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COVID-19 – Countermeasures and the Consequences for German State Finances

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COVID-19 – Countermeasures and the Consequences for German State Finances

Annette Olbrisch-Ziegler¹

Management Summary

In addition to medical, the corona pandemic has recently left its mark on German society, socially, and above all, economically. The attempts to revive the economy and to minimize the upheavals by a large wreath of various state measures in society as well as the economy can be assessed as successful in large parts. The consequences for German public finances are considerable and increase the debt ratio. An analysis of European countries debt situation after COVID-19 will be topic of a consecutive paper.

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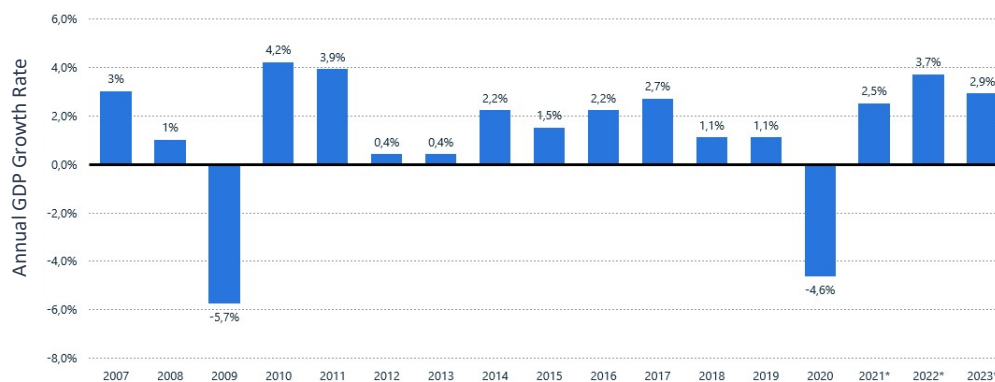
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1 Introduction

As of spring 2022, the COVID-19 pandemic appears to be gradually subsiding. After years of waves of infection, which have left significant marks on the economic performance of nations, there are now increasing signs that an economic recovery is in prospect. The positive development of Germany's gross domestic product and the persistently rising employment since the recession peaked in 2020 are clear signs of a recovery in German economy.

Figure 1: Germany's Real Gross Domestic Product (GDP): Development and Forecast



Source: Statista, Forecast of ifo-Institute (2021 to 2023)

The development of employment in Germany in recent years has also been encouraging. Despite the turbulence surrounding the Lehman Brothers bankruptcy and the subsequent banking, financial crisis and, in many countries, debt crisis (2008 and 2009), the German labor market is proving to be extremely robust and the long-term trend is affirmative expressing low unemployment figures. The economic downturn caused by the COVID-19 crisis only had a limited impact on the unemployment figures. The robustness of the German labor market in the recent past, in combination with the government's aid packages, gives reason to hope that this crisis will not trigger a sustained reduction in the number of employees, but that a speedy recovery can be expected. However, economic prosperity and low unemployment rates depend primarily on the further course of the COVID-19 pandemic, the countermeasures taken by governments and companies, and the financial leeway of governments, because the crisis and the strategy to overcome are leaving their mark on public finances.

Figure 2: Unemployment Rate Germany - Development 2005 - 2021



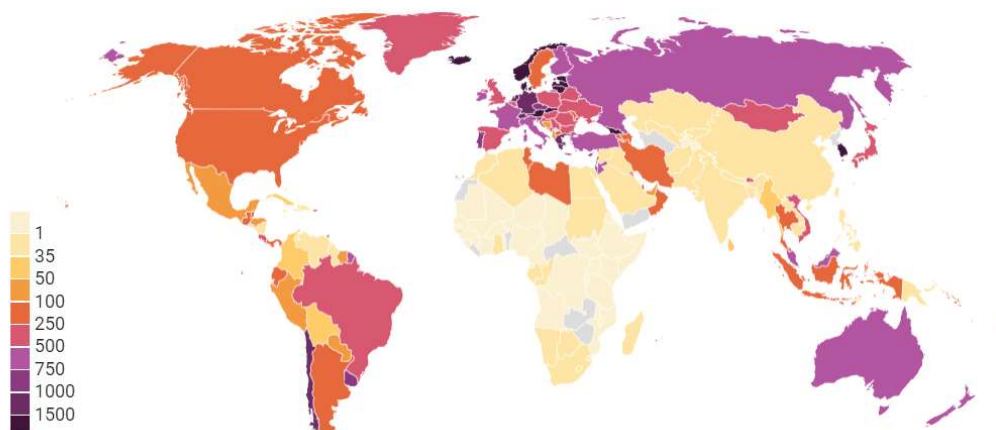
Source: Bundesagentur für Arbeit (Federal Employment Agency), own illustration.

2 Course of the Pandemic

2.1 Spread of the Virus COVID-19

Probably already in November 2019, at the latest with the official notification of the Chinese government to the World Health Organization (WHO) on December 31, 2019, a new lung disease made its way into the world and across all continents in a very short time. The virus, classified as SARS-CoV-2, spread at an unprecedented rate, with the first infection identified outside of Chinese territory as early as mid-January 2020, with the first illness detected in the United States on January 21, 2020, France on January 24, and Germany on January 27. Already in February, the first patients die from the lung disease COVID-19 (**Corona Virus Disease 2019**) in France and Italy. The critical public health sector situations required governmental actions: movement restrictions of populations and lockdowns of cities to contain the spread of the virus (travel bans, curfews were imposed). By March 2, 2020, COVID-19 is already detected in 60 countries and the World Health Organization (WHO) reports more than 3,000 deaths worldwide. In the same month, the WHO declares pandemic status. From now on, the virus spreads across the planet at an unprecedented speed and in various mutations. In European countries, countermeasures were imposed, with a variety of measures aiming primarily at reducing social contact in order to prevent or at least slow down the spread of the virus. The threat of overloading the healthcare system prompted the EU as a whole, as well as individual nation states, to introduce entry bans, strict border controls and, in Germany, a repatriation campaign for more than 160,000 stranded holidaymakers.

Figure 3: Spreading of the Virus



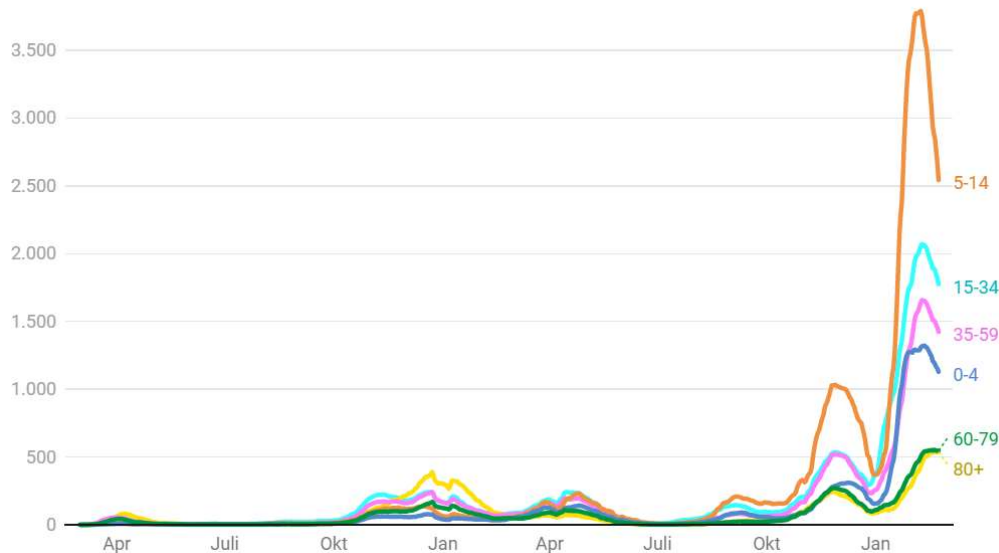
Remark: The figures reflect the 7-day-incidence, i.e. the number of infected people per 100,000 inhabitants.
Source: Deutschlandfunk, Februar 2020

On March 22, strict exit and contact restrictions were imposed by the government for Germany. Millions of Germans could no longer reach their workplace, were not able to work at all or could only work at home. Also, the closure of schools and children's daycare, bans on events and assemblies, curfew, entry controls from abroad and much more were declared. At the end of March 2020, according to calculations by John Hopkins University, more than 800,000 people worldwide were infected, and almost 40,000 people have died. In Germany, more than 67,000 cases and more than 680 deaths were registered. Within a time span of three months since COVID-19 was reported more than 800,000 people were infected - the speed at which the virus spread was staggering, as was the loss of life and damage to health and the economy.

While in the initial phase of the pandemic, concern was particularly focused on infection of elderly persons, for whom the risk factors of age and previous illness were responsible for a particularly high mortality rate from the corona virus, in the later months (October 2021 to February 2022), the younger age cohorts of society are particularly affected by COVID-19 infection. After the society's sometimes traumatic experience with strict lockdowns (public life and companies) and school closures in the first wave, school and educational facilities were deliberately kept open during fall and winter 2021/22 (Daube 2022). As a

result, infection rates were remarkably high in the groups of daycare children (0 to 4 years)², school children (5 to 14 years), and adolescents and young adults (15 to 34 years).

Figure 4: New Infections by Age Groups



Source: Deutschlandfunk 2022 Data: RKI, Period: April 2020 bis January 2022.

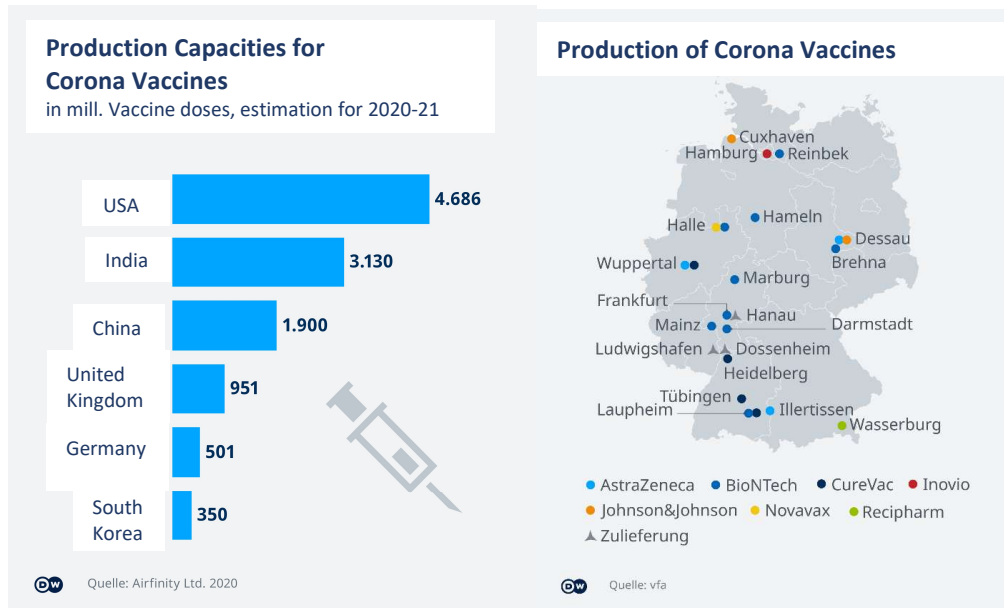
2.2 Vaccine Development: Production Sites and Distribution

Thanks to the rapid development of effective vaccines and their review by the European Medicines Agency (EMA, EU 2022), the European Commission was able to approve the first vaccines as early as December 21, 2020, first from BioNTech-Pfizer (mRNA) (Gelbe Liste 2022), followed by Moderna (mRNA) on January 6, 2021 and AstraZeneca's vaccine (adenovirus) on January 29, 2021. On March 11, 2021, Janssen Pharmaceutica NV (Johnson & Johnson, adenovirus) received approval, and on December 20, 2021, Novavax received approval for the first protein-based vaccine. The development of different vaccines is a strong argument to offer an alternative to vaccine critics who, for example, reject the comparatively new technology of an mRNA vaccine (Wesolowski 2021, Bundesregierung 2022, Robert Koch Institut 2022 und Bundesministerium für Gesundheit 2022).

The initial slow start to vaccine production was reflected in correspondingly low vaccination rates at the beginning of the vaccination campaigns. However, the expansion of production capacities in Germany and worldwide is expected to secure the world's supply of vaccines in the coming months.

² The German authority STIKO (Standing Committee on Vaccination) recommends a vaccination of children only from the age of 12 years (April 2022).

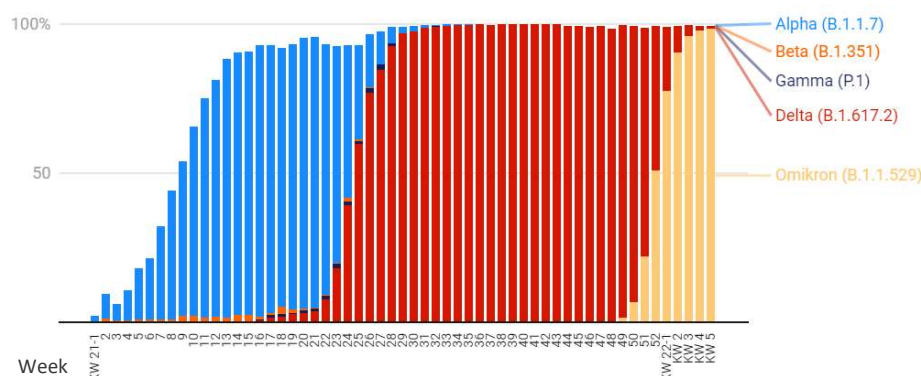
Figure 5: Production Capacities COVID-19-Vaccines



Source: Deutschlandfunk 2022c und 2022d

Vaccination does not prevent infection with the Corona virus, but it does significantly reduce the risk of severe disease progression. Thus, vaccination not only protects people's health and lives; a high vaccination rate of the population makes it possible to keep the health sector functioning, to prevent its overstrain, and, with the spatial limitation of COVID-19 outbreaks (through quarantine measures), also to return to the usual production methods and productivity of the pre-Corona era. Even for the numerous virus variants that have evolved in less than two years, current vaccines provide good to very good immune responses. And the most recent mutation of the virus (Omicron) appears to be significantly more infectious than its predecessors, but the disease courses are predominantly less severe and reduced in lethality (Tropeninstitut 2021).

Figure 6: Virus Variants (Date: 10.02.2022)*



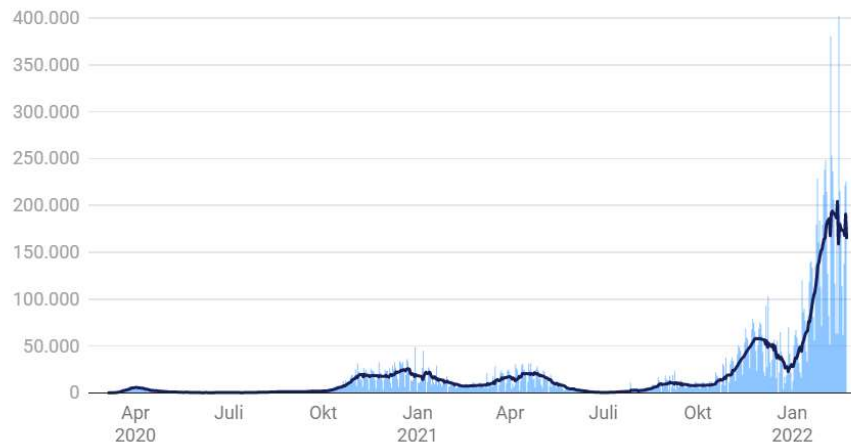
* Illustration shows the proportion of sequenced VOC-virus variants in the set of samples randomly selected for sequencing
Source: Deutschlandfunk 2022a

3 Anti-Corona Measures of the Government

3.1 Corona Measures by the Government in Germany

The infection process developed and continues to develop very dynamically. The number of infections appears to rise in waves toward the fall and winter, only to drop again in late spring.

Figure 7: Infection Figures in Germany



Source: Deutschlandfunk 2022a

The German government has always adapted its measures to local requirements in accordance with the course of infection. Due to the federal structure of Germany, measures to combat epidemics and maintain public health are distributed among the three decision-making levels of the federal government, the states and the municipalities.

Infection control is the responsibility of the federal states, which decide on school and business closures, bans on going out, and the like. The implementation and monitoring of compliance with these orders is carried out by the health authorities in the municipalities or districts. The sealing off of German borders, the control of persons entering the country and coordination with other nations or the EU, on the other hand, are the responsibility of the federal government. The measures were generally taken in close coordination between the federal government and the states (federal-state conferences), although the deliberations were quite controversial and the decisions were applied to varying degrees - depending on the local level of infection. When referring to government measures, this paper subsumes the federal and state entities. Table 1 provide an overview of the variety of Corona containment measures.

Table 1: Overview of Corona Measures in Germany (Date: February 2022)

Section	Measures
Contact restrictions for private meetings/visits	Unvaccinated/unlesioned persons may receive a maximum of one (two) persons of an additional household (exception: children up to 14 years of age), AHA+L+A rules ³
Isolation of infected persons/ quarantine	Isolation of infected persons in home quarantine with the possibility of "free testing" of contact persons
Culture and leisure events	2G (vaccinated and recovered), 2G+ (vaccinated, recovered plus day-old test), 3G (vaccinated, recovered and "boosted"), 3G+ (vaccinated, recovered and "boosted" plus negative PCR test)
Retails	Stores for daily needs (groceries, pharmacies, drugstores) are unrestricted, but can be entered with a mask. For other stores, the 2G, occasionally the 2G+ regulation applies in most federal states.
Gastronomy / Hotel business	After weeks of closure (e.g., winter/spring 2020), reopening only under mask use, with strict spacing rules, partly curfew regulations. Access according to 2G+, partly 3G regulations.
Clubs, discos, large events	Dance events prohibited, open under 2G+ conditions. Limit attendees to e.g. 60 percent of maximum capacity, sport events without audience etc.
Public transportation system	Initially only mandatory masks, now 3G rule
Retirement and nursing homes	Mandatory masking, additional mandatory 3G, daily negative test results, and facility-based mandatory vaccination
Schools and daycare centers	From closure: home-schooling and care at home, when reopening: weekly, partly daily testing obligation
Workplace	Home office must be offered where possible. Work start-up in the company only under 3G rules (incl. free tests twice a week).

Source: Own illustration based on Bundesregierung 2022

³ **AHA-L-A** stands for keep your distance, observe hygiene, wear a mask in everyday life, ventilate regularly and use the Corona warning app, see more details under Bundeszentrale für gesundheitliche Aufklärung (BZgA).

3.2 Consequences of Government Containment Measures

from an infection biology point of view the measures were necessary to reduce contacts, the lockdown and the restrictions on visits, affect large parts of the economy, especially in sectors that are associated with public traffic: Tourism, hospitality, hotels, but also the event industry, art and culture, stage and theatre owners, complementary services such as technical equipment, catering, room maintenance, security services, and others.

Industries and service providers whose tasks could be relocated easily to the home office because access to the company network, a PC and a telephone were sufficient to maintain functionality tended to suffer little or hardly at all from the corona restrictions.

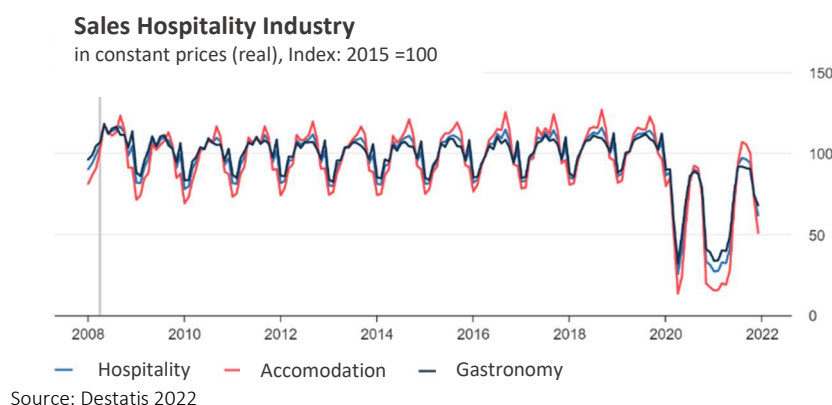
Figure 8: Impact Degrees of Anti-Corona-Measures

Low Impact <i>(12.9 million jobs subject to social security contributions)</i>	Medium Impact <i>(13.0 million jobs subject to social security contributions)</i>	High Impact <i>(7.5 million jobs subject to social security contributions)</i>
Mining, Energy and Water Supply, Waste Disposal	Agriculture, Forestry, Fishing	Production of Preliminary Products and Services (especially Chemicals, Plastics)
Construction Industry	Production of Goods consumed at Home (Food, Beverages, Textiles/ Clothing, Pharmaceuticals)	Metal and Electrical Industry, Steel Industry (including Machine and Vehicle Construction)
Information and Communication	Trade, Maintenance and Repair of Motor Vehicles	Cultural and Creative Industries (excluding Software and Games Industry)
Real Estate and Housing Services	Logistics	Tourism / Hospitality
Financial and Insurance Services	Other and Business- related Services	
Public administration, Defense, Social Insurance		
Educational and Teaching Services		
Health and Social Services		

Source: based on Ehrentraut et.al. 2020

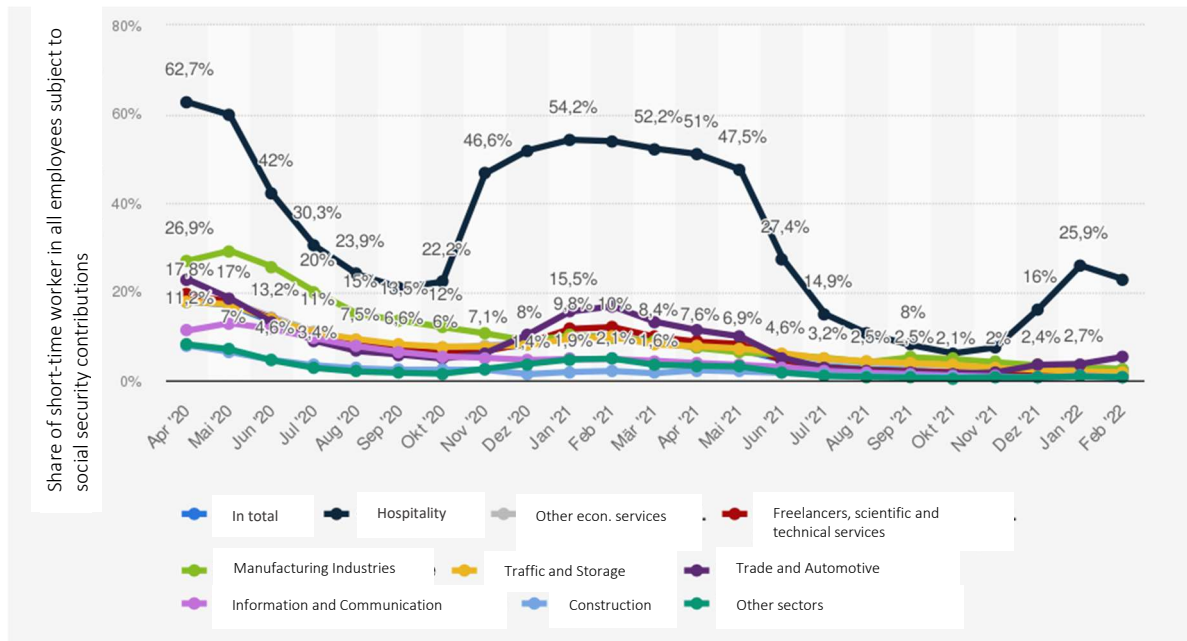
But production facilities that require on-site presence, that need the cooperation of several people to complete tasks, have had to accept sometimes considerable output reductions and also productivity losses due to (enforced) plant closures or protection requirements. In particular, the traditional production sectors (industry, crafts) as well as sectors with a high public profile (tourism, hospitality, culture) have suffered severely. In contrast, activities that can be performed in the home office (programming, financial services, etc.) or that are predominantly performed outdoors posed virtually no risk of infection and could therefore be performed on a regular basis. Accordingly, at the height of the COVID-19 crisis, the sectors' revenues developed differently. Tourism, cultural and creative industries, logistics, and automotive trade expected the highest losses and revenue declines in 2020. And these expectations have come to pass, as the following figures show. For example, the hospitality industry suffered dramatic losses in 2020 and 2021. The ordered closures of pubs, restaurants and cafés have led to sharp drops in sales.

Figure 9: Sales Hospitality Industry Germany



The risk of insolvency has increased accordingly. With every further measure or tightening, the reserves and savings of the companies melt, sales and profits fall and the resilience of the companies is reduced.

Figure 10: Share of Short-time Worker by Sectors



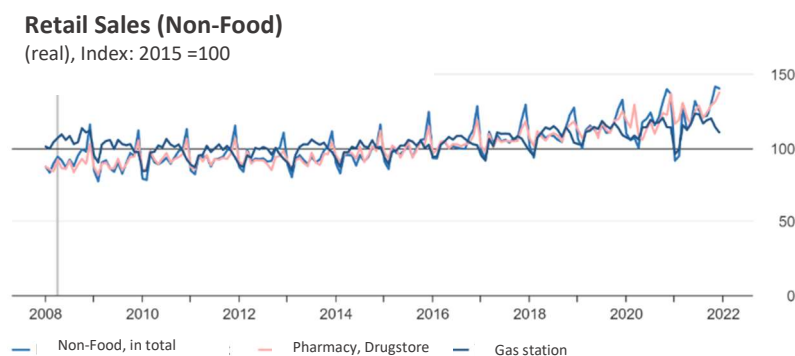
Quelle: Statista 2022b

Percentage of short-time workers in Germany by sector (April 2020 – February 2022), estimation of ifo-Institute and Federal Agency for Employment (Bundesagentur für Arbeit)

At the same time, registrations for short-time work are increasing, and the data shows that the sectors are asymmetrically affected, with the hospitality industry at the top.

In the retail sector, the picture is somewhat more differentiated - easy to recognize in the divergent development of sales, while in the stricter contact restriction phases autumn-winter (2020, 2021 and 2022) the sales of drugstores and pharmacies developed well above average (the shops remained open under hygiene measures), sales at petrol stations (thanks to home office) and non-food trade have plummeted.

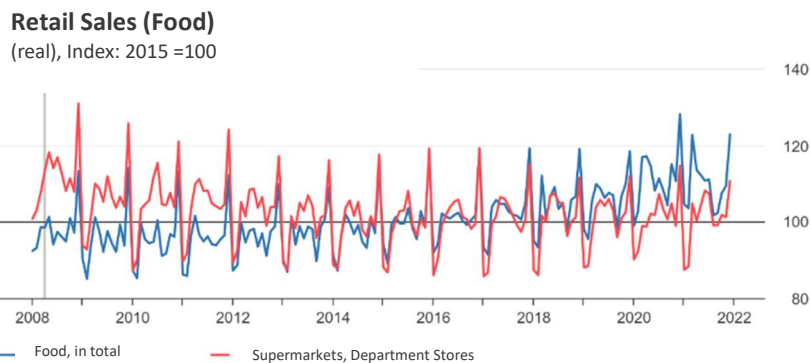
Figure 11: Retail Sales, excl. Food



Source: Destatis 2022

Due to a lack of alternatives to conventional shopping, numerous sectors suffered major sales losses, and thanks to home offices and home schooling, a considerable proportion of the population was cut off from typical shopping habits for weeks, sometimes months: The usual stroll through the city centers was cancelled or was only possible under numerous conditions. This was a major deterrent for potential consumers.

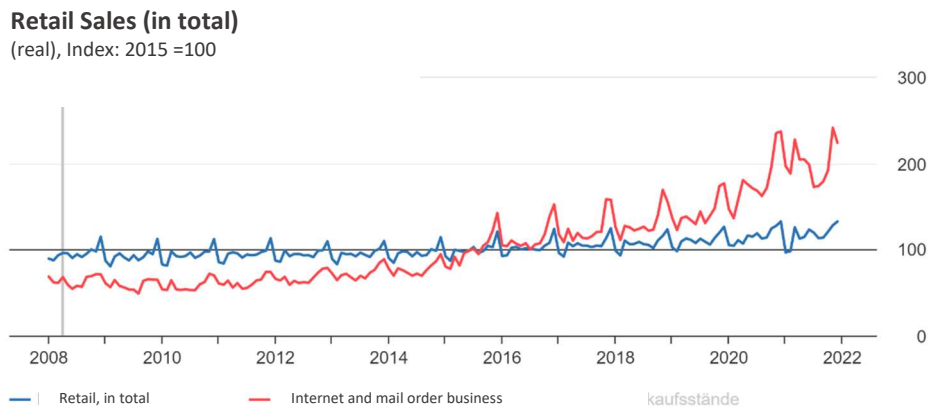
Figure 12: Retail Sales - Food



Quelle: Destatis 2022

The opportunities for online shopping were used all the more. The sales figures for online retailing developed correspondingly well.

Figure 13: Retail Sales – Index values



Quelle: Destatis 2022

The lockdown phases and regulations have severely restricted public and private life: Individuals' freedom of movement was reduced, in some cases drastically. In Hamburg, there was even a nightly curfew from 01.04.2021 to 12.05.2021 - a measure that was not imposed even during the Second World War (Spiegel Online 2021.). This concentration on the private, the domestic life, the limitation of the world of experience to close family members and neighbors created the "Corona-Biedermeier-period" (NDR 2021, RP Online 2021, Zeit Online 2020).

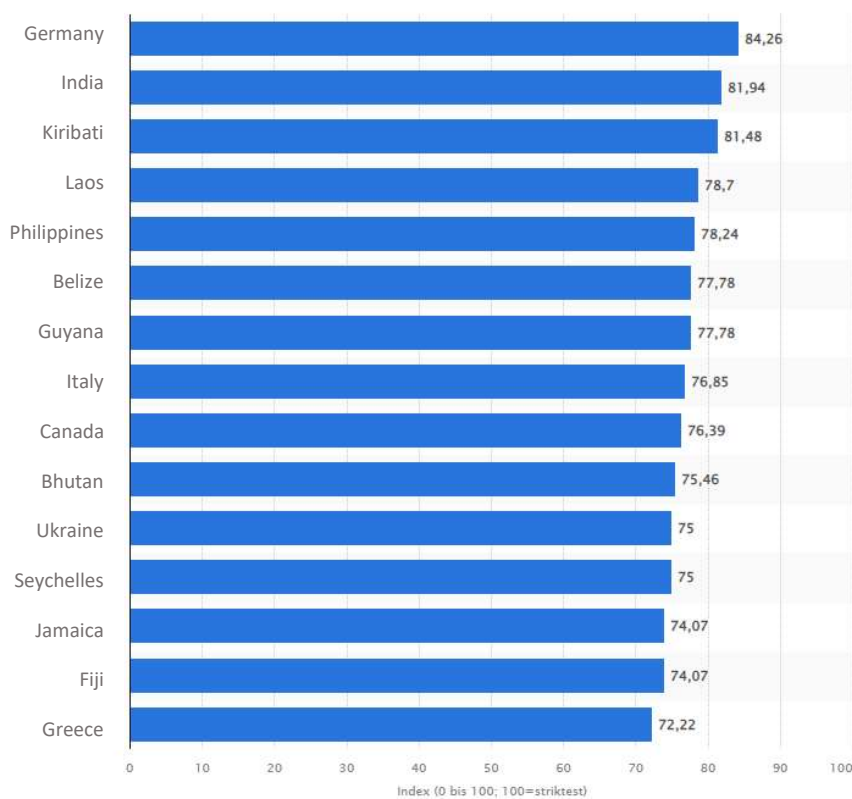
Naturally, this retreat into the private sphere particularly benefited industries that correspond to this focus on a home-centered life limited to the nuclear family: Internet retailing, consumer electronics, streaming services⁴, sporting and camping goods, bicycle retailing (Deutschlandfunk 2020).

3.3 Protective Measures in the Judgment of the Population

To maintain public order, ensure the functioning of the healthcare system and the efficiency of the economy - as far as possible and justifiable - measures were taken by governments worldwide. The German government's catalog of measures is presented as an example; in different gradations and variants, the rules were dynamically adapted as far as necessary and appropriate, in direct response to the course of the pandemic. Society's adaptation to the waxing and waning numbers of infections and the corresponding governmental countermeasures were generally widely accepted and followed by the society (El-Menouar 2021). Figure 14 makes clear that Germany imposed comparatively tough regulations on people and companies. The protective measures adopted for the Federal Republic were regularly adjusted over time at the level of local authorities and administrative districts in response to the situation. These highly individualized adaptation steps with reference to local infection figures led to a "patchwork quilt" (cf. Felbermayr and Stehn 2020, Tagesschau 2021) of different rules in the individual regions, which did not facilitate acceptance among the population. Particularly at the border between federal states, such as in the Hamburg region and the neighboring states of Schleswig-Holstein and Lower Saxony, differing regulations regarding the closure of DIY stores led to a flurry of shopping tourism. Closed DIY stores in Hamburg led to increased visits by Hamburg customers to nearby surrounding communities.

⁴ In the Corona year 2020, Netflix said it gained 37 million new subscribers, Disney+ gained 100 million new subscribers in just 16 months, source: Tagesschau. More information on changed media behaviour see it Daily und Statista 2022c.

Figure 14: Countries with strictest Counter-Measures (Index, Date: 21.02.2022)



Source: Statista 2022d⁵

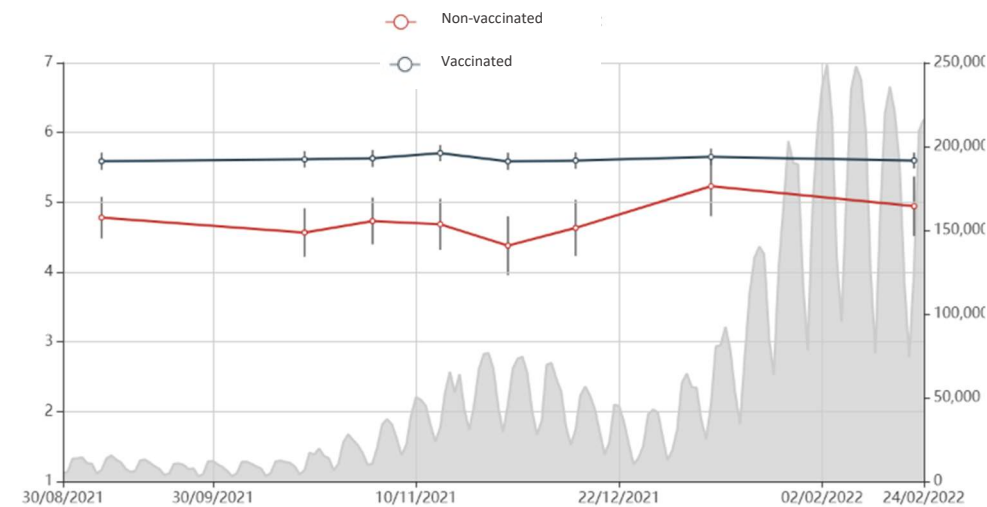
This additional shopping traffic was, of course, undesirable because it also meant that the virus increasingly crossed national borders. The patchwork of different regulations was still rather accepted at the beginning of the pandemic, but as the pandemic progressed, the population became more and more disgruntled about the different conditions. The desire for uniform, nationwide rules was increasingly articulated.

⁵ According to Oxford University calculations, Germany had enacted the strictest coronavirus containment measures in the world by Feb. 21, 2022 (or the most recent values available). Germany ranked first with a score of 81.26 out of 100 index points. The Oxford COVID-19 Government Response Tracker (OxCGRT) collects systematic information on policies governments have adopted to combat COVID-19. Coding is done in indicators such as school closures, travel restrictions, vaccination policies.

Figure 15: Corona Protection Measures in the Opinion of the Population

Retail Measures to contain the Corona pandemic should be uniform nationwide.

Mean values and 95% confidence intervals

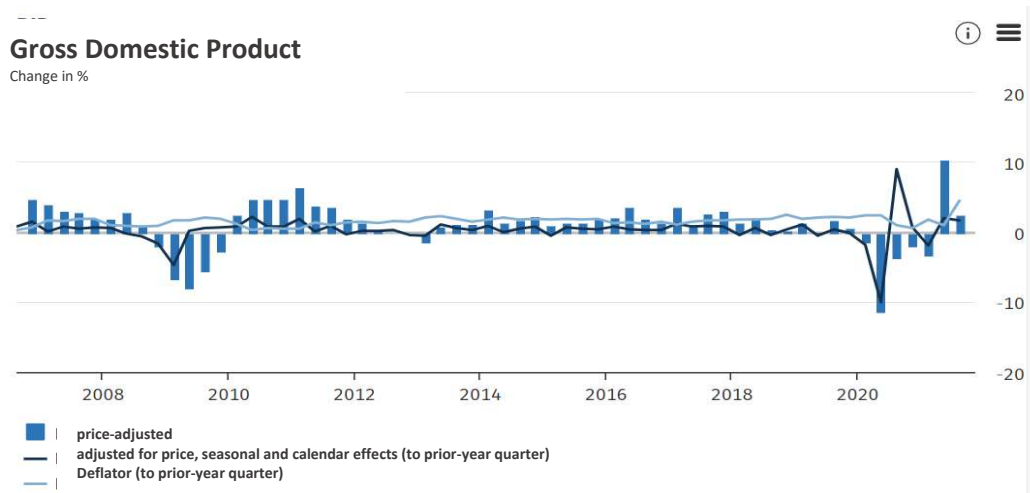


Quelle: Cosmo – COVID-19 Snapshot Monitoring

4 Consequences for Public Finances

The severity of the recession left clear traces in all key economic aggregates. The severity of the Corona recession can be seen in the development of gross domestic product. In 2020, the economic output of the Federal Republic of Germany contracted by 4.9 percent compared with the previous year.

Figure 16: Development of GDP (Germany)

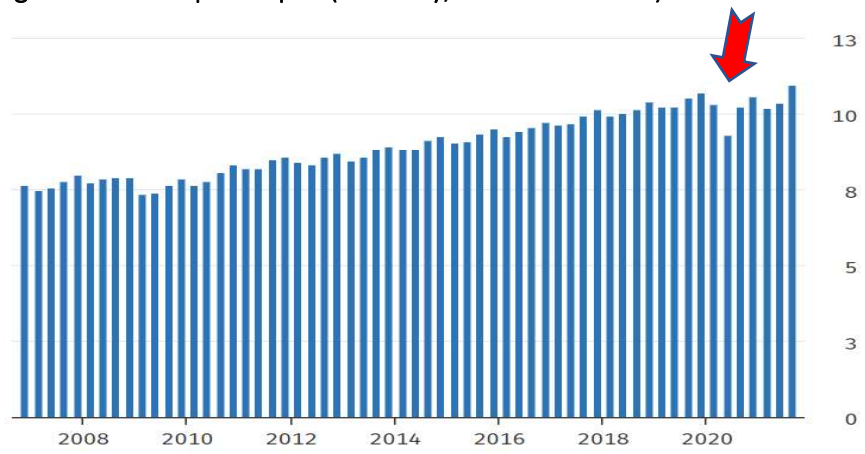


Quelle: Destatis 2022, Dashboard.

The 9.7 percent slump in gross domestic product in the second quarter of 2020 is of historic proportions. The third quarter compensated for some of these losses, managing an increase of 8.5 percent (Federal Statistical Office 2021). In 2021, economic growth stabilized, German production rose again by 2.9 percent (adjusted for price, seasonal and calendar effects), and the recovery process continued (Statistisches Bundesamt 2022b).

Germany's initially shrinking gross domestic product in the recession year 2020 forms the basis for the government's tax revenues.

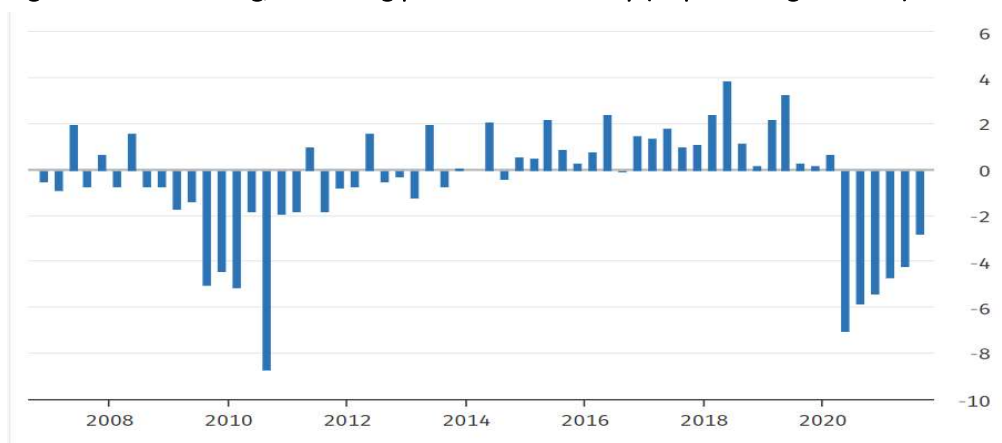
Figure 17: GDP – per- Capita (Germany, in thousand Euro)



Source: Destatis 2022, Dashboard.

Only realized production of a society can be taxed and provides the state with sufficient liquid funds to fulfill its tasks. At the same time, government spending typically increases during a crisis: the necessary government subsidies for social insurance (unemployment, health and nursing care insurance, pension insurance), but also subsidies and support measures (economic stimulus package) by the government to shorten the recession phase.

Figure 18: Net lending/borrowing position of Germany (as percentage of GDP)



Source: Destatis 2022, Dashboard.

The consequences of the recession are particularly evident in the government's net lending/borrowing, the difference between revenues and expenditures. A deficit will be financed by borrowing on the capital markets.

4.1 Government Revenues

The economic consequences of the Corona restrictions leave clear traces in the budgets of the public sector. If we look at the tax revenues of federal states and municipalities, the economic damage that COVID-19 is causing to the performance of the economy and consequently also for the state revenues is apparently (Bundesfinanzministerium (Federal Finance Ministry), several monthly reports).

Table 2: Development of Government Tax Revenues

	in bn. €			
Level	2018	2019	2020	2021
Nation	322,4	329,1	283,1	313,7
States	314,1	324,5	316,3	355,1
Municipalities	48,6	51,4	32,8	38,2
EU	28,60	30,9	50,1	54,0
Sum	713,6	735,9	682,4	761,0

Own illustration, data from Statistisches Bundesamt.

The collapse in tax revenue at the federal level of 14 percent in 2020 is remarkable. In comparison, the revenue shortfalls in the federal states and municipalities were rather small (minus 2.5 percent each). Since the EU finances itself through financial allocations that have already been determined by the member states according to the 7-year budget, the EU institutions did not have to accept a drop in income.

Table 3: Change in Tax Revenue

	Change (compared to previous year)					
	2019		2020		2021	
Level	in bn. €	in %	in bn. €	in %	in bn. €	in %
Nation	+6,7	+2,1	-45,9	-14,0	+30,6	+10,8
State	+10,5	+3,3	-8,2	-2,5	+38,3	+12,3
Municipalities	+2,8	+5,8	-1,3	-2,5	+5,4	+16,5
EU	+2,3	+8,2	+1,9	+6,0	+3,9	+7,7
Sum	+22,3	+3,1	-53,5	-7,3	+78,6	+11,5

Own illustration, data from Statistisches Bundesamt.

The crisis year of 2020, with weeks of lockdowns, home offices, trade and travel restrictions, supply chain problems and plant closures, has caused tax revenues to collapse by a total of 7.3 percent compared to the previous year, with the most significant decline at the federal level at 14.0 percent. Even though the economy appears to be recovering in 2021 and tax revenues are rising significantly, with increases of between 7.7 and 12.3 percent, only the states and the EU level will be able to reach the pre-crisis level or, in the case of the federal states, significantly exceed it. The tax revenues of the federal and local governments in 2021 will remain well below the pre-crisis level. Taking into account the sharp increase in financing requirements for the numerous anti-corona measures, the debt problem becomes obvious.

4.2 Government Spending: Increased Financing Requirements Due to Crisis

An examination of the federal government's expenditure side reveals the debt potential resulting from the Corona recession. The additional financing requirements are clearly reflected in the values of the supplementary federal budget. In black type, the realized 2019 and 2020 figures and the original projection of federal revenues and expenditures for 2022 onward. In red font, the additional, supplementary budget because the available financial resources were already insufficient to cover expenditures for 2021 and high financial requirements continued to be forecast for the following years until 2025.

Table 4: Federal Budget (incl. supplementary budget, all values in bn. Euro)⁶

				<i>Finance Plan</i>			
	2019	2020	2021	2022	2023	2024	2025
Total Expenditure*	357,1	443,4	370,3	376,5	381,1	387,0	
Total Revenues **	356,4	313,0	370,3	376,5	381,1	387,0	
Supplementary budget***			547,7	419,8	397,5	402,7	403,4
Net borrowing	0,0	130,5	0,0	0,0	0,0	0,0	
Supplementary budget***			240,2	81,5	8,3	11,5	10,0

* Total expenses incl. transfers to reserves.

** Tax revenues incl. administrative/coin revenues and withdrawals from reserves

*** according to Finanz Plan plus.

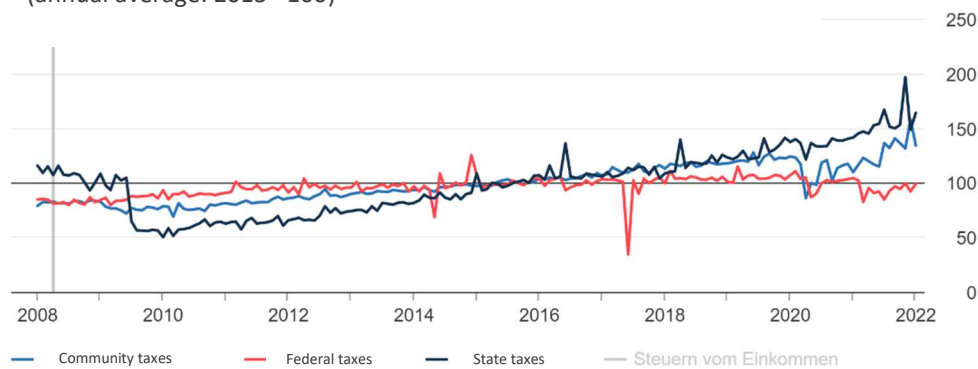
Own illustration.

⁶ Bundesministerium der Finanzen, various budgetary accounts.

Compared with the financial consequences of the 2008/09 financial crisis, the differences become clear: The 2008/09 financial crisis sharply reduced state tax revenues in particular, while community and federal taxes suffered only slightly. The Corona crisis in 2020/21 severely decimated federal tax revenues, while state revenues were only slightly affected (Statistisches Bundesamt 2022c).⁷

Figure 19: Revenues from Community, Federal and State Taxes⁸

Adjusted Revenues from Community, Federal and State Taxes
(annual average: 2015 =100)

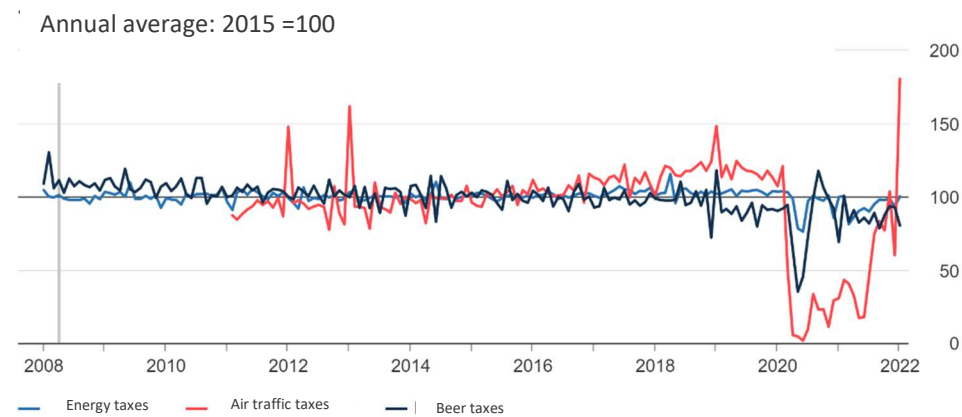


If we look at the development in terms of the revenue from the beer tax (state tax) and the energy and air traffic tax (federal tax), it becomes clear how asymmetrically the economic sectors are affected by the pandemic. While air traffic came to a standstill for weeks in Europe and many other countries, fluctuations in energy consumption are characterized by low volatility.

⁷ Statistisches Bundesamt 2021b, Press release: "As reported by the Federal Statistical Office (Destatis) ... the heavy tax losses of municipalities due to the Corona pandemic were compensated by allocations (financial aids) from the federal and state governments, such as under the "Municipal Solidarity Pact 2020."

⁸ Community taxes are divided between the federal and the state level.

Figure 20: Development of Selected Tax Revenues



Source: Destatis 2022.

The Corona Aid Packages

The German government has adopted an economic stimulus package to cushion the economic and social consequences of the crisis (Federal Ministry of Economics (Bundesministerium für Wirtschaft 2020). The aim is not only to mitigate the short-term consequences of the crisis, but also to ensure innovative capability in the future with the future package.

The economic stimulus package focuses on the following areas

- (1) Support for **businesses** (financial commitments, suspension of insolvency),
- (2) Support for **households** (families and individuals in need, child benefits, simplified basic security access),
- (3) Support for **public institutions** (social enterprises, public transport, municipalities),
- (4) **Public procurement** (stabilization of aggregate demand).

Key measures of the stimulus package include the elements:

- Reduction of VAT rate from 19% to 16% and from 7% to 5% (from July 1, 2020 to December 31, 2020, financing requirement: 20 billion euros)
- "Social guarantee 2021": social security contributions will be stabilized at a maximum of 40% through federal subsidies (financial requirement: 5.3 billion euros in 2020, requirement in 2021 cannot be determined)

- EEG levy⁹ capped by federal subsidy (2021: target value 6.5 ct/kwh, in 2022 target value 6.0 ct/kwh, financial requirement: 11 billion euros)
- Support measures for entrepreneurs (insolvencies): Shortening of the debt relief procedure for natural persons to three years, introduction of a pre-insolvency restructuring procedure.
- Federal government brings forward planned contracts and investments (digitization projects in administration, security projects and new defense projects with a high German value-added share, project volume: 10 billion euros)
- Public procurement law to be temporarily simplified (shortening of award deadlines for EU procurement procedures, adjustment of thresholds for restricted invitations to tender and private treaty awards)
- Short-time allowance to be simplified from January 1, 2021
- Bridging aid for small and medium-sized enterprises (volume: maximum 25 billion euros, June to August. Reimbursement of 50% to 80% of fixed operating costs, depending on the decline in sales, up to a maximum of 150,000 euros for three months. Companies ≤ five employees: reimbursement amount 9,000 euros, companies 10 employees: 15,000 euros (funding requirement: 25 billion euros from unused, existing programs).
- Simplified access to basic benefits for jobseekers (SGB II) extended until September 30, 2020.
- Stabilization of non-profit organizations (social enterprises, youth hostels, youth education facilities, family vacation centers, school hostels and other non-profit child and youth accommodations): 2020 and 2021 a special loan program via KfW (plus funding participation of state-owned institutes, funding requirement 0.9 billion euros).
- To support the maintenance and strengthening of the cultural infrastructure, emergency aid, additional needs of facilities and projects, and the promotion of alternative offerings, including digital offerings. (Financial requirement: 1 billion euros)

⁹ EG levy was introduced in 2000. Also known as the "green electricity levy," it is used to finance the expansion of solar, wind, biomass and hydroelectric power plants. Up to now, it has been levied on end customers via their electricity bills.

- Compensation for local authorities for tax shortfalls: The federal government can bear up to 75% of the costs of housing and heating in basic benefits for jobseekers (funding required: 4 billion euros per year).
- Subsidies for public transport companies to compensate for the sharp drop in fare revenues (funding requirement: 2.5 billion euros in 2020)
- Family support: one-off child bonus of 300 euros per child for each child entitled to child benefit (not offset against basic income support, financial requirement: 4.3 billion euros), capacity expansion for kindergartens and daycare centers (financial requirement: 1 billion euros), expansion of all-day schools (financial requirement: 1 billion euros). 1 billion), expansion of all-day schools and all-day care (digitization, teacher training, (funding requirement: 2 billion euros), relief contribution for single parents raised from the current 1,908 euros to 4,000 euros for 2020 and 2021 and thus more than doubled. (financial requirement: 0.75 billion euros).

In addition, the tax authorities have provided support: Tax payments were deferred, advance tax payments were refunded, in other words, measures were taken to ensure the financial survival of companies in the Corona crisis. However, such a package of measures also entails the risk of concealing or delaying insolvency (Becker 2021).

With a more long-term dimension, the government is launching the **Future Package**:

- (1) **Mobility** (rail and marine transport, transformation of drive technologies,
- (2) **Energy and Digitalization** (hydrogen tech, AI, communication technologies),
- (3) **Modernization of Public Administration**
- (4) **Health Sector**.

In detailed, the future package covers the areas:

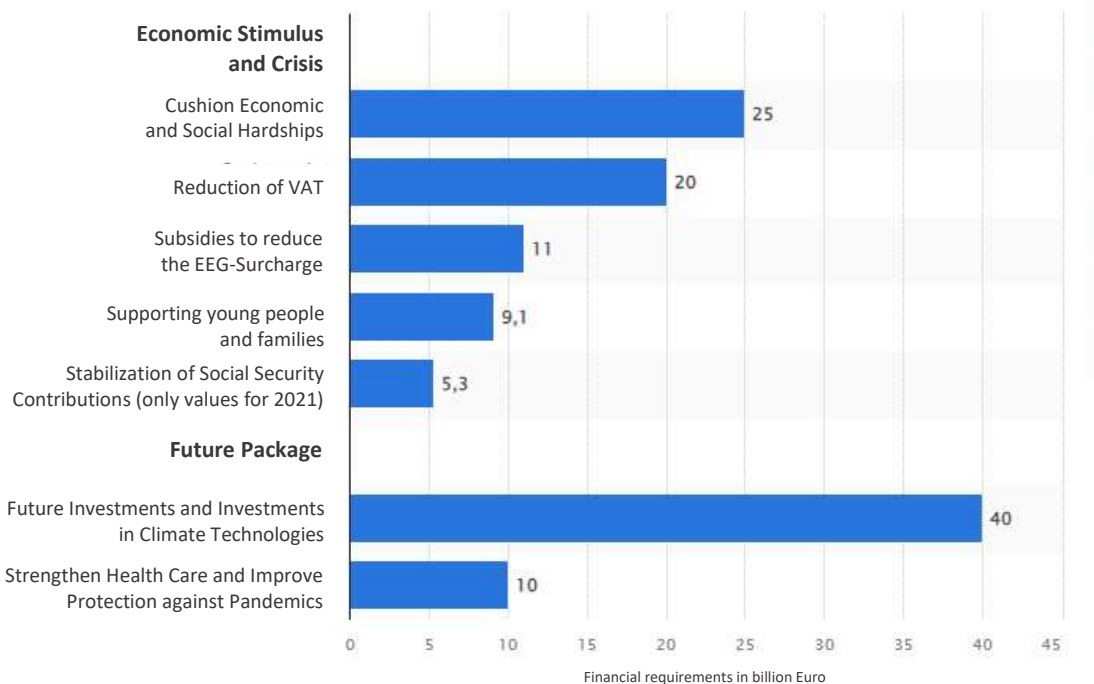
- Tax-based research allowance for companies, support for major non-university research organizations (funding requirement: 2 billion euros).
- Structural change mobility and digitization: vehicle tax for passenger cars to be more closely aligned with CO2 emissions, ten-year vehicle tax exemption for purely electric vehicles granted until Dec. 31, 2025 and extended until Dec. 31, 2030, doubled e-vehicle premium from 3,000 to 6. 000 (financial requirement: 2.2 billion euros), promotion of research and development and electromobility in urban traffic

- (financial requirement: 2.2 billion euros), fleet replacement program for tradesmen and SMEs for electric utility vehicles up to 7.5 t, charging column infrastructure (2.5 billion euros), bus and truck fleet modernization program for private and municipal operators (financial requirement: 1.2 billion euros), support for the transformation of vehicle manufacturers and the supplier industry: (financial requirement: 2 billion euros).
- German Railway (Deutsche Bahn): Compensation for Corona-related revenue shortfalls through additional equity increase of 5 billion euros.
 - Shipping: Riverbank rehabilitation, modernization of locks, replacement of ships: Innovation promotion, the Maritime Research Program, the Shore Power Promotion Program, the LNG Refueling Vessel Promotion Program, the Fleet Renewal Program for Government Ships, the Clean Ship Immediate Program (funding requirement: an additional 1 billion euros).
 - Accelerated conversion of aircraft fleets to modern aircraft of the latest design (up to 30% less CO₂, funding requirement: 1 billion euros)
 - National hydrogen strategy (funding requirement: 7 billion euros), development of foreign trade partnerships with countries that can produce hydrogen efficiently (funding requirement: 2 billion euros)
 - CO₂ building refurbishment program to be increased for 2020 and 2021 (funding requirement: approx. 2 billion euros).
 - Modern administration: modernization of registers, digitization of administration at federal, state and local level, and sustainable energy consumption (funding requirement: 4.3 billion euros).
 - Promotion of artificial intelligence (AI) (additional 2 billion euros) and quantum technologies (funding requirement: 2 billion euros), future communications technologies 5G and, in the future, 6G (funding requirement: 2 billion euros), nationwide 5G network throughout Germany (funding requirement: 5 billion euros).
 - Health sector: Research and establishment of a model health office (funding requirement: 4 billion euros), future program for hospitals (funding requirement: 3 billion euros), domestic production of important drugs and medical products

launched. (1 billion euros), German vaccine development, protective equipment and stockpiling (1.75 billion euros) (Bundesministerium für Wirtschaft 2020).

The large number of measures in the economic stimulus and future package may give the impression of being somewhat arbitrary, but in fact the measures are designed to support and stabilize demand across a broad front in order to counter recessionary trends at an early stage. At the same time, the stabilization of demand is intended not only to have an effect in the "here and now", but also to be skilfully managed in order to prepare the economy for the challenges of the near future and position it well. In particular, the measures in the Future Package include programs that are part of supply policy and set the course for a prosperous economy in the medium and longer term.

Figure 21: German Government: Selected Parts of Economic Stimulus Program (from 03.06.2020)



Source: Statista, Financial requirements for the years 2020 und 2021 in billion Euro.

Social Security: Grants and Deficits

If we look at the financing balances of the social security funds (core and extra budgets), the deep scars left by the Corona crisis become clear here as well. (Statistisches Bundesamt 2022d).

Table 5: Selected Social Securities - Surpluses and Deficits

Social Securities	2021*	2020	2019	2018
Statutory health insurance	-1.329	-5.143	-433	3.613
General pension insurance	-4.573	-4.555	+1.415	3.977
Federal Employment Agency (BA)	-21.581	-20.660	+2.482	6.228
Sum	-29.368	-27.894	+8.149	+11.158

Figures in bn. Euro.

*Angaben für 2021 beinhalten nur Daten für die Quartale 1, 2 und 3, Finanzierungssaldo i.d.R. finanziert über Entnahmen aus Rücklagen.
Quelle: Statistisches Bundesamt 2022d.

The surpluses in 2018 and 2019, which were largely allocated to reserves, were followed in 2020 and 2021 by deficits in the social security funds, which were financed by releasing the reserves from the past.

It should be noted that the social security funds are in any case supported by taxpayer funds, the so-called federal subsidies. In 2021, the federal subsidy totaled 134 billion euros. The federal government has already budgeted for additional funding. To stabilize wage costs and employment levels, the federal government wants to stabilize the contribution rate to social insurance at a maximum of 40 percent for the years 2022 to 2025; this measure alone will require an additional 144 billion euros over a period of four years (Büttner and Werding, 2021).

Figure 22: Development of Federal Subsidies to Social Insurances



Source: BMWI, 2021

It is obvious that in view of the long-term demographic development, the decline in professional activity (retirement of the so-called "baby boomer" generation 1955 - 1969), advancing digitalization and automation of production processes, the revenue base of the social security funds is visibly eroding, while at the same time expenditures are rising: increasing number of pension recipients, longer life spans, advanced and expensive medical treatments. The measures taken to stabilize the labor market in the Corona crisis (short-time work, easier access to social welfare, etc.) also imply costs in the billions of euros, which represent a burden on the federal budget and thus on the taxpayer.

The increased financing requirements, in particular the high social security contributions, have led to a sharp rise in net borrowing not only in Germany but also in the other EU member states.

5 Consequences for the Debt Situation

The fight against the Corona crisis has left its mark on the budgetary and financial situation in numerous European countries, including Germany. In 2020, government (federal, state and local) revenue has slumped considerably compared with 2019, from EUR 705 billion to just EUR 632.2 billion. For the federal government alone, this means a reduction in revenue of 14 percent (see table 3); the states and municipalities also suffered revenue losses, although these were significantly lower at 2.5 percent in both cases.

At the same time, federal spending in 2020 has risen to a total of EUR 443.4 billion due to the financing of the Corona aid measures. Financing will require net borrowing of EUR 130.5 billion in 2020. The social security funds alone (statutory health insurance, general pension insurance and the Federal Employment Agency) have a deficit of EUR 27,894 billion in 2020, and an even higher deficit of EUR 29,368 billion is forecast for 2021.

For the federal government's financial planning, this means a trend toward greater debt. Net borrowing in 2021 will total 240.2 billion euros, and 81.5 billion euros in 2022. The figures for 2024 and 2025 of EUR 11.5 billion and EUR 10 billion respectively raise hopes of a decline in new borrowing and a return to a balanced federal budget. In the past, the federal government has been running a budget surplus since 2012, a circumstance that has

enabled the continuous reduction of public debt. This phase will clearly come to an end in 2020.

In view of the Corona crisis and its implications, the debt ratio of the Federal Republic of Germany (according to Maastricht criteria, as a percentage of annual gross domestic product) will rise to 68.7 percent in 2020 and to 69.3 percent in 2021, a fact that must give rise to concern in view of the permissible debt criteria of the EU (max. 60 percent of GDP). Despite all the uncertainties regarding future developments, there is room for optimism in the case of Germany - the government has already demonstrated in the past that sound public finances are a high priority in German politics and public opinion and that a renewed reduction in high debt levels therefore appears possible and quite likely.

In other EU member states, on the other hand, the fight against high debt levels has not always been very promising. In Italy and France, the debts accumulated as a result of the Corona crisis have increased an already comparatively high level of debt. In some of these countries, the political leeway and the will to reduce debt appear to be rather limited, which is a cause for considerable concern with regard to the common currency area.

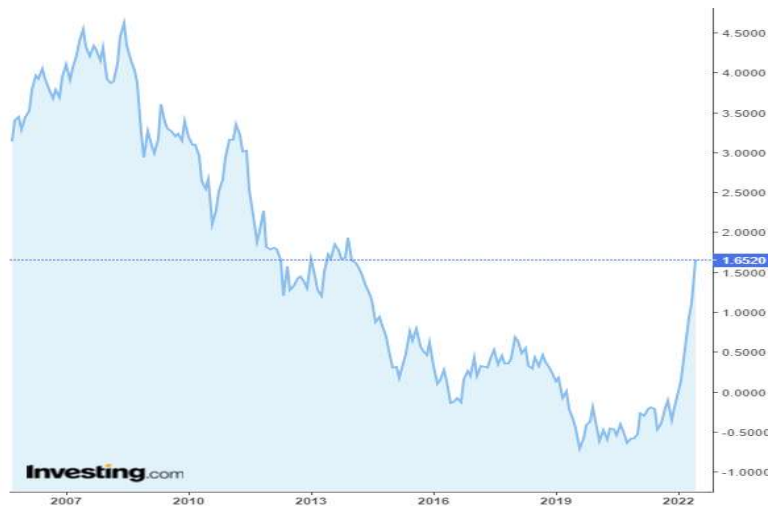
To make matters worse, the outbreak of the Russia-Ukraine conflict (end of February 2022) will thwart the budget plans for the current year 2022 and the following years. It will not be possible to maintain the current planning. Additional funds will have to be raised for military aid to Ukraine, accommodation and supplies for Ukrainian refugees, and the looming supply crisis in the energy sector, which will cause heating and electricity costs in Germany to rise sharply. It is expected that gas prices could triple or even quadruple by 2022, with unforeseeable consequences for economic development. The government's countermeasures in the form of fuel rebates, 9-euro tickets, climate money, etc., are also a threat. These measures may temporarily alleviate the financial hardships of the population, but they are not a sustainable and, from an economic point of view, not a sensible response to the shortage of fossil fuels.

Thanks to the ECB's lax monetary policy with a zero-percent interest rate policy for many years, flanked by government bond purchase programs (e.g. PEPP, PSPP)¹⁰, Germany as well as other euro member states were able to refinance themselves comparatively

¹⁰ For PEPP (Pandemic Emergency Purchase Programme) see Bundesbank a.

favorably on the capital markets. With rising inflation rates in the euro area since early fall 2021 at the latest, the pressure on the European Central Bank to raise interest rates in the euro area, or at least to end the purchase programs, is increasing. This is a development that has recently caused debt interest rates to rise even for countries with a triple A rating such as Germany.

Figure 23: Yield on 10-year Government Bonds Germany



Source: www.investing.com, 28.06.2022

Rising borrowing rates (in June 2022 to 1.652 percent for Germany) are making it more expensive to finance government spending via the financial markets. In addition, countries such as Germany and Italy have promised investors inflation compensation when issuing government bonds (so-called inflation-indexed bonds and obligations)¹¹ - a circumstance that is now also making servicing old debts an expensive affair for the government.

Against this background, the future outlook for the Federal Republic of Germany's ability to finance expensive economic stimulus programs as a countermeasure to a renewed economic slump in 2022 has become significantly gloomier. The development of debt and debt ratios in selected EU member states as a result of the COVID 19 pandemic is the subject of a further study.¹²

¹¹ See for example Deutsche Finanzagentur.

¹² Olbrisch-Ziegler: Consequences of the COVID-19 Pandemic for Public Debt Ratios - Forecasting Public Debt Developments in Central EU Member States, Working Paper 04/2022 (publication planned for July 2022).

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