

## NECESSARY SHORT TERM, DANGEROUS LONG TERM

The long-term impacts of the Covid-19 emergency fiscal packages will be challenging



Martin Moryson  
Chief Economist Europe

IN A NUTSHELL

- The current rescue packages are necessary to prevent the world from slipping into a depression. However, they are causing government debt to rise dramatically. These can only be reduced through growth, inflation or future budget surpluses.
- Government intervention in the economy carries the risk of huge distortions that could ultimately harm productivity growth.
- For the second time in twelve years, the state has had to rescue many companies. Trust in what have been the drivers of global prosperity, the free market economy and globalization, could be eroded.

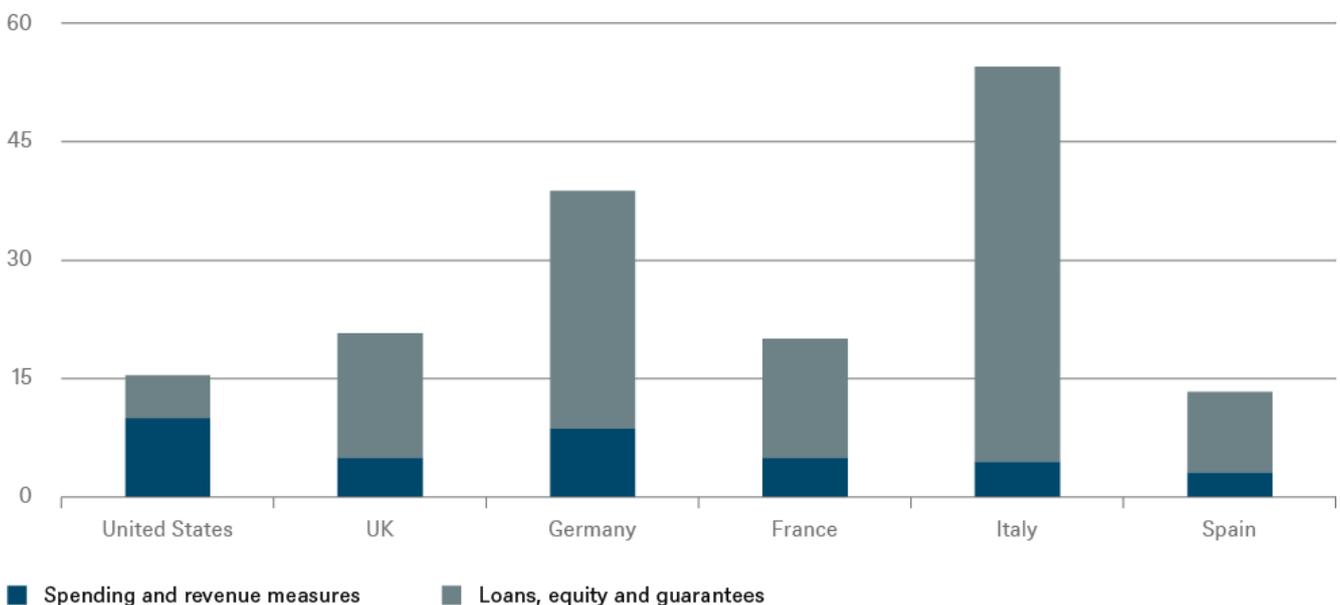
The lockdown measures taken by states to stem the spread of the coronavirus have triggered the worst recession in post-war history. To support workers who are unable to work and companies who are unable to trade and to prevent the economy from sliding out of a severe but "normal" recession into the downward spiral of depression, fiscal pack-

ages worth billions are currently being passed around the world (Fig. 1). These packages are undoubtedly unavoidable in the current desperate situation. But there should be no doubt that they will have serious side effects in the long term.

FIG. 1: THIS IS GOING TO BE EXPENSIVE

### ANNOUNCED FISCAL MEASURES OF SELECTED COUNTRIES

% of GDP



Sources: IMF, DWS Investment GmbH as of May 2020

All opinions and claims are based upon data on 6/4/20 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect.

Source: DWS Investment GmbH

All articles are available on <https://go.dws.com/cio-view-articles>

CRC 076434 (06/2020)

/ 1

Fiscal measures can be divided into programs that have a direct impact on expenditure or revenue, such as tax relief or direct grants, and those that have only a potential for expenditure, such as loans, guarantees<sup>1</sup> or equity. The United States appears to favor direct support, while Europe is increasingly focusing on indirect measures such as loans and guarantees. In both cases, however, the volumes are rising to levels never before reached. Even the huge rescue packages from the times of the 2007-8 financial crisis are dwarfed by what is currently being launched. Will this work out well? To answer this question, we will address the following topics:

1. What will be the level of public debt by the end of the crisis?
2. How can this national debt be reduced again? In other words, who is going to pay?
3. What will be the long-term effects on productivity growth?
4. For the second time in less than 15 years, it is the state that has to rescue the economy from collapse. What are the social and political implications of the greater role that the state is playing during the crisis?

## 1. TWIN PACK FISCAL PACKAGES: FIRST RESCUE, THEN STIMULUS

In the massive fiscal packages that are now being put together around the world, one must distinguish between two fundamentally different types of aid: first rescue, then stimulus.

The pure rescue packages are intended to ensure that the economy survives the forced standstill during the lockdown at all, and aim to help prevent a contraction in productive potential on the supply side. However, they explicitly do not serve to stimulate demand. After all, the aim is to stop people going to the movies, traveling or eating out during the lockdown. Only afterwards, when lockdowns have been eased and social life is returning to normal, can stimulus come into play.

With a simple thought experiment one can estimate the necessary scale of the rescue measures. To do this, one must first consider what an "optimal" rescue policy should look like. Of course, to combat the pandemic, the state has prohibited countless economic activities during the lockdown. This is entirely reasonable because the social inter-

actions involved in most economic activity have a negative effect: contagion. Refraining from economic activity means fewer infections. The costs are borne by companies and workers. An optimal rescue policy would therefore externalize or compensate for these costs. Assume for the moment that the state compensates for every cancelled economic activity: flights, hotel stays, restaurant and cinema visits, as well as goods that are not sold, such as cars and work attire. Then for every company and employee it would be as if the economic crisis had not occurred. Wages, social-security contributions and taxes could be paid as if nothing had happened and, immediately after the end of lockdown, all economic actors could resume work where they stopped, at the beginning of the lockdown. It's clear that the cost of this optimal aid, which fully offsets the financial harm from lockdown, cannot be higher than the hit to gross domestic product (GDP). Though the actual rescue measures put in place are not like this, this approach allows us to estimate the maximum costs of the government rescue packages quite well.

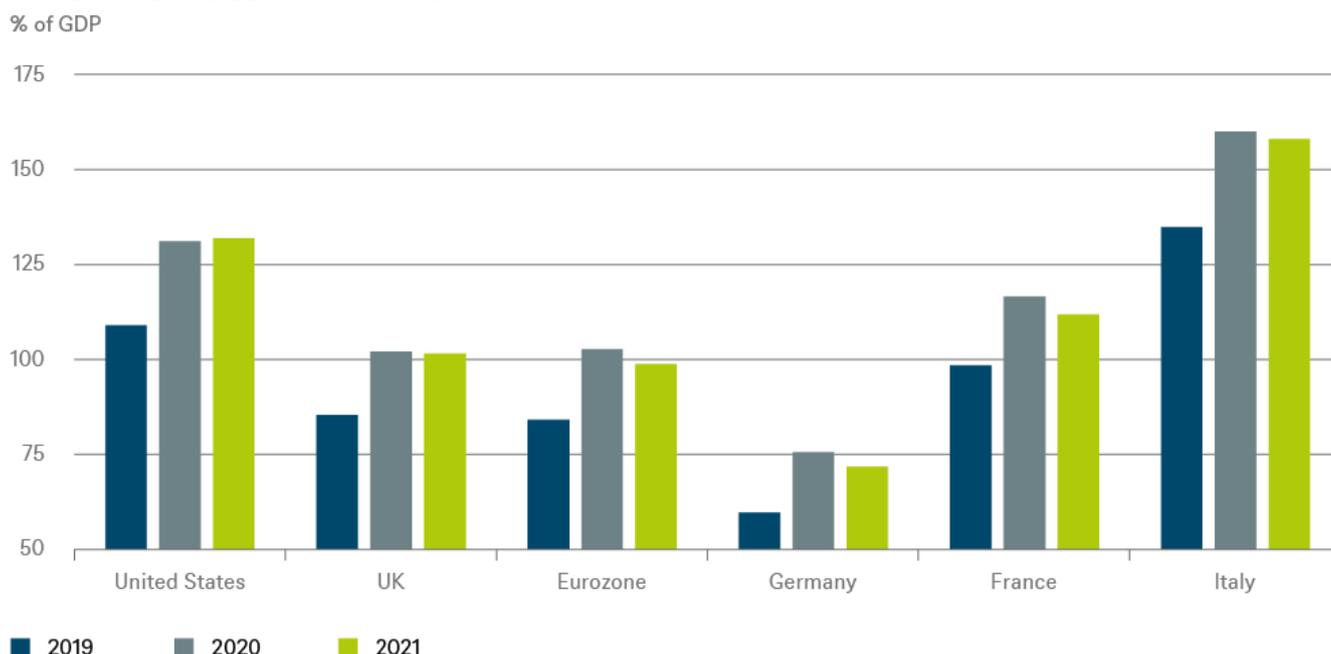
However, measures of this kind would not prevent a decline in actual real gross domestic product. After all, all flights and theatre performances are cancelled during the lockdown. In fact, this means that these rescue packages alone will cause the national debt ratio to rise by twice the GDP loss: On the one hand, the numerator rises by the new debt; on the other hand, the denominator falls due to the decline in economic output.

But that is not all. Once the lockdown is over, the world will still be in the deepest recession in recent economic history. It is not at all certain that the economy will return to its old path "just like that." After all, supply chains have been broken, markets abroad are also in recession and unemployment will have reached undreamt-of levels, either overtly, as in the United States, or covertly, thanks to furlough schemes in Europe. Fiscal packages will once again be needed, this time to stimulate the economy. These should then pull the economy out of the worst post-war recession and prevent it from plunging into a depression. These measures may well be on the same scale as the fiscal packages from the times of the 2007-8 financial crisis. Either way, we will face a massive increase in government debt in virtually all countries (Fig. 2).

<sup>1</sup> Promise by a third party to provide payment on a liability in the event of default.

FIG. 2: GOVERNMENT DEBT RATIOS BEFORE NEW HIGHS

GOVERNMENT DEBT AS % OF GDP



Sources: IMF, EU Commission, DWS Investment GmbH as of May 2020

2. THE SUSTAINABILITY QUESTION, OR: WHO SHOULD ACTUALLY PAY FOR ALL THIS?

A question hardly anyone asked in the past when interest rates were higher is being asked more frequently: Does the state actually have to pay back its debts at all or can it simply go on increasing its debt infinitely? In other words, is there a sustainability limit for public debt? Of course, an increase in nominal government debt is unproblematic if GDP grows at the same rate. The focus is therefore less on the absolute level of debt than on the national debt ratio. The "law of motion of public debt" helps in a more detailed analysis of this question.

$$\left(\frac{debt}{GDP}\right)_t = \frac{(1+r)}{(1+g)} \left(\frac{debt}{GDP}\right)_{t-1} - \left(\frac{T-G}{GDP}\right)_t - X$$

The public debt ratio (*debt/GDP*) declines as real interest rates *r* fall, real growth *g* rises and primary surpluses (taxes and duties *T* minus government revenue excluding interest payments *G*) increase. Debt write-offs, *X*, naturally reduce the government debt ratio abruptly.

Hence, there are only four ways to reduce debt or to make it more sustainable: growth, inflation, primary surpluses or debt write-offs. The latter are to be avoided at all costs, as they entail unforeseeable consequential costs for the economy and society. Therefore, there are only three options left, which we will look at in more detail below.

THE ELEGANT WAY: GROWTH

The most painless way out of the debt trap is certainly via real growth. The faster real GDP rises, the faster the relative debt mountain melts away. Strictly speaking, *g>r* must apply: that is, real growth must be higher than the real interest rate.

Unfortunately, there are many reasons why we cannot expect industrialized countries to grow at a pleasing rate in coming years. Productivity growth has been weak for a long time, especially since the 2007-8 financial crisis. The coronavirus pandemic is again likely to make things worse. Increased protectionism, a reduction in just-in-time production in favor of higher inventories, and measures to prevent infection that will most probably remain in force for a long time to come are all likely to restrict productivity growth. The consequences of mass unemployment should not be ignored, either. We believe that the (re)creation of jobs will take much longer than many expect. While being unemployed many people lose skills – first the company-specific skills, later also more general ones. This hysteresis effect<sup>2</sup> should not be underestimated: the damage that lingers after lockdown and economic crisis might prove lasting. A demographic headwind is yet another problem. The growth in the working-age population is significantly weaker in the United States than it was at the turn of the millennium and is negative in Europe.

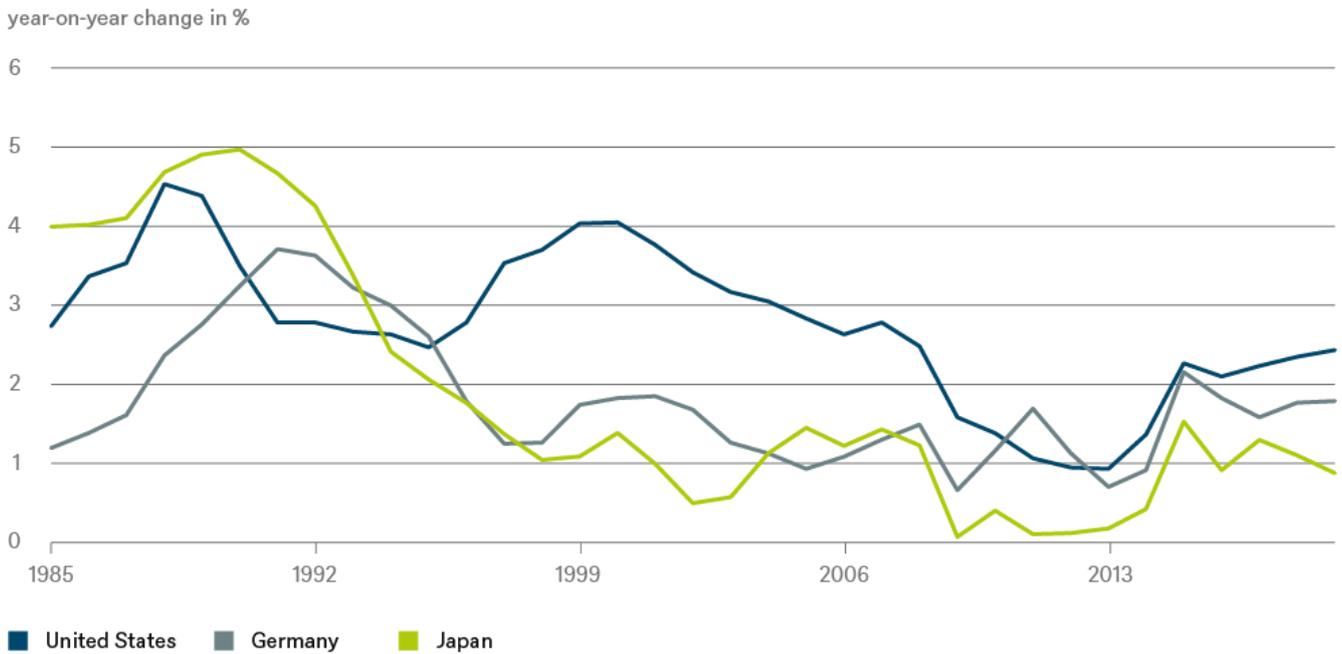
Overall, despite the many obstacles, a reduction in the debt ratio via the growth path is more realistic for the U.S. than for the Eurozone. Since the 2007-8 financial crisis, average

<sup>2</sup> In economics, hysteresis is understood to be the effect that a system does not (or only with a delay) return to its initial state, even if the influence that threw the system out of balance has long since subsided. All opinions and claims are based upon data on 6/4/20 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect. Source: DWS Investment GmbH

real growth has been almost one percentage point higher in the U.S. than in the Eurozone or Japan (Fig. 3) - not least

thanks to somewhat more positive growth of the working-age population.

**FIG. 3: GROWING OUT OF TROUBLE WILL BE DIFFICULT**  
**REAL GDP GROWTH\* OF SELECTED COUNTRIES**



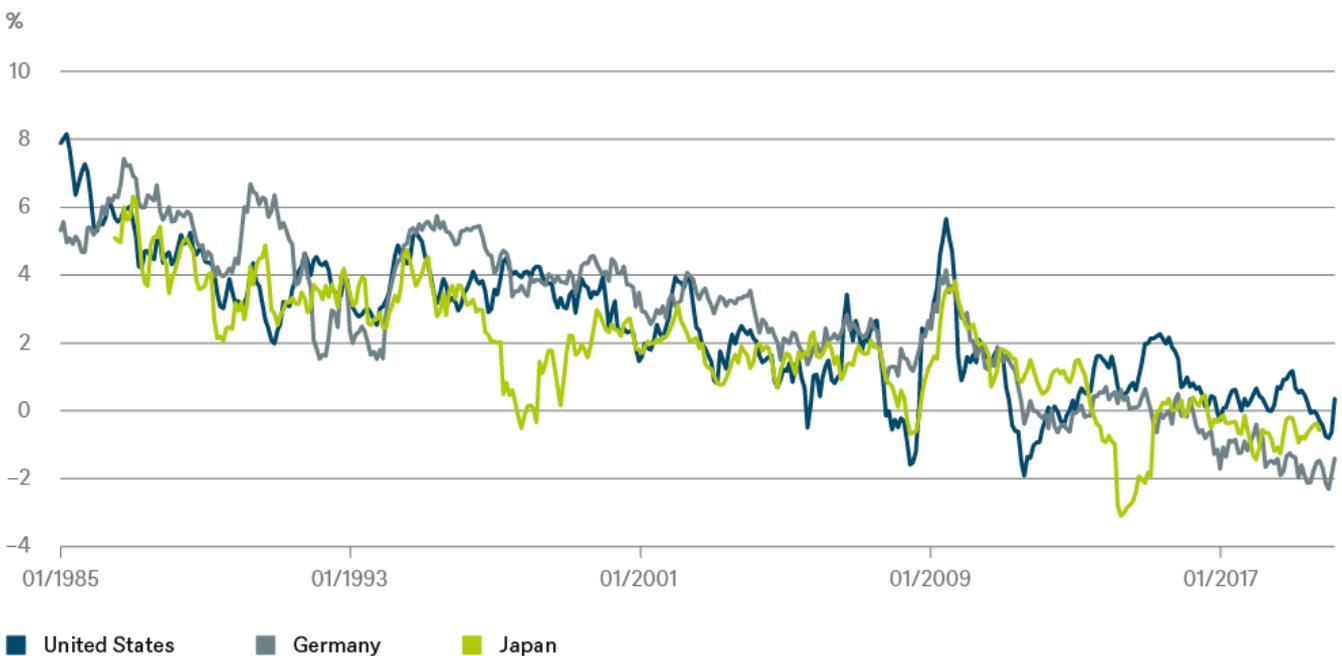
Sources: Haver Analytics Inc., DWS Investment GmbH as of May 2020  
 \* 5-year moving average

**THE DEAR WAY: INFLATION**

The debt-sustainability equation can be looked at from another angle. The public debt ratio also falls (all other things being equal) when real interest rates are lower than real

growth. Real interest rates are falling globally. Initially, this was mostly due to inflation rising, in the more recent past also due to very low or even negative nominal interest rates.

**FIG. 4: REAL INTEREST RATES ALSO FALL**  
**REAL INTEREST RATE\* OF SELECTED COUNTRIES**



Source: Haver Analytics Inc., DWS Investment GmbH as of 4/30/20

\*10-year government bond yield minus inflation rate

All opinions and claims are based upon data on 6/4/20 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect.

Source: DWS Investment GmbH

What are the future prospects for the real interest rate? Let us start with the inflation rate. Whether the coronavirus crisis drives up or slows down inflation in the long term is by no means certain. On the one hand, supply constraints, de-globalization, the shortening of global supply chains and other productivity constraints might tend to drive inflation up. Additionally, the massive fiscal and monetary intervention in response to the crisis could also trigger inflation. On the other hand, mass unemployment and underutilization of productive capacity could keep inflation in check for many years to come.

Whatever the outcome, we assume that central banks would do little to counteract inflation if it was to emerge. After all, high inflation helps to reduce the real weight of public debt. Indeed, fiscal concerns look to be the dominant factor here: The high level of public debt restricts central banks' room for maneuver. This pressure is exacerbated by regulation that favors government bonds. For example, insurance companies and banks are encouraged to hold government bonds (either directly or indirectly by lower capital requirements for the respective holdings of government bonds). In a sense, the government achieves its strong position vis-à-vis the central banks because of, rather than in spite of, its high level of indebtedness. In addition, many states also exert direct pressure on their actually independent central banks. This has been quite obvious in the cases of Japan since Shinzo Abe took office and, only slightly more subtly, in the United States since Donald Trump has been in the White House. Finally, the ruling by Germany's Federal Constitutional Court can also be interpreted as an attack on the independence of the European Central Bank

(ECB) – although this intervention, if heeded, would tend to restrict the ECB's monetary expansion and provide a deflationary impulse.

However, higher inflation is in the interest of the central bank for a second reason. As a result of the coronavirus crisis, not only will government debt have risen, but also that of the private sector. Above all, the high level of debt in the corporate sector is an obstacle to productivity growth.

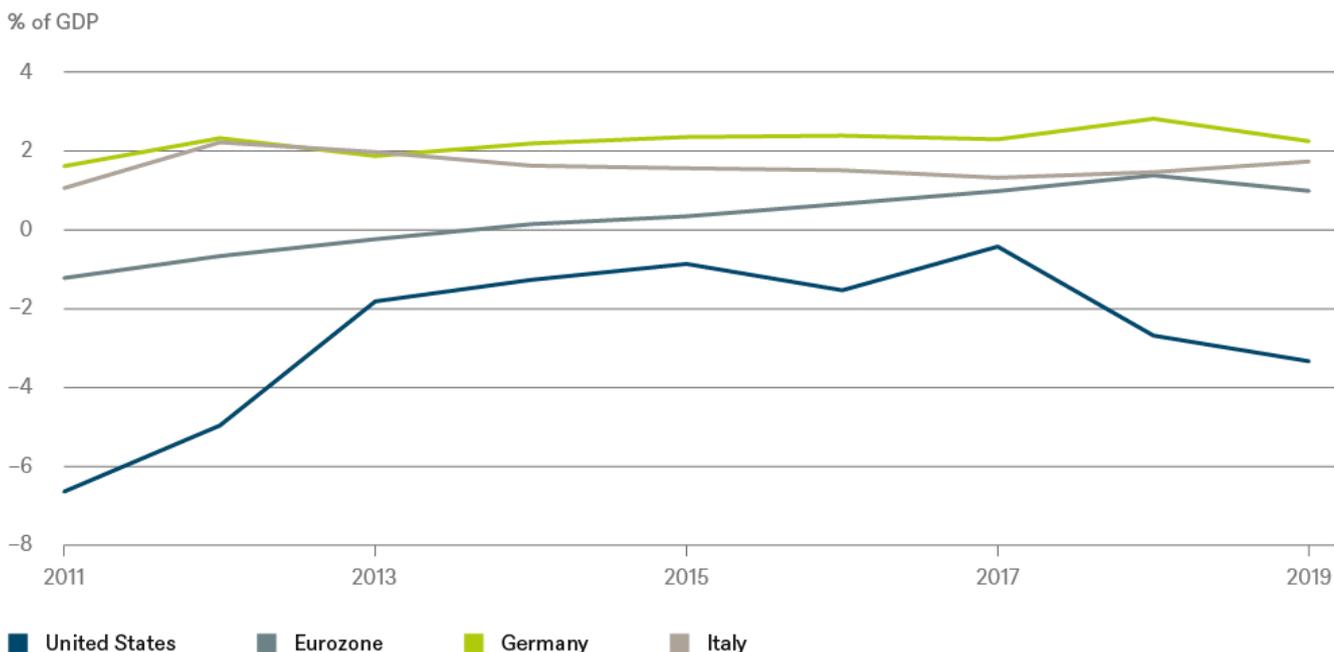
**THE HARD WAY: PRIMARY SURPLUSES**

Higher inflation rates may be a route for the U.S., but not for the Eurozone or Japan where inflation was already limp before the crisis. That is unlikely to change any time soon. Attempts by the ECB and the Bank of Japan to bring inflation rates close to 2% have all failed.

If the inflationary escape route is blocked, the last resort is to generate primary surpluses – that is to say, higher tax revenues than spending, excluding debt interest payments – either by reducing expenditure or by increasing tax revenues.

Here, the European Union is more likely to lead the way. Not only has the notorious "world champion of saving," Germany, achieved primary surpluses over many years. Italy and Greece, too, have had positive primary surpluses for years (Fig. 5), achieved largely through expenditure cuts. Whether the Eurozone will follow the same path in the future is anything but certain. Fiscal discipline, often critically called austerity by its opponents, has been very unpopular, has done damage to the cohesion of societies and weighs on the public support of governments that have implemented it.

**FIG. 5: TAKING IN MORE THAN YOU SPEND. PRIMARY BALANCES OF SELECTED COUNTRIES**



Sources: EU Commission, DWS Investment GmbH as of May 2020

All opinions and claims are based upon data on 6/4/20 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect.

Source: DWS Investment GmbH

We therefore assume that the part of the increased debt that cannot be "deflated away" will be financed by tax increases – at least, in the Eurozone. The state is taking on the central role in the crisis. Tax increases can be a way of expressing the fact that the state – even after the crisis – wants to retain its increased importance.

### 3. RESCUE PACKAGES: FORMALDEHYDE FOR THE ECONOMY?

The rescue packages currently being launched are – by their very nature – quite different from the theoretically optimal ones outlined above. They inevitably lead to considerable distortions in competition. For the state is faced with the choice of either rescuing all companies across the board, including those that would already have needed help without the coronavirus pandemic, or deciding on a case-by-case basis whether a company is in difficulty and thus "worthy of rescue" solely because of the state-imposed lockdown measures and their consequences. The state would then have to decide which company ought to survive and which should not. Even assuming the best will in the world, this is a hopeless undertaking given the sheer number of companies affected. There would be two likely consequences. First, large companies would be favored simply because more jobs are attached to them, they enjoy greater media attention and because it is much easier to save one large company than thousands of small ones. Second, if in doubt, the state would prefer to rescue too many companies rather than too few. This would keep alive companies that would in face have fallen victim to a normal market shakeout even without the coronavirus crisis. The resulting misallocation of resources would also be likely to reduce productivity growth.

In addition, most aid to enterprises is not provided in the form of grants but often in loans or guarantees. Both of these can lead the state into a form of participation in the companies if defaults due to the lockdown measures or the global recession lead to more than temporary payment difficulties. In this case, the state becomes a stakeholder in companies. This would likely become a problem in Europe in particular. While the state in the U.S. was quick to dispose of the equity shares in banks which it boldly acquired during the financial crisis, this process has been slow in Europe and is still incomplete in some countries.

European companies already lag behind in international comparisons of innovative strength and productivity growth. Higher corporate debt levels and even state shareholdings in companies would likely reinforce this trend even further.

### 4. THE STRONG STATE?

Potentially the phenomena described above have even wider implications. One could say that part of the "operating system" of the West is at stake. The recipes for success in recent decades have been globalization, open markets and

free competition. There is no doubt that these were not perfect remedies. Countless negative side effects of these mostly beneficial models had not been adequately addressed even in Western industrialized countries. For example, CO2 emissions, which are a major contributor to climate change, have not been and remain under-regulated. An internalization of these external effects, whether through CO2 certificates or CO2 taxes, is urgently needed and would have to be carried out globally. Climate change has certainly generated many opponents of the free market economy. But with the right regulation the market economy could contribute to an efficient solution to the problem.

In addition, globalization (and above all the opening of China and the fall of the Iron Curtain) has led to a considerable loss of comparatively well-paid industrial jobs for the low-skilled in the West – above all in the U.S..

The redistributive effects of the market economy have been given too little attention by politicians in recent years, especially in the United States. The free market economy, digitalization, globalization and too little regulation have led to a considerable concentration of economic power, wealth and market income. In Europe, too, awareness of these problems is growing, even if here, by and large, the tax and social-security system is redistributing to a considerable extent, so that the increase in the concentration of income and wealth is less pronounced.

Nevertheless, it is plain that the pendulum in the West has been swinging against the market economy for some time. De-globalization tendencies and protectionism have been on the rise. President Trump, Brexit and protests against the Canada and EU trade agreement (CETA) in the EU are eloquent testimonies to this alienation from the foundations of prosperity in the Western world.

All this will most probably be reinforced by the coronavirus crisis. There is also a diffuse feeling in considerable sections of society that the pandemic is a predictable punishment for capitalism, or at least for immoderate growth and excessive globalization.<sup>3</sup> It is also perhaps human nature, after such a shock, to look for a guilty party, a scapegoat – usually outside one's own country. For example, President Donald Trump attaches great importance to not calling the infectious disease Covid-19, but the Chinese or Wuhan virus. And almost all countries have entry restrictions. Although this may have been epidemiologically necessary in some cases, these measures were sometimes applied excessively.

Unfortunately, too, crises of this kind also lead to a return to focusing on national problems and a decline in international cooperation and solidarity. One example of this is the export ban on medical protective equipment imposed by Germany. And in the U.S., EU and Germany the rescue measures are aimed primarily at domestic industry, "national champions," "the sovereign economy," etc. However, the latest moves in the EU to set up a recovery fund (Next Generation EU) is a

<sup>3</sup> <https://www.zeit.de/kultur/2020-03/krankheiten-epidemie-coronavirus-psychologie-soziologie/komplettansicht>

All opinions and claims are based upon data on 6/4/20 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. Past performance is not indicative of future returns. Forecasts are not a reliable indicator of future performance. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect.

Source: DWS Investment GmbH

step in the right direction, with EU member countries showing more solidarity. That could be seen as the start of a “rainy day fund” to which all countries contribute equally but support is provided based on need.

Something else could potentially undermine the West’s market-economy orientation. For the second time in less than fifteen years, the world has plunged into a crisis that could only be halted by massive state intervention. It is pure coincidence that the virus has struck when the consequences of the financial crisis have only just been dealt with. The under-30 generation must feel it has experienced a permanent state of emergency. This cannot leave the public debate and the attitude towards capitalism unaffected. Whether a left-wing or right-wing view will prevail is completely open but the debate will in all probability lead to less globalization, less competition, less (economic) freedom, less international solidarity, more nationalistic solo efforts and more protectionism.

## CONCLUSION AND OUTLOOK

The enormous fiscal packages needed to contain the economic damage of Covid-19 and prevent a spiral into depression are accompanied by a whole series of serious side effects.

In the medium term the measures are likely to weaken potential growth by distorting competition and crowding out smaller firms, thereby contributing to higher economic concentration.

The pandemic and the responses to it may feed, too, what was already rampant protectionism, sometimes expressed quite directly, such as in the United States’s punitive tariffs or China’s defense of state-owned enterprises, but also in more subtle forms, such as Europe’s “national champions.”

The coronavirus crisis has given the state a greater role, which it will certainly want to defend. Its new self-confidence is evident in its pervasive direct intervention in the economy, which goes far beyond setting the institutional framework. In addition, repayment of the newly acquired debt is likely to take many years. As a result, central banks are losing some of their independence, as they will have to take the sustainability of the national debt into account when determining their monetary policy. Whether the severe recession with its numerous supply and demand effects will tend to drive inflation up or dampen it cannot yet be conclusively answered. However, if it leads to higher inflation we assume that central banks will be more likely to be permissive in order to melt down the debt mountains in real terms.

Just as open is the question of how the political debate will develop. There is much to suggest that globalization will come under even more pressure in Western countries and that the call for redistribution and higher taxes will increase.

A lot of investors will also suffer from this. Weak potential growth reduces earnings; higher taxes may reduce them even more. Should inflation rise, real investments (such as real estate or equities) are likely to outperform bonds in the long term. This should also be the case if – as in the aftermath of the financial crisis – inflation is evident not in the real economy but only in asset prices. That would fuel political discontent further, as, for the second time in not much more than a decade, the impression created will be that individuals are collecting profits while losses are being socialized.

Capitalism, already facing uncomfortable times before the coronavirus, may face still more discomfort after it has passed.

## GLOSSARY

The **Bank of Japan (BOJ)** is the central bank of Japan.

**Brexit** is a combination of the words "Britain" and "Exit" and describes the exit of the United Kingdom of the European Union.

**CETA** (Comprehensive Economic and Trade Agreement) is the trade agreement between the European Union and Canada.

**Deflation** is a sustained decrease in the general price level of goods and services.

A **depression** is a phase of the economic cycle indicating a low. A depression often follows a recession.

The **European Central Bank (ECB)** is the central bank for the Eurozone.

The **European Union (EU)** is a political and economic union of 28 member states located primarily in Europe.

The **Eurozone** is formed of 19 European Union member states that have adopted the euro as their common currency and sole legal tender.

The **financial crisis** refers to the period of market turmoil that started in 2007 and worsened sharply in 2008 with the collapse of Lehman Brothers.

**Fiscal policy** describes government spending policies that influence macroeconomic conditions. Through fiscal policy, the government attempts to improve unemployment rates, control inflation, stabilize business cycles and influence interest rates in an effort to control the economy.

The **gross domestic product (GDP)** is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

**Inflation** is the rate at which the general level of prices for goods and services is rising and, subsequently, purchasing power is falling.

**Monetary policy** focuses on controlling the supply of money with the ulterior motive of price stability, reducing unemployment, boosting growth, etc. (depending on the central bank's mandate).

In economics, a **nominal** value is not adjusted for inflation; a real value is.

A **primary budget surplus** is a surplus of government revenues over expenditure before interest payments on debt.

**Real GDP** is GDP adjusted for a given measure of price inflation in an economy.

A **recession** is, technically, when an economy contracts for two successive quarters but is often used in a looser way to indicate declining output.

## IMPORTANT INFORMATION

This marketing communication is intended for retail clients only.

DWS is the brand name of DWS Group GmbH & Co. KGaA and its subsidiaries under which they operate their business activities. The respective legal entities offering products or services under the DWS brand are specified in the respective contracts, sales materials and other product information documents. DWS, through DWS Group GmbH & Co. KGaA, its affiliated companies and its officers and employees (collectively "DWS") are communicating this document in good faith and on the following basis.

This document has been prepared without consideration of the investment needs, objectives or financial circumstances of any investor. Before making an investment decision, investors need to consider, with or without the assistance of an investment adviser, whether the investments and strategies described or provided by DWS Group, are appropriate, in light of their particular investment needs, objectives and financial circumstances. Furthermore, this document is for information/discussion purposes only and does not constitute an offer, recommendation or solicitation to conclude a transaction and should not be treated as giving investment advice.

The document was not produced, reviewed or edited by any research department within DWS and is not investment research. Therefore, laws and regulations relating to investment research do not apply to it. Any opinions expressed herein may differ from the opinions expressed by other legal entities of DWS or their departments including research departments.

The information contained in this document does not constitute a financial analysis but qualifies as marketing communication. This marketing communication is neither subject to all legal provisions ensuring the impartiality of financial analysis nor to any prohibition on trading prior to the publication of financial analyses.

This document contains forward looking statements. Forward looking statements include, but are not limited to assumptions, estimates, projections, opinions, models and hypothetical performance analysis. The forward looking statements expressed constitute the author's judgment as of the date of this document. Forward looking statements involve significant elements of subjective judgments and analyses and changes thereto and/ or consideration of different or additional factors could have a material impact on the results indicated. Therefore, actual results may vary, perhaps materially, from the results contained herein. No representation or warranty is made by DWS as to the reasonableness or completeness of such forward looking statements or to any other financial information contained in this document. Past performance is not guarantee of future results.

We have gathered the information contained in this document from sources we believe to be reliable; but we do not guarantee the accuracy, completeness or fairness of such information. All third party data are copyrighted by and proprietary to the provider. DWS has no obligation to update, modify or amend this document or to otherwise notify the recipient in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate.

Investments are subject to various risks, including market fluctuations, regulatory change, possible delays in repayment and loss of income and principal invested. The value of investments can fall as well as rise and you might not get back the amount originally invested at any point in time. Furthermore, substantial fluctuations of the value of any investment are possible even over short periods of time. The terms of any investment will be exclusively subject to the detailed provisions, including risk considerations, contained in the offering documents. When making an investment decision, you should rely on the final documentation relating to any transaction.

No liability for any error or omission is accepted by DWS. Opinions and estimates may be changed without notice and involve a number of assumptions which may not prove valid. DWS or persons associated with it may (i) maintain a long or short position in securities referred to herein, or in related futures or options, and (ii) purchase or sell, make a market in, or engage in any other transaction involving such securities, and earn brokerage or other compensation.

DWS does not give taxation or legal advice. Prospective investors should seek advice from their own taxation agents and lawyers regarding the tax consequences on the purchase, ownership, disposal, redemption or transfer of the investments and strategies suggested by DWS. The relevant tax laws or regulations of the tax authorities may change at any time. DWS is not responsible for and has no obligation with respect to any tax implications on the investment suggested.

This document may not be reproduced or circulated without DWS written authority. The manner of circulation and distribution of this document may be restricted by law or regulation in certain countries, including the United States.

This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction, including the United States, where such distribution, publication, availability or use would be contrary to law or regulation or which would subject DWS to any registration or licensing requirement within such jurisdiction not currently met within such jurisdiction. Persons into whose possession this document may come are required to inform themselves of, and to observe, such restrictions.

DWS Investment GmbH. As of: 6/10/2020

Issued in the UK by DWS Investments UK Limited which is authorised and regulated by the Financial Conduct Authority (Reference number 429806).

© 2020 DWS Investments UK Limited

In Hong Kong, this document is issued by DWS Investments Hong Kong Limited and the content of this document has not been reviewed by the Securities and Futures Commission.

© 2020 DWS Investments Hong Kong Limited

In Singapore, this document is issued by DWS Investments Singapore Limited and the content of this document has not been reviewed by the Monetary Authority of Singapore.

© 2020 DWS Investments Singapore Limited

In Australia, this document is issued by DWS Investments Australia Limited (ABN: 52 074 599 401) (AFSL 499640) and the content of this document has not been reviewed by the Australian Securities Investment Commission.

© 2020 DWS Investments Australia Limited