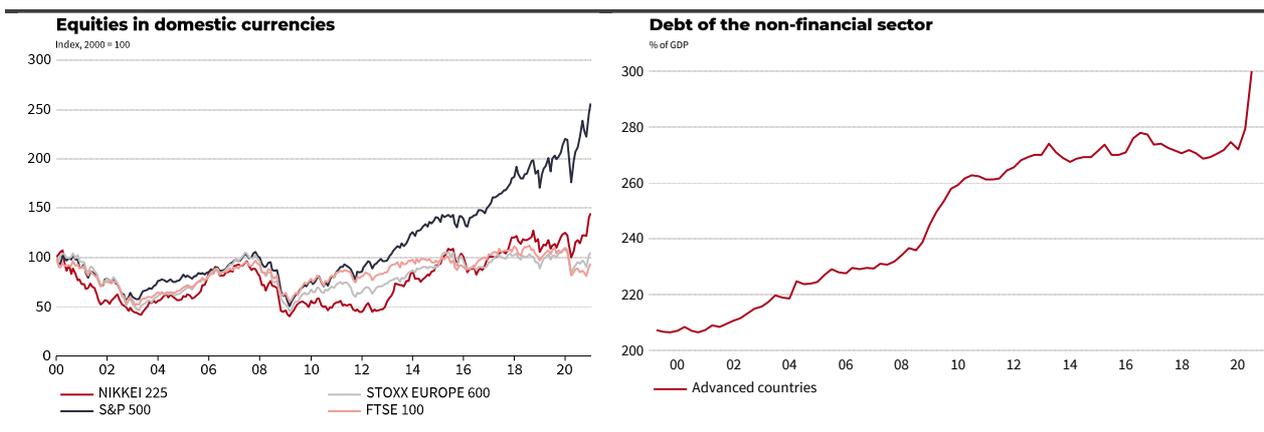
¹¹ “Forward guidance” is a communication intended to lower longer-term interest rates. Central banks aim at guiding investors' beliefs about future action by committing to keeping policy rates low for an extended period.

term government debt or risky private-sector assets, such as agency mortgage-backed securities (MBS), corporate bonds and even equity¹².

These policies have pursued two fundamental objectives:

- Reduce the cost of borrowing to encourage households and companies to borrow more and thus stimulate aggregate demand;
- Sustain asset prices (e.g. stock market prices) to raise household wealth and drive consumption upwards.

Wealth and debt effects in support of growth



Source: Refinitiv.

With the onset of the COVID-19 pandemic, QE programs have been used on an even bigger and bolder scale than after the global financial crisis, leading to the further expansion of central banks' already bloated balance sheets. The jury is still out on these policies. Studies suggest that they have boosted economic activity slightly; however, by weighing persistently on long-term yields and credit spreads, they have also paved the way for a build-up in financial vulnerabilities, including elevated stock valuations, record corporate indebtedness, including from the more leveraged corporate borrowers, and a marked erosion of credit standards, primarily outside the regulated banking sector¹³.

¹² Large-scale liquidity injections to alleviate financial institutions' liquidity problems have been prioritised in continental Europe given its tradition of bank-based financial systems.

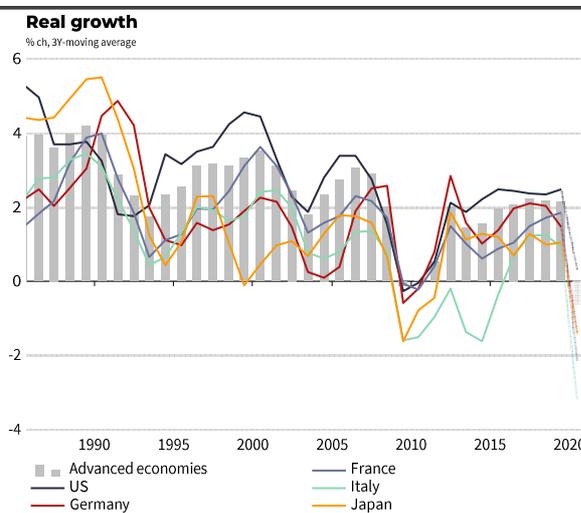
¹³ Over the past decade, the ultra-low interest-rate environment, coupled with widespread liquidity, has unleashed a hunt for yield that has driven investors towards riskier assets, such as high-risk debts (leveraged loans and junk or high-yield bonds). Recent years have seen an explosion of the leveraged loan market for high-risk companies. Leveraged loans have often been pooled into an asset-backed security called a collateralized loan obligation, or CLO—the close cousin of collateralized debt, or CDO, which re-secured largely subprime mortgage-backed securities and played a central role during the global financial crisis. CLOs have been a booming business over the past decade. This is of increasing concern at a time when the COVID-19 pandemic is throttling companies' earnings across sectors.

3. Secular stagnation

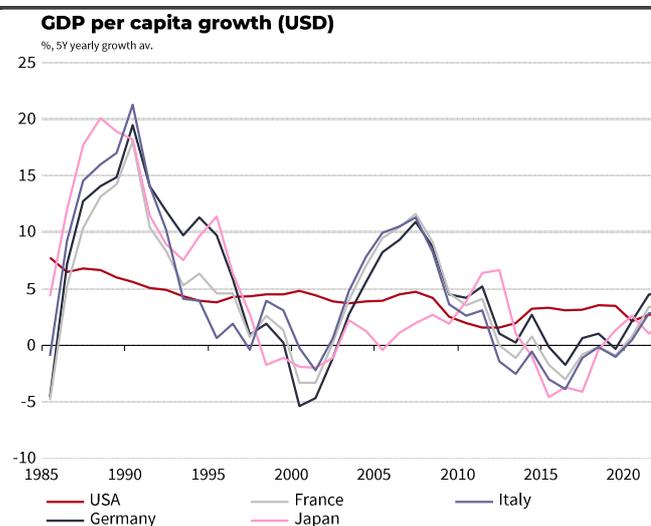
31. The Effective Lower Bound has been, and will continue to be, a big issue

Prior to the global financial crisis, the effective lower bound problem was largely viewed as an oddity in the policy and academic community. The Bank of Japan had kept short-term nominal interest rates at the effective lower bound for many years. But this was largely considered a reflection of factors specific to that country. The situation has, however, changed dramatically since the global financial crisis, with all main central banks in advanced economies being stuck at their own effective lower bounds.

Global trends towards lower growth rates...



... and lower GDP per capita growth

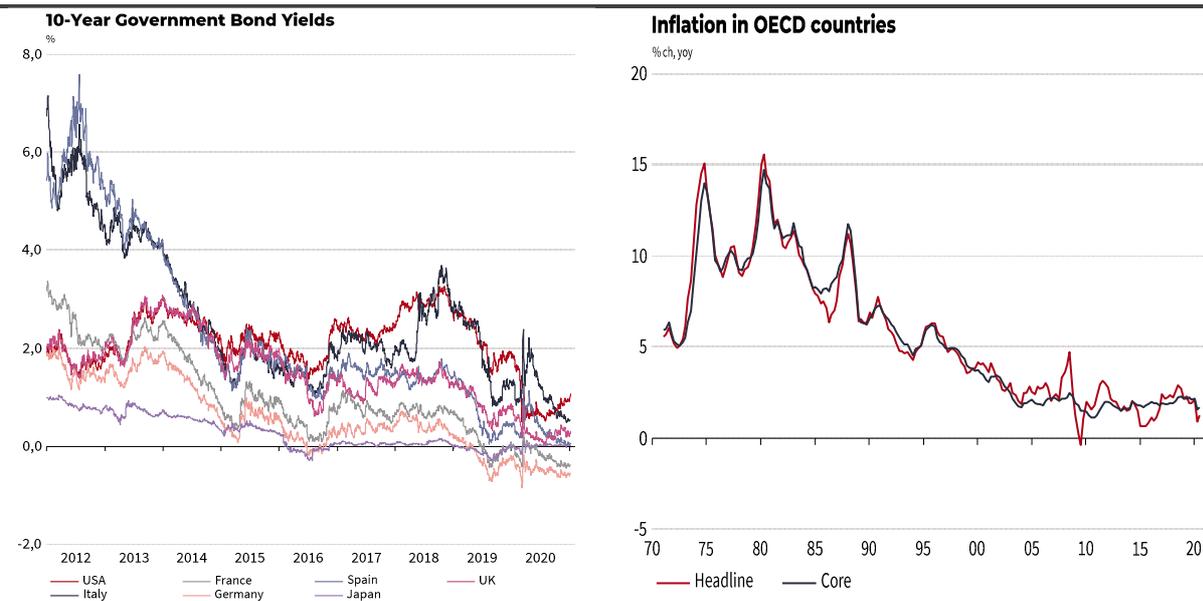


Source: IMF, Refinitiv.

The more-than-a-decade-long period spent at, or close to, the effective lower bound in most advanced economies, notably in Japan and the euro area, has been accompanied by disappointing macroeconomic performance. Although these economies have seen brief periods of recovery since 2013, these cyclical upswings proved subdued and temporary. Even in the US, where the recovery from the financial crisis was relatively stronger, the economic expansion during the 2010s was the weakest—albeit the longest—on record. For most of the past decade, yearly core inflation was below central banks' targets across the advanced world. And global long-term interest rates continued trending towards zero unabated. These ultra-loose monetary policies eventually succeeded in achieving (subpar) growth, but at the cost of mounting financial vulnerabilities, slower structural adjustment, and distorted investment decisions.

Global trends towards lower interest rates...

... and lower inflation rates



Source: Refinitiv.

32. Stuck in a low-neutral-interest-rate world

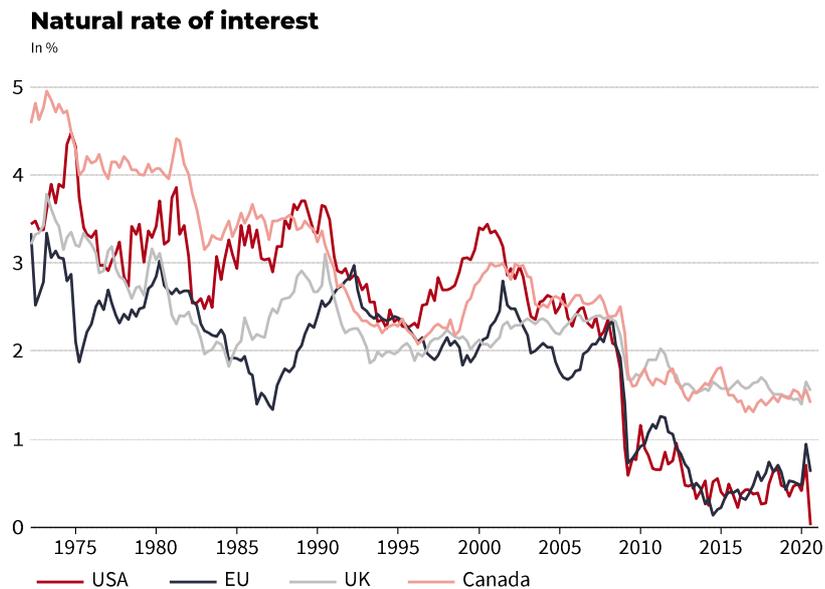
The interest rate that central bankers seek to achieve is the rate at which the economy is neither depressed and deflating nor overheated and inflating; it is, in other words, the “natural rate of interest”—also called the “long-run equilibrium interest rate” or “neutral real rate” or, in economic jargon, “r-star” or “r*” (see Box 1 below). In the US, the natural rate of interest is estimated to have dropped from around 2.5% prior to the global financial crisis to less than 1% prior to the global lockdown in 2020. In the euro area, it is estimated to have fallen to less than 0.5%.

Box 1: The natural rate of interest

The natural rate of interest was first defined by the Swedish economist Knut Wicksell who, in his book *Interest and Prices* (1898), defined it as the real rate of interest which balances the supply of funds (savings) with the demand for funds (investment) at maximum output, i.e., full employment of resources. In other words, it is **the rate that prevails when actual output equals potential output. This rate is the only one compatible with price stability.**

The natural rate of interest is a key concept for central bankers as its level serves as a guidepost for determining whether monetary policy is too tight or too loose. **Monetary policy is accommodative as long as the real policy rate is below the natural rate of interest.**

The natural rate cannot be observed; it is a purely theoretical construction derived from actual data like real GDP growth, inflation and nominal interest rates. One commonly used approach to compute the natural rate was developed by Federal Reserve economists Thomas Laubach and John Williams¹⁴. **Most estimates suggest that the natural rate of interest in advanced countries has been on the decline for the greater part of the last 30 years.** A downtrend to which the global financial crisis added a surge of fresh momentum.



Sources: Bloomberg, SG Economic and Sector studies.

For policymakers, the implications of the natural rate of interest being very low—close to zero or even negative—are widespread: monetary policy is accommodative as long as the real policy rate is below the natural rate of interest. As seen above, however, policy rates cannot fall (much) below zero; thus, ultra-low natural rates mean that the current ultra-low levels of central bank policy rates cannot fall to the levels which would be required to successfully combat a recession. Since 2008, central banks have been able to further ease monetary policy through unconventional methods, but when monetary policy stays ultra-loose for an unusually long period of time, financial excesses, like disproportionate risk-taking and excessive debt accumulation, build up and increase the economy's vulnerability to boom-bust cycles.

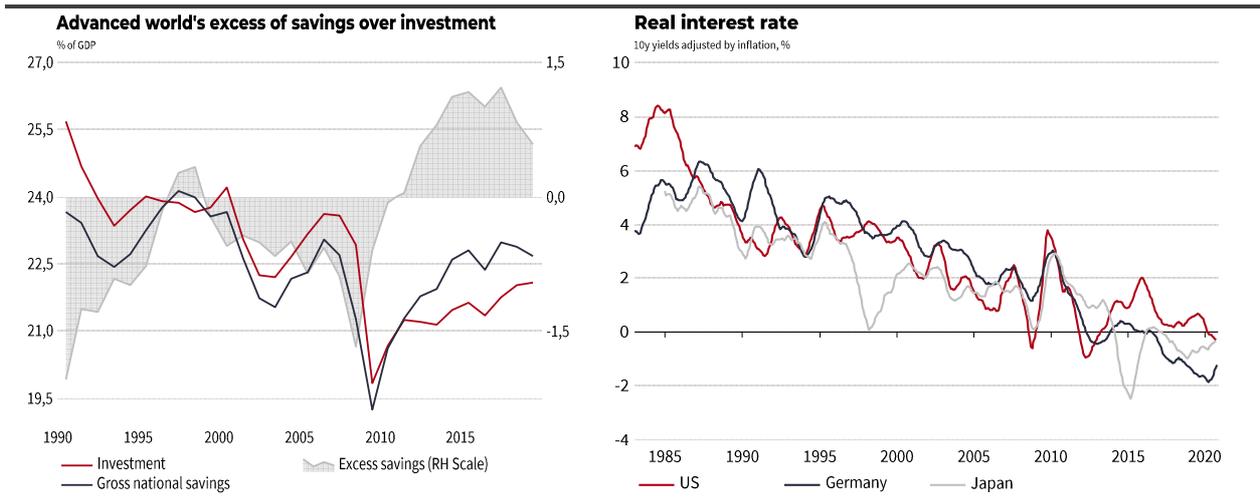
¹⁴ See Laubach, Thomas and John C. Williams (2003), "Measuring the Natural Rate of Interest", Review of Economics and Statistics, Volume 85, Issue 4, November pp. 1063-1070.

33. Excess savings

The evolution of the natural rate of interest is viewed as driven by changes in underlying saving-investment determinants¹⁵. As such, the fact that the natural rate—and along with it, the whole range of interest rates and yields—has been trending downwards for so long and in so many countries is seen as the result of an excess of desired savings relative to desired investment.

Developed world: Savings & investment...

... and low real interest rates



Source: Refinitiv.

Explanations for the downward trend in the natural rate of interest—that is, the lack of “appetite” for investment relative to the “appetite” for savings—have fallen into two broad categories:

- The deterioration of growth potential across the advanced world and the consequent decline in real future returns on investment
- The sluggishness of global demand and the associated increase in the general population’s propensity to save.

We explore these two points in more detail below.

DETERIORATION OF GROWTH POTENTIAL & DECLINE IN THE APPETITE FOR INVESTMENT

Revising downwards their assessments of the level of growth potential in many advanced countries has become a pattern for economists over the past decade. For an economy, lower growth potential is synonymous with a decline in real future

¹⁵ See, for example, Lawrence Summers (2014) (op.cit.); Ben Bernanke (2005), “The global saving glut and the US current account deficit”, Remarks at the Sandridge Lecture, Virginia Association of Economists, Richmond, Virginia, 10 March; Ben Broadbent, (2014), “Monetary policy, asset prices and distribution”, Speech given at the Society of Business Economists Annual Conference, Bank of England.

returns on investment, and thus in a decline in the desire to invest. This clearly weighs on investment over the long term. Three main factors have been put forward to explain the deterioration of growth potential:

Deceleration in active population growth: In recent decades, the fall in birth rates in advanced countries, combined with increases in life expectancy, has led to a deceleration or shrinking of the working-age population (aged 15 to 64 years). A shrinking labour force, however, means a slower-growth economy and, due to the accelerator effect, a decline in investment demand, as less investment is required to increase capacity to meet demand. A shrinking labour force, indeed, means lower demand for new office buildings, new materials to equip workers, etc. This trend has been reinforced by the availability of cheaper capital goods. The digital and technological revolution has in effect led to a sharp decline in the relative price of equipment, especially in the information technology (IT) space, meaning that a given investment project requires less capital input than was previously the case – hence, an overall decline in investment value.

Slower productivity growth: Growth in labour productivity—another key determinant of a country’s long-run growth potential—has slowed markedly in advanced economies since the early 2000s. This deceleration trend is especially puzzling given that it has occurred at a time of rapid technological change, with innovations in the production of digital information and communications technologies (ICT) and the spreading use of ICT across the advanced world. This has left economists to ponder the causes (see Box 3 below).

The damage inflicted by the Great Recession on the labour force and on productivity (hysteresis effects): As seen above, the shocks to employment inflicted by severe economic downturns leave scars on workers who lose their jobs, which can result in rising structural unemployment and lower labour participation, directly reducing an economy’s growth potential. And the Great Depression of 2020 will no doubt take a large toll on potential growth given the damage done to human capital and capital accumulation.

Box 2: A puzzle yet to solve: The productivity slowdown.

“You can see the computer age everywhere but in the productivity statistics”. With this observation, Robert Solow (winner of the Nobel Prize in Economic Sciences in 1987) pointed out that, contrary to expectations, labour productivity in the US did not reflect the growth of information technologies in companies.

This is the **famous Solow productivity paradox**.

Indeed, since the mid-1960s, labour productivity growth has been trending downward in most developed economies. This fall was temporarily halted—in the

second half of the 1990s and in the second half of the 2000s—but never entirely reversed. In the wake of the 2008 financial crisis, productivity collapsed despite major progress in information and communications technologies.

Economists have debated the reasons for the slowdown, but no consensus has emerged.

Explanations have generally fallen into five categories:

1. Statistical underestimation

Statistics poorly measure added value / productivity gains in an increasingly intangible and innovative economy. Many positive effects of the digital economy, particularly on the production of wealth, are not visible in statistics. For example, Wikipedia's contribution to GDP is close to zero, since it is based on the free sharing of information; and yet, Wikipedia contributes to the well-being of its users.

Hence, the argument that statistics should be reinvented to allow for the measurement of the impact of free goods and services on the standard of living.

2. Long dissemination times of technological innovations

This line of argument emphasizes that the effects of innovations on productivity are slow to appear, due to long dissemination, learning and widespread adoption times, but will ultimately manifest themselves.

3. Market rigidities

Cette and al. (2018)¹⁶ used company data to show that the most efficient companies have posted important productivity gains, but these gains have not been generalized. This is because the markets are not flexible enough, thus blocking the necessary reallocations of production factors to the most innovative sectors and preventing technological innovations from spreading throughout the economy. This poor reallocation of resources is exacerbated by low real interest rates, which allow underperforming or obsolete businesses to survive.

4. Employment shifts to services

The American economist William Baumol¹⁷ points out that with the shift in jobs from the industrial sector to the tertiary sector, where overall productivity gains are lower than in the former, a decline in productivity growth across the economy is inevitable.

¹⁶ See Gilbert Cette, Simon Corde and Rémy Lecat (2018), "Firm-level productivity dispersion and convergence", *Economics Letters*, Elsevier, vol. 166, pp. 76-78.

¹⁷ William Baumol (1986), "Productivity growth, convergence, and welfare: What the long-run data show", *The American Economic Review*, vol. 76, No. 5, December, pp. 1072-1085.

5. Secondary transformative changes

The economist Robert Gordon¹⁸ argues that innovations in information and communication technology do not have the capacity to transform production processes and impact growth and productivity in the same way as the past Great Inventions such as the steam engine and railroads, electricity, urban sanitation and the internal combustion engine. According to Gordon, truly major innovations bring about significant changes in business practices, and there were some changes along those lines between the mid-1990s and the mid-2000s, but not much since.

Innovations since 2000, he argues, have focused on leisure and consumption habits, without fundamentally changing business practices as electricity, cars and running water have done.

SLUGGISHNESS OF GLOBAL DEMAND & INCREASED APPETITE FOR SAVINGS

Alongside the decline in investment demand, a number of factors have combined to increase the general population's propensity to save:

A long cycle of deleveraging after the global financial crisis: After the accumulation of vast private debts in the years leading up to the 2008 financial crisis, much of the advanced world has been forced to begin a broad deleveraging cycle (with some exceptions, such as France). With balance sheet repair now being the key priority for highly indebted private agents, entire sectors of the economy have become more concerned with rebuilding savings and eliminating debt than with increasing their consumption or investment, regardless of ultra-low interest rates¹⁹.

Rising uncertainty about the length of retirement and the availability of benefits: Longer life expectancy and declining death rates have left many economies grappling with ageing societies, which often end up hoarding capital to live off it after retirement, all the more so amid increasing uncertainty about governments' ability to meet pension obligations.

Widening inequality and an increasing share of income going to higher-income people: Since 1980, income growth in the middle of income distribution has been much weaker than at the top. This has translated to an increase in aggregate saving given that upper-income households have a higher propensity to save than

¹⁸ Robert Gordon (2016), (op.cit.).

¹⁹ See, for example, Lo, Stephanie and Kenneth Rogoff (2015), "Secular stagnation, debt overhang and other rationales for sluggish growth, six years on", BIS Working Paper No. 482.

households at the bottom and the middle of the income distribution range. Moreover, the rising profit share typically ends up transferring income to those with a lower propensity to spend and a higher propensity to save.

Increased accumulation of foreign exchange reserves by central banks²⁰: The accumulation of foreign exchange reserves, primarily in Asia and Europe²¹, led to an increase in savings worldwide to the extent that these savings pools have not been matched by higher domestic investment.

THE HYPOTHESIS OF SECULAR STAGNATION

Overall, a variety of structural changes, ranging from adverse demographics to deleveraging and to increased inequalities, have operated to boost the appetite for savings relative to the appetite for investment in the main advanced economies. One consequence has been lower aggregate demand and disappointing growth performance. Another consequence has been a fall in the natural rate of interest to extremely low or even negative levels. The fall of the natural interest rate to these low levels has, in turn, been a major obstacle to sustained growth by preventing monetary policy from effectively providing the necessary stimulus owing to the effective lower bound on nominal interest rates. It is true that the world economy grew at a fairly robust rate between 2017 and 2019, but that growth was based on increasingly shaky financial foundations. Ballooning debt and asset-price bubbles become, in an age of secular stagnation, the foundations of economic growth²².

The key message of the secular stagnation hypothesis is that, in an age of secular stagnation, interest rates remain so low that central banks frequently find themselves unable to cut rates sufficiently to effectively cope with another recession. As a result, economic slowdowns are more frequent, and deeper and longer than periods of economic recovery, which drives average GDP growth down and unemployment up. Constrained by the effective lower bound on nominal interest rates, the economy can only approach full employment of resources if the government resorts to fiscal stimulus policies—increasing, for example, infrastructure spending, healthcare benefits or education expenditures—or if monetary policy becomes strongly expansionary, encouraging the distribution of credit and rising asset prices, which then become the engine of economic growth. An economy suffering from secular stagnation will not remain permanently stagnant—

²⁰ This is the so-called “global saving glut” hypothesis, which holds that the world is in the grip of a global saving glut mainly among high-saving economies, such as China and Germany. See Ben Bernanke (2005), (op.cit.).

²¹ Of note, the contribution of commodities producers to Bernanke’s original saving glut story has since then faded away due to the slump in commodities prices which has led these countries to dissave.

²² See Lawrence Summers (2015), “Low Real Rates, Secular Stagnation and the Future of Stabilization Policy”, Speech at the Bank of Chile Research Conference, November 20.

this economy, on the contrary, will experience phases of expansion from time to time. But the foundations of that growth are unsustainable over the long run.

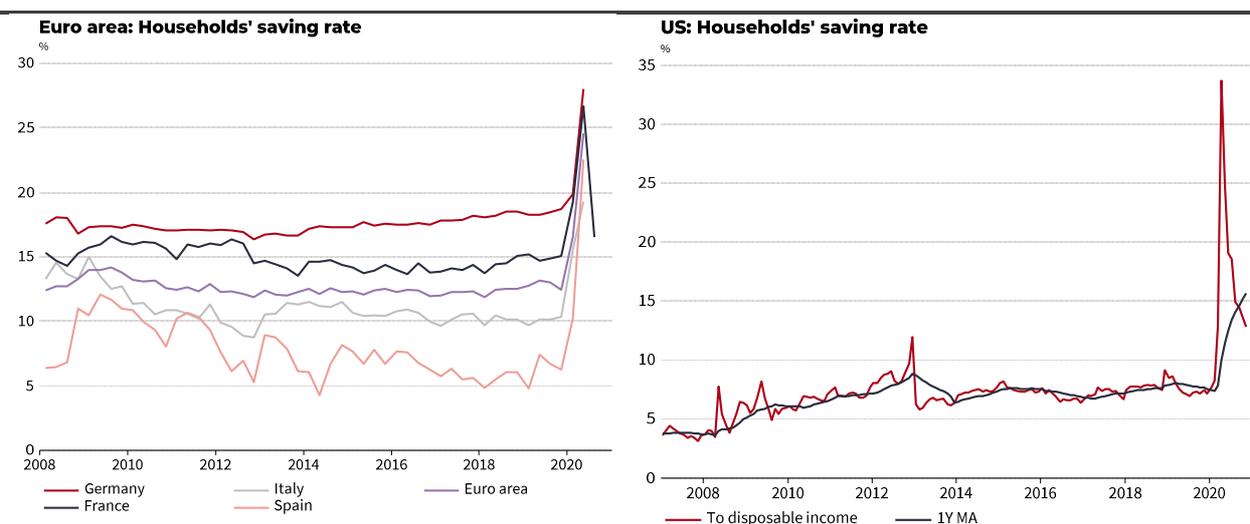
4. The COVID-19 shock compounds the problem of excess saving

On top of the forces of secular stagnation outlined above, came the seismic blow of the COVID-19 pandemic and its attendant lockdowns.

4.1. Higher risk aversion

In a world jolted by the pandemic and dominated by uncertainty about its evolution, many companies have raced to raise precautionary cash, including by issuing more debt, even as profits deteriorate, and/or cut costs with large-scale layoffs. And the surge in—or fears of—unemployment has prompted households to be doubly cautious in their spending and boost their precautionary saving.

Surge in saving



Source: Refinitiv.

At the onset of the pandemic, household consumption fell precipitously, bringing the propensity to save to historical highs. This reflected both forced saving during the lockdowns and an increase in precautionary saving caused by uncertainty about the course of the pandemic. Massive governmental support has, to a large extent, succeeded in shielding workers idled by the lockdown from severe economic hardship, allowing for a rebound in consumption with the easing of lockdown restrictions. But the virus acts like a tax on activities involving social interaction, and as such, it is bound to shift consumption and production patterns for as long as it remains a part of daily life. This may, in turn, bring about broad economic structural

changes. Over the longer term, households and firms may not be able to return to their previous investment and consumption patterns.

Tail risk events, defined as rare and unexpected events that have a considerable impact—and also known as “black swans” in the financial industry²³—usually generate strong behavioural and emotional reactions and lead to a shift in belief systems. Examples of black swans include the attack on Sarajevo and the breakout of the First World War, the bankruptcy of Lehman Brothers in September 2008 and, of course, the COVID-19 pandemic. Before 2020, few entertained the possibility of a global pandemic²⁴. From now on, however, the great losses that the COVID-19 pandemic is inflicting on large sections of society, combined with the belief that epidemics can strike at any time—or (at a minimum) arise more frequently than once envisaged—is bound to alter the behaviour of individuals: households and firms will now make decisions bearing in mind the risk of another pandemic, or indeed that of any unforeseen crisis. And this will add to the momentous short-term output losses already incurred as a result of the coronavirus pandemic.

As Kozlowski et al. (2020) put it: *“The largest economic cost of the COVID-19 pandemic could arise from changes in behaviour long after the immediate health crisis is resolved. A potential source of such a long-lived change is scarring of beliefs, a persistent change in the perceived probability of an extreme, negative shock in the future”*²⁵. The COVID-19 shock is poised to fuel risk aversion in the private sector, which will translate to a higher desire to save for precautionary reasons. It is likely that households will cut back on at least some future discretionary spending over the longer term in order to have a higher savings buffer in case of future crises²⁶. And if households decide to save more and consume less, the immediate consequence

²³ “Tails” refer to the end portions of distribution curves, the bell-shaped curves that show statistical probabilities for a variety of outcomes. Under “normal” distribution law (Gaussian distribution), the probability of an “ordinary” event is high, whereas the probability of an “extreme” event, in the tail of the distribution, is very low. In the financial services industry, tail risk, also known as “black swan”, describes the occurrence of an event that is considered unexpected or extraordinary (an “aberration”) because its existence cannot be deduced from inductive reasoning based on past observable data. Another characteristic of a tail event is that it has a considerable impact. See notably Nassim Nicholas Taleb (2008), *The Black Swan: The Impact of the Highly Improbable*, 28 February.

²⁴ Bill Gates, however, has long warned about the arrival of a future global pandemic. “If anything kills over 10 million people in the next few decades, it’s most likely to be a highly infectious virus rather than a war,” Gates said. “Not missiles, but microbes,” he emphasized in a TED talk in 2015. He also warned that the US and other countries were not prepared for this eventuality.

²⁵ See Kozlowski, Julian, Laura Veldkamp, and Venky Venkateswaran (2020), “Scarring body and mind: The long-term belief-scarring effects of COVID-19”, NBER Working Paper Series, WP No. 27439, June.

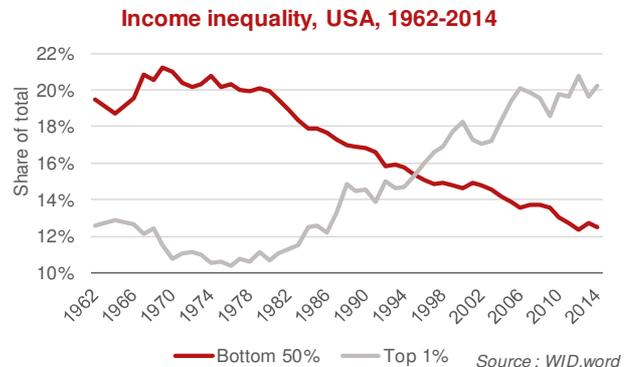
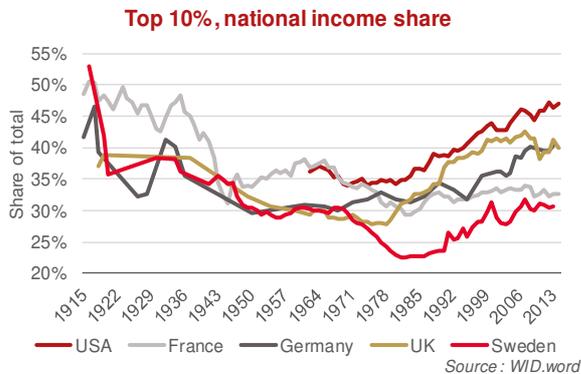
²⁶ Malmendier and Shen (2019) suggest that prior lifetime experiences can “scar” consumers, especially if they have lived through times of high unemployment. See Malmendier, Ulrike, and Leslie S. Shen (2019), “Scarred consumption”, International Finance Discussion Papers, Board of Governors of the Federal Reserve System, n°. 1259, October.

will be lower business investment. A contraction in consumer spending reduces the market for goods, negatively affecting companies' sales and therefore their profit outlook, which will lead them to lower their production and investment spending and cut jobs. Moreover, as the private sector takes the epidemiology risk to heart, certain activities, goods and services, and production processes will be viewed as riskier and costlier, causing an increase in the risk premium required on capital investments and, therefore, a decline in capital accumulation. A decline in demand, coupled with firms' desire to expand cash buffers and a greater likelihood of obsolescence, will hold back investment. This could, however, be partially offset by increased investment in digital technology to meet the needs of social distancing and many of the new demands made on companies.

42. Higher inequalities

Before the coronavirus, inequality was already rising in virtually all developed countries, albeit at different speeds, with income and wealth increasingly concentrated at the very top²⁷. Among advanced economies, the sharpest rise in inequality is found in the US and the UK, but more egalitarian societies like Australia and Sweden have also exhibited notable increases in inequality since the early 1980s.

Marked rise in inequalities since the 1970s



Source: WID.world..

The pandemic has interacted with existing divides in terms of level of education, skill, income, age, and ethnicity, in many cases exacerbating existing inequalities. People belonging to many of the most disadvantaged social groups, more likely to hold jobs in sectors that have been forced to shut down (hospitality, etc.) and where remote working is not always possible, have often been more affected by the pandemic. The overwhelming majority of those in at-risk occupations are low-paid

²⁷ See notably Thomas Piketty (2014), *Capitalism in the 21st Century*, Harvard University Press, Harvard.

workers with lower levels of formal education²⁸. Likewise, lockdown policies have not affected businesses in an equal manner. The power of digitalized firms will almost certainly continue to increase, leading to rising concentration in corporate profit, which will in turn contribute to mounting household inequality, as firms are the ultimate source of income and wealth.

Major epidemics over the past hundred years or so have exacerbated income inequality while damaging the employment prospects of the most vulnerable, such as people with basic education, and leaving high-skilled workers hardly affected²⁹. These distributional effects are bound to be magnified in the current context by the tremendous boost that COVID-19 is giving to the digital economy.

A major force behind income divergence over the past forty years has been the momentous changes in information and communication technologies (ICT). This has reflected two main phenomena:

- The so-called “skills-biased technological change”, which expresses that the gains that the new technologies have created have disproportionately favoured high-skilled workers through both increased productivity and strong demand for their services³⁰;
- The decline in the cost of capital brought about by the new technologies, which has led firms to increasingly replace workers with machines, exacting a particularly heavy toll on middle-skilled workers who are more liable to have routine jobs that are highly exposed to automation.

The COVID-19 crisis is dramatically accelerating the digitalization of various sectors of the economy. The innovations brought by the Fourth Industrial Revolution—the wider use of the Internet, robotics and artificial intelligence technologies, Internet of Things, large-scale data consumption—are playing a major role in the pandemic by enabling businesses to operate through the crisis and helping reduce the spread of the virus while allowing people to manage their work from home without going to the office. With the spread of coronavirus infection, millions of people at home and

²⁸ See, for example, Wardrip Keith and Anna Tranfaglia (2020), “Which Workers Will Be Most Impacted?”, Federal Reserve Bank of Philadelphia, April, and Richard Blundell, Monica Costa Dias, Robert Joyce, Xiaowei Xu (2020), “COVID-19 and Inequalities”, Fiscal Studies, The Journal of Applied Public Economics, 27 June.

²⁹ See Furceri, D, P Loungani, J D Ostry, and P Pizzuto (2020), “Will Covid-19 affect inequality? Evidence from past pandemics,” Covid Economics 12: 138-57, and De Haan, J, and J-E Sturm (2017), “Finance and Income Inequality: A Review and New Evidence,” European Journal of Political Economy 50: 171-195.

³⁰ This trend has been largely documented. See, for example, Autor and Acemoğlu (2010), “Skills, Tasks and Technologies: Implications for Employment and Earnings”, Handbook of Labor Economics 4, June, and Erik Brynjolfsson and Andrew McAfee (2011), *Race against the machine: How the revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*. Lexington, Mass: Digital Frontier Press.

in offices around the world are now moving to or more actively using online and digital platforms. Delivery robots, online shopping, digital and contactless payments, remote work, distance learning, telehealth, robotics, etc. are becoming a new trend, helping to reduce the risk of infection³¹.

Some people—namely, those who have Internet access and are more likely to be able to work from home—are set to gain from the move to online technologies. These are typically well-educated individuals with higher earnings. But many in the most disadvantaged social groups who are much more likely to hold jobs in sectors like retail and hospitality that have been forced to shut down, and where remote working is not always possible, will fall further behind. Moreover, school shutdowns during the pandemic are likely to accentuate the socio-economic divide in educational achievement. Children from disadvantaged families are at a greater risk of partial de-schooling or not returning to schools once they reopen. This effect on their education will, in turn, lead to worsening prospects in terms of long-term employment and earnings.

The development of automation technologies, particularly artificial intelligence, is transforming many aspects of our economies, including the production base and the number and kinds of jobs created. Medium-skilled workers and increasingly low-skilled workers are most at risk of job displacement by automation. The divide between firms at the cutting edge of innovation and those falling behind will grow, as will the divide between workers in secure jobs and those in precarious ones. What is more, the rise in productive capital stock that is inherent to automation is set to widen the inequality gap even further, given that capital ownership is more unevenly distributed than labour income. This will lead to a rising concentration of wealth and income which will generate additional savings given the higher marginal propensity to save at the top of the income pyramid. Without deliberate and strenuous attempts by governments to protect the most vulnerable segments of society, the adverse impact on inequality of the COVID-19 blow is set to be much larger than those in previous pandemic episodes.

³¹ See, for example, Xiao Y. and Fan Z. (2020), “10 technology trends to watch in the COVID-19 pandemic”, World Economic Forum, 27 April.

5. How to combat secular stagnation?

Is there a set of policy responses that could allow for an exit from secular stagnation? The answer seems to be yes, but the necessary policy responses would have to be wide-ranging, well-focused and inclusive.

5.1. The need to rethink macroeconomic policy

Secular stagnation requires a reconsideration of macroeconomic policy³². Conventional and unconventional monetary policies are unlikely to be up to the task of addressing secular stagnation. Conventional monetary policy becomes ineffective at the effective lower bound, while unconventional monetary policy is likely to be subject to diminishing returns, as suggested by central banks' inability to achieve their target inflation rates. Moreover, an expansionary monetary policy conducted over a long period of time may well increase the risk of bubbles and financial instability. There are also concerns about the significant complexities that exiting from unconventional monetary policy would entail. Central banks are in that respect in uncharted territory.

Fiscal policy, in contrast, is well suited to address secular stagnation³³. An expansionary fiscal policy can boost investment and reduce national savings by absorbing the large supply of private saving through deficit-financed public spending. This can contribute to raising the natural rate of interest, whose low level is the core problem of secular stagnation. Additionally, monetary policy close to the effective lower bound usually amplifies the size of the fiscal multiplier, which means that fiscal policy is particularly effective in an era of secular stagnation³⁴. Increased investment in public health, infrastructure, training and education, green energy, and research and development is the first-best strategy to address secular stagnation and stimulate economic growth.

But focusing on fiscal policy alone will not be enough. In addition to demand-side stimulus, supply-side reforms are required, as are much stronger redistribution

³² See Olivier Blanchard and Lawrence Summers, eds, *Evolution or Revolution? Rethinking Macroeconomic Policy after the Great Recession*, MIT Press, 2019.

³³ See Lukasz Rachel and Lawrence Summers (2019), "On Falling Neutral Real Rates, Fiscal Policy, and the Risk of Secular Stagnation", *Brookings Papers on Economic Activity*, and Eggertsson, Gauti B. and Neil R. Mehrotra (2014), "A model of secular stagnation", *NBER Working Papers*, No 20574

³⁴ See Batini, N., L. Eyraud, L. Forni, and A. Weber (2014), "Fiscal multipliers: Size, determinants, and use in macroeconomic projections", New York: International Monetary Fund; Eggertsson, Gauti B. and Paul Krugman (2012), "Debt, deleveraging, and the liquidity trap: A Fisher-Minsky-Koo approach", *Quarterly Journal of Economics*, 127(3): 1469-1513, August; Eggertsson, Gauti B. (2010), "What fiscal policy is effective at zero interest rates?", *NBER Macroeconomic Annual*, 25(1): 59-112; Delong, J. Bradford and Lawrence H. Summers (2012), "Fiscal policy in a depressed economy", *Brookings Papers on Economic Activity*, Spring.

mechanisms given the importance of tackling high and rising (income and wealth) inequality. While the forces fuelling the persistent increase in inequality—in particular, progress in digital technology—will be difficult to counter fully, their adverse effects can be mitigated through various policy measures: accelerated upskilling, training and education to prepare students and workers for a more digitally advanced world, the build-up of digital infrastructure and, crucially, enhanced redistribution via the tax and social-security systems. A tax on robots could finance the redeployment of employees who have lost their jobs, while a negative income tax could enable the government to assure a minimum income to anyone who works³⁵.

52. The COVID-19 as a game changer for macroeconomic policy?

Fiscal policy has already played a much larger role in the current crisis than in the past. The fiscal policy response to the COVID-19 pandemic by the world's major economies is a global policy event without precedent in peacetime. Governments have rightly acted as emergency insurers by compensating as much as possible for the loss of corporate and household income linked to the sudden cessation of activity during lockdowns enforced to fight COVID-19. Measures to support liquidity-constrained households and firms and to revitalize the economy, combined with the fall in tax revenue caused by the economic recession, have placed deficits and public debt on a sharp upward trajectory.

Should that situation raise concerns about the sustainability of public debt? The answer for most advanced countries is at present a qualified “no”, given the fiscal space that these countries still have in an environment where interest rates are likely to remain low for a long time³⁶. With interest rates at the ELB, the amplified multiplier effect of public investment will raise GDP relative to what it would otherwise be. The higher level of GDP will, in turn, bring additional revenue to the governments which will at least partially offset the initial direct fiscal cost. When the interest rate falls below the growth rate, the government can roll over its debt, or even afford a slight primary deficit, and yet see its public debt-to-GDP ratio decline without having to increase taxes.

³⁵ To face the potentially massive displacement of workers due to the rise of automation, robotics and artificial intelligence, Bill Gates has put forward the idea of a tax on robots, while Brynjofsson and McAfee—who believe that the real challenge ahead will be the disruptive nature of economic growth, not subpar growth—have promoted that of a negative income tax. In a similar vein, Elon Musk believes that a universal basic income may be necessary to alleviate the scarcity of jobs and maintain social order.

³⁶ Krugman calls for a permanent investment-centred fiscal stimulus. See Paul Krugman (2020), “The Case for Permanent Stimulus”, *New York Times*, March 7. Also see Olivier Blanchard (2020), “Designing the fiscal response to the COVID-19 pandemic”, *PIIE*, April 8, and Olivier Blanchard (2019), “Public Debt and Low Interest Rates”, *American Economic Review*, vol. 109, no. 4, April, pp. 1197-1229.

Conclusion

The COVID-19 pandemic is bound to leave long-term legacies that will affect private savings, aggregate demand, and economic growth. In response to the crisis, both consumers and firms are altering their behaviours, and many of these behavioural shifts are expected to persist for years to come. Populations may well become more risk averse, leading to a rise in the relative supply of (precautionary) savings, when the underlying pace of growth will decline, making investment less attractive. As societies become ever more unequal, the collective propensity to consume will likely decline, reducing aggregate demand and slowing growth. As a result, there is a real risk that the COVID-19 shock worsens the already existing problem of excess private savings, thus pulling the natural rate of interest further down and strengthening the forces of secular stagnation.

But secular stagnation may not be a foregone conclusion, as policymakers do have tools and policies at their disposal to combat it. In this regard, the COVID-19 shock and the extraordinary fiscal response to it may prove to be a game-changer, as these challenging times present a formidable window of opportunity to rethink narratives, to review incentives and policies, and to reform policymaking. A rethinking of the role of fiscal policy, together with the implementation of a set of adequate incentives and reforms in the current circumstances, has the potential to create a framework for a healthy, long-term, inclusive and environmentally sustainable economic growth. And of course, if the long-awaited productivity shock from digital transformation were to materialise, the risk of secular stagnation would melt away.

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