



EVALUATION OF COVID-19 IMPACT

A CASE COMPARISON OF PORTUGAL, SWEDEN,
GERMANY AND ITALY

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EVALUATING COVID-19 IMPACT

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Abstract: In this project, we compare the strategies of four European countries – Portugal, Italy, Germany and Sweden – in the combat of the first wave of the pandemic. Relating the policies adopted to the evolution of the contagion by COVID-19 in each country, as well as to the behaviour of major economic indicators, we evaluate the trade-off between public health and economic well-being. We find that the countries acting faster and imposing tighter restrictions were able to better contain the pandemic. However, while positively protecting the public health, these measures were found harmful to the economy. In fact, the liberal approach adopted by Sweden allowed it to mitigate the economic contraction that was felt in the countries imposing heavier restrictions.

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1. Introduction

Reported for the first time in December 2019, in China, COVID-19 emerged to shake the world we were once used to. In only a couple of months, it spread around the globe, bringing chaos along with it. All countries urged to take measures to contain the infection, restricting travel, blocking large gatherings, promoting the use of face masks, encouraging work from home and closing schools, ending up imposing local and nationwide lockdowns.

Departing from the existing literature, which draws the main consequences of the pandemic to the economy and brings empirical evidence on the efficacy of different policies adopted to combat the contagion, we compare the strategies adopted by four European countries – Portugal, Italy, Germany and Sweden. According to the cited authors, by affecting all countries around the world, the coronavirus will result in several economic shocks that will make the crisis much more extensive. Additionally, the policies adopted by governments have also aggravated the impact of the virus, resulting in both, demand and supply shocks. These measures are, however, essential to protect public health, being necessary to find an equilibrium between their effects on health and on the economy.

Our work adds to this literature by assessing the impact of the policies adopted by the different governments, taking also into account their timing. We will see that faster and more restrictive measures, as those adopted by Portugal and Germany, positively reflected into a slower spreading of the virus, resulting in lower mortality rates. Sweden, on the opposite end, minimizing the restrictions imposed on its population, and Italy, which was caught unprepared by being the first country facing a surge of infections, experienced a higher number of cases and deaths. Regarding the economic consequences of the pandemic, we analysed the behaviour of output, external balances, economic confidence and spending and the efficacy of the economic measures. We concluded that countries that are more dependent on international spending as is the case of Portugal and Italy suffered the most from the pandemic. On the other hand, Sweden was able to mitigate the fall in domestic production by avoiding the imposition of a nationwide lockdown.

This study is organized as follows. Section 2 revises the existing literature on the impact of the pandemic on the economy and on the efficacy of different strategies followed to contain the spreading of the virus. Section 3 briefly describes the methodology adopted along our analyses. In section 4 we present a short description of the healthcare systems of each country and their weaknesses. Section 5 describes the policies implemented in each country, relating them to the evolution of the pandemic. Section 6 analyses the economic impacts. Finally, Section 7 concludes.

2. Literature Review

We begin to understand the coronavirus pandemic with Baldwin (2020) explaining that the COVID-19 economic crisis is a different and more extensive crisis as it hit all the economic giants at once; the G7 nations and China. It is also a combined mix of a credit crisis, a banking crisis and a sudden-stop crisis. In specific, evidence is gathered to demonstrate three types of economic shocks. The first starts from the disease which hits outputs by putting workers in sickbeds; it can be thought of as temporary unemployment. The second consists of the public health containment measures such as factory and office closures, travel bans and quarantines. Lastly, the third shock is the expectations shock which leaves consumers and firms around the world in a wait-and-see mode. Baldwin argues that governments should focus on using costly but quick measures to ensure the flow of money continues to circulate. The goal is to reduce the persistence of the crisis and avoid unnecessary economic scar tissue. In doing so, reducing the number of personal and corporate bankruptcies, as well as, making sure people have money to keep spending even if they are not working.

Moreover, Carlsson-Szlezak, Phillip, Reeves and Swartz (2020) defend that a careful look must be taken at market signals across asset classes, recession and recovery patterns, as well as the history of epidemics and shocks, to glean insights into the path ahead. Furthermore, he explains that idiosyncratic, real recessions which are most commonly associated with COVID-19, tend to be more benign than policy or financial crisis induced recessions. This is because real recessions represent potentially severe but transient demand or supply shocks. Carlsson-Szlezak examines three kinds

of recovery scenarios. First, the V-shaped scenario which describes the classic real economy shock, where growth eventually rebounds despite the displacement of output. Next, the U-shaped scenario which illustrates a shock that persists for longer and causes some permanent loss of output. Lastly, the L-shaped scenario which is the worst of them as it signals real structural damage with a significant impact on growth. For example, breaking something on the supply side of the economy, such as the labor market, capital formation, or the productivity function. The likely path to recovery according to Carlsson-Szlezak is said to depend on the degree to which demand is delayed or foregone, whether the shock is truly a spike or lasting, or whether there is structural damage.

Pedro Brinca, João Duarte and Miguel Faria e Castro (2020) estimate sequences of labor supply and demand shocks for each major sector. It is found that two-thirds of the fall in the growth rate of hours worked in March and April 2020 could be attributed to negative labor supply shocks. In particular, the sector of leisure and hospitality was subject to historically large negative supply and demand shocks. Other sectors, such as information and retail trade, experienced small supply. The Information sector, more specifically, experienced positive shocks due to the demand boost as many firms increased technology services to implement teleworking from home. It is also explained that negative labor supply shocks are more directly related to the on-going public health crisis and public health policy response, while labor demand shocks reflect economic forces that may persist beyond the public health crisis.

When it comes to understanding the flattening the infection curve, Gourinchas (2020) concludes that measures taken to fight the outbreak will inevitably steepen the macroeconomic recession curve. Furthermore, in a perfect world (described as a scenario where people would self-isolate until infection rates decline sufficiently, and public health authorities give the all-clear') they estimate that one month at 50% and two months at 25% shutdown would cost 10% of annual output. Hence, they argue that to reduce the economic implications of the shutdown, the priority should be to ensure that workers can remain employed and collect wages (being temporary layoff assistance a key component); safeguard firms from going into bankruptcy; and protect the financial system avoiding a financial crisis.

The impact of the great lockdown on purchases is studied by Bruno Carvalho, Susana Peralta and João Pereira dos Santos (2020) using comprehensive data on electronic payments from SIBS. It is found in the study that the overall purchases went from a baseline growth rate of 10% to a decrease of 45%. More specifically, the study concludes that purchases of essential goods increased softly, whereas sectors closed by government orders and the ones heavily dependent on tourism suffered severe contractions. Additionally, it is noted that people relied more on proximity shops, avoiding public transportation and a higher concentration of people. Finally, it is concluded in the report that people reduced their visits to hyper and supermarkets although increasing their average transactions.

Finally, examining two countries that decided to use different approaches, Andersen, Hansen, Johannesen and Sheridan (2020b) compare the responses of Denmark and Sweden and their effects. Denmark imposed several restrictions on social and economic activities and Sweden generally allowed its private businesses to operate freely. Comparing consumer responses, the study concludes that aggregate spending dropped by 25% in Sweden and by 29% in Denmark. Therefore, it is likely that most economic contraction is caused by the virus itself, regardless of the measures taken by the government. Furthermore, it is found that the effect of the shutdown in consumption is negative for young adults (18-29 years) and positive for the oldest (70+ years) due to the decrease in the health risks associated with going grocery shopping. Comparing the major stock market indexes, it was possible to conclude that they presented the same behavior throughout the crisis, and in what concerns unemployment it was slightly sharper in Denmark than in Sweden. Finally, analyzing the excess deaths, it is observed that they begin to diverge after March 11th (start of lockdown in Denmark), with a continuous increase to over 40% in Sweden, contrasting with a leveling off of 5% in Denmark.

3. Methodology

The aim of this project is to establish a qualitative comparison between different strategies adopted by national governments to contain the first wave of the pandemic.

We focus our analysis on four nations that we thought to be especially relevant. Firstly, Portugal, for being our own country. Secondly, Germany, for being a country of reference to the European Union, weighing heavily on its economy. Thirdly, Italy, which suffered a collapse of its healthcare system, and, like Portugal, with limited budgetary capabilities and debt constraints. Finally, we looked into Sweden's innovative strategy, which completely differed from the ones adopted all across Europe, working as a control group for our analysis.

The approach followed includes the analysis of data regarding the economy of each country considered, as well as data concerning public health. To avoid statistical discrepancies, we collected all our data from EU sources, namely from the European Centre for Disease Prevention and Control and from Eurostat. To analyze the economic impact of the pandemic we focused on employment, GDP growth, economic confidence indicator, consumption and savings. We are aware that the analysis of these variables does not allow us to assess the complete impact of the government responses, as there might be some delay in the transmission process. Finally, to assess the efficacy of the adopted measures in the spreading of the virus, we look at the number of cases and deaths, the testing rates and the hospital occupancies.

Finally, to determine the results we began by describing the strategy adopted by each government, proceeding to the analysis of the data and relating it to the measures adopted. Nevertheless, being a descriptive analysis, we are not allowed to establish any causal relation. Therefore, our conclusions are based on the comparison between countries.

4. Pre-COVID Comparison

In this section, we briefly describe the state of health in each of the countries considered in our analysis. The data contained in the table below is referent to the year 2017, the most recent numbers available. We considered some demographic indicators that could explain how easily the virus spreads and how severely it hits those infected. Additionally, we also consider some data concerning the healthcare system of each country, which will help us assess their ability to cope with a surge of infections.

	<i>Portugal</i>	<i>Italy</i>	<i>Germany</i>	<i>Sweden</i>
<i>Healthcare Expenditure (2017 %GDP)¹</i> (Government contribution, %)	9 (66.4)	8.8 (74)	11.2 (84.4)	11 (84)
<i>Hospital beds per 1000 population (2017)</i>	3.4	3.2	8	2.2
<i>Doctors per 1000 population (2017)</i>	5	4	4.3	4.1
<i>Nurses per 1000 population (2017)</i>	6.7	5.8	12	10.9
<i>Life Expectancy (2017)</i>	81.6	83.1	81.1	82.5
<i>Population Density (persons per km²)</i>	113.0	202.9	234.7	25
<i>Share of Population over age 65 (2017)</i>	21.1	22.3	21.2	19.8

Source: OECD/European Observatory on Health Systems and Policies

In terms of life expectancy and composition of the age pyramid, all countries are relatively similar, with Italy having the highest longevity and Germany having the lowest. Italy also presents the largest share of population above age 65, whereas Sweden has the lowest. The population densities vary a lot across countries, however, they are not representative of the actual dispersion of population given the existence of highly uninhabited areas, namely in Sweden, where very little population lives in the North, concentrating in the South of the country.

Concerning the national healthcare system (NHS) of each country, we consider the national healthcare expenditure and the availability of resources. Italy presents the smallest healthcare expenditure (as a share of GDP) among the four countries considered. However, the Portuguese government is the one covering the least part of these expenditures. This can be explained by the fact that, although being universal and mainly financed by taxation, the Portuguese NHS still requires large out-of-pocket payments.

This is also verified in Italy, where health spending is relatively low. Sweden and Germany, on the other hand, present the higher government intervention, with low out-of-pocket spending. The German NHS has the particularity of being financed through compulsory health insurance, which is split into public social insurance and private health insurance. This allows the country to accumulate financial reserves that can be used during economic downturns, which is not possible in the other countries where healthcare expenditure was severely affected by the economic crisis of 2007. A more general result is that, irrespectively of current spending and resources' availability, all countries face challenges in granting long-term sustainability of their NHS given the aging of the population and of the taskforce.

Further looking into the efficiency of each healthcare system, one can easily see the disparities in the number of nurses and doctors among countries. Portugal and Italy both have low numbers of nurses per 1 000 population, contrasting with Germany and Sweden. With regards to doctors, Portugal has the highest number per 1 000 inhabitants, being characterized by the relatively large number of doctors and low number of nurses. Finally, Germany holds the largest number of beds to population, with the three other countries falling way behind. The shortage of resources in Portugal and Italy weakens their NHS, leaving them more vulnerable to the consequences of the pandemic.

5. Policy Responses

The coronavirus first arrived in Germany on the 27th of January. A few days later, on the 31st of January, it was arriving in Italy and Sweden. Portugal was the last country registering its first two cases of infection on the 2nd of March. Upon the outbreak, Italy acted swiftly, suspending flights from China, declaring a national emergency with only two confirmed cases and imposing quarantine in 11 municipalities in northern Italy on the 22nd of February. Nevertheless, the number of confirmed cases increased quickly, only a few weeks after its first case (graph 1.). Following this pattern, this country was the first to close all its schools on March 4, reaching the peak number of cases at the end of March. As COVID-19 spread throughout Italy, with a large number of deaths and ICU patients, its healthcare system collapsed, acting as a warning to other European

countries, that urged to respond as soon as the virus arrived. In fact, Portugal, which, similarly to Italy, has a weaker national health system, acted promptly after registering its first two cases - by the 16th of March, all schools for all academic levels were closed. On the same day, Germany closed not only schools, but all other public spaces as well.

Italy was the first western country hit hard by the outbreak, registering 100 cases of infection on the 23rd of February, way earlier than the other three countries under analysis. The virus first began to spread quickly in a small town and by mid-February ICU patients occupied about 50% of the total ICU beds of the Lombardy region. This percentage is close to the average percent of ICU beds available in Italy throughout the whole year. Looking at the evolution of these trends in Italy, one can see how fast the number of cases and deaths increased (per million population), hitting very high numbers much earlier than the other countries (graphs 1. and 2.). For this reason, Italy was the first country to impose a national lockdown, which began on the 9th of March, dividing its country into three zones (full quarantine, partial lockdown, safety and preventive measures only) since March 1.

The speed at which the situation aggravated in Italy served as a warning to the rest of the world, allowing other countries to take action earlier, and preventing a calamity in their own country. As such, on the 22nd of March, Portugal and Germany imposed severe restrictions. By following this cautious approach, both countries successfully flattened their curves, slowing down the growth in total cases (graph 1). In Portugal, the government proceeded with the objective of containing the threat of contagion. The first step was the reinforcement of the national healthcare system, easing the recruitment of human resources and improving the contact center SNS24. The full lockdown set on March 22 in Portugal included stay-at-home measures such as promoting teleworking, limiting the circulation on the public road, closing shops, restaurants, gyms and recreation facilities and cancelling religious ceremonies. Additionally, some sentences for the least serious crimes were partially forgiven to prevent the spread of the virus inside prisons. In Germany, the measures were quite similar, including, as well, the prohibition of gatherings of more than two people, requiring a minimum of 1.5 meters between them, with the exception of families, partners or people living in the same household.

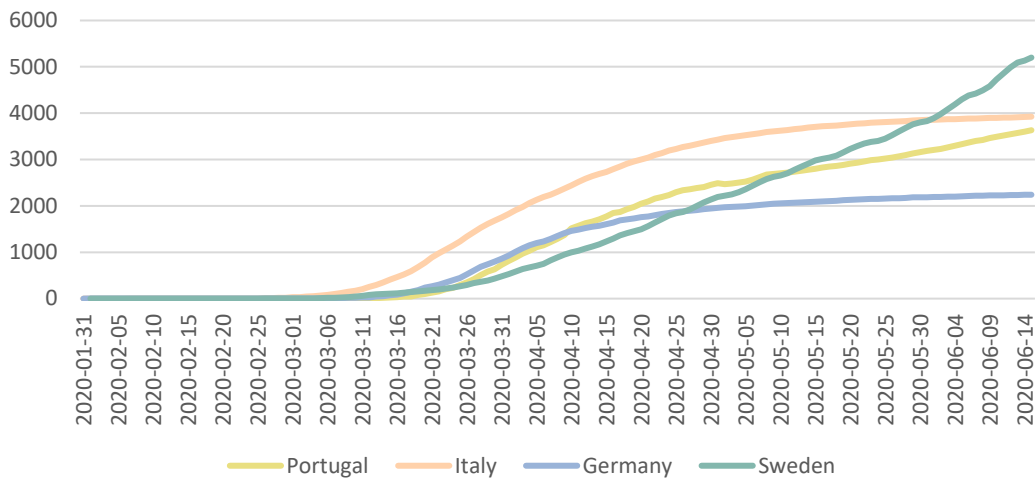
As nationwide lockdowns were imposed across Europe, Sweden decided to embrace a different approach, standing out from other European countries for its reliance on measures of more voluntary nature. Although never imposing a nationwide curfew, the country implemented some restrictions, such as prohibiting gatherings of more than 500 people on March 11, later reducing that number to 50 people on March 27, recommending people to work from home and moving all schools, including colleges and universities, to online learning on March 16. As a result, although later than in Italy, the contagion occurred, and while the remaining countries were already overcoming the first wave of cases, in Sweden these were still growing at a high rate (graph 1.).

Considering these differences in the strategies adopted, as well as their timings, we can begin to verify the way each country differs in the spreading of the virus and mortality rates. In graphs 1. and 2., one can easily distinguish Portugal and Germany, which, regardless of their contrasting NHS capacities, were able to slowdown contagion and prevent the fatality of the virus. On the other hand, Italy, where the virus emerged without warning, and Sweden, with its liberal approach, registered the highest rates of deaths and ICU patients (graph 2. and appendix 2.2.). In these two countries, the number of cases terminating in death grew especially faster than in the other two nations. Additionally, as Portugal and Germany successfully contained the spreading, later followed by Italy, Sweden kept high daily numbers of new cases. This trend becomes even more relevant when comparing each countries' testing rates, with Sweden testing the least amount of people (appendix 2.1.).

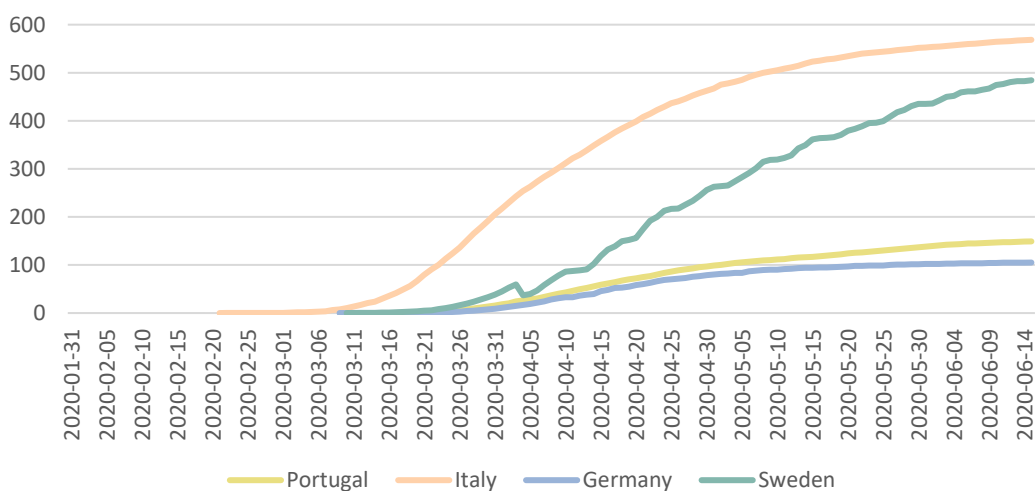
Additionally, some countries declared a state of emergency, as was the case of Portugal on the 18th of March, allowing the government to narrow individual rights in the name of greater public health. This measure was initially enforced for fifteen days but was later renewed twice, ending on the 2nd of May. At that time, the country entered its state of calamity and began the process of easing restrictions. Italy imposed its state of emergency even earlier on January 31 and did not end such a state even after the first wave of the outbreak had passed in Europe. As for the start of the easement of restrictions, each of the countries we studied began to lift their measures around the same month. Portugal began its first phase of easing restrictions early on May 4, allowing small stores to reopen again, while Italy's government announced on May 16 a plan to

remove certain measures such as free movement granted to all citizens within their region, although movement across regions was still banned for non-essential moves. In Germany, on May 4, schools reopened for the ones preparing to leave primary and secondary schools, and, on May 6, all stores and restaurants reopened, seniors in care homes received visitors again, religious services resumed in most states. For Sweden, on May 18 the pressure felt by intensive health care workers had declined and the greater focus was now the rehabilitation of patients. Finally, Portugal began its second phase of easing restrictions on May 18, ensuring nurseries and secondary schools reopen, along with restaurants, cafes, medium-sized stores and some museums; all with mandatory usage of masks and distance rules.

Graph 1.: Cumulative Cases (per million population)



Graph 2.: Deaths (per million population)



Source: Our World in Data

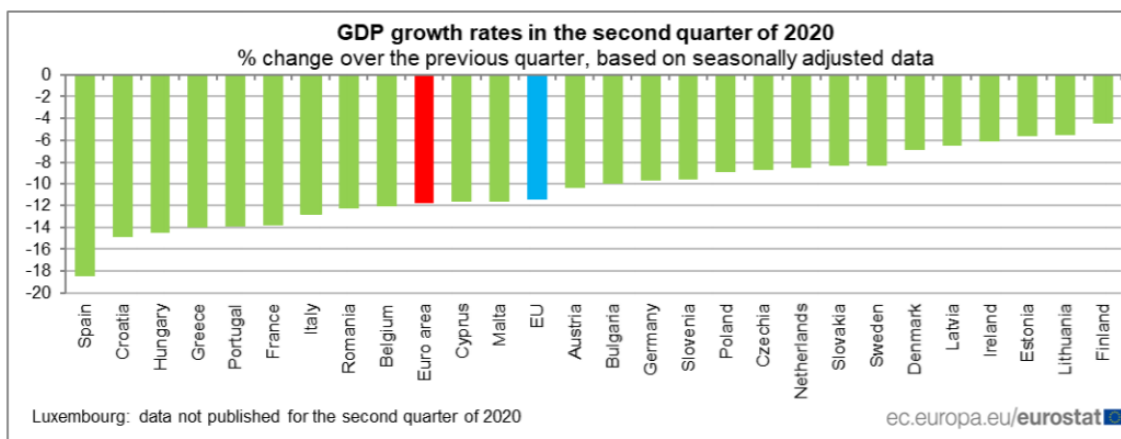
	<i>Portugal</i>	<i>Italy</i>	<i>Germany</i>	<i>Sweden</i>
<i>1st Case</i> <i>100th Case</i>	March 2 March 13	January 31 February 23	January 27 March 1	January 31 March 6
<i>Lockdown</i>	<p>March 20: Government orders mandatory self-quarantine on all travelers.</p> <p>March 22: Full lockdown: must stay at home, any violation is a crime. All but supermarkets, gas stations and pharmacies close.</p> <p>April 9: Prohibition of circulation among municipalities during Easter weekend.</p> <p>May 1: Government prohibits inter municipal travel for the weekend.</p>	<p>Feb. 22: Government imposes quarantine of more than 50,000 people from 11 municipalities in Northern Italy, penalties for violations include fine or prison time.</p> <p>March 8: Several northern provinces placed in lockdown.</p> <p>March 9: Lockdown extended nationwide.</p> <p>April 1: Lockdown extended until April 13.</p>	<p>March 10: Cancellation of events and public gatherings with more than 1000 people.</p> <p>March 16: Some restrictions are imposed, such as the shutdown of activities mainly related with leisure.</p> <p>March 20: State of Bavaria declares curfew.</p> <p>March 22: Lockdown is extended nationwide.</p> <p>April 20: Some shops start to reopen (car dealers, bicycle shops and bookstores)</p> <p>May 6: Easement of restrictions (all stores open, reopening of cinemas, theaters and restaurants remain unclear).</p>	<p>March 10: Public Health Agency urges everyone with respiratory symptoms to stay home.</p> <p>March 11: Government prohibits all public gatherings over 500 people.</p> <p>March 16: People aged over 70 are urged to avoid social interaction. Everyone should work from home when possible.</p> <p>March 25: Only table service allowed in restaurants and bars. Drinking or ordering at bar is not allowed.</p> <p>March 27: Public gatherings of 50 or more people is prohibited.</p> <p>May 29: Easement of restrictions announced.</p>
<i>Schools</i>	<p>March 16: Schools close for all academic levels.</p> <p>May 18: Secondary school reopen.</p>	<p>March 4: Schools and universities close nationwide and stay closed for rest of the school year.</p>	<p>March 16: Schools, nurseries and universities close.</p> <p>May 4: Schools reopen for students leaving secondary and primary schools.</p> <p>March 11: Schools reopen in the state of Bavaria.</p>	<p>March 17: Secondary schools, Folk High Schools and Universities urged to move online, but elementary schools kept open.</p> <p>April 2: Schools partially open for practical examinations and to pupils with special needs.</p>
<i>State of Emergency</i>	<p>March 18: State of emergency declared.</p> <p>May 2: State of emergency ends; country enters state of calamity.</p>	<p>January 31: State of emergency declared and did not end until 2021.</p>		
<i>Masks Usage</i>	<p>May 1: Face masks made mandatory for all citizens in closed public settings, including stores, public services or in public transport.</p>		<p>April 27: Face masks are made mandatory in public transport and retail.</p>	

6. COVID Impact

6.1. Impact on GDP

COVID-19 abruptly interrupted the growth trends that had marked Europe in the post debt crisis, lockdowns and a near-complete freeze of the economy led to initial losses in GDP in the first quarter and then dramatic plummets of GDP in the second quarter when the full weight of both the health crisis and response policies was felt. The COVID-19 crisis enjoys a set of characteristics that make it unique, the confinement has had a big impact on both private consumption and global production and supply chains, also the volatility of the public health situation has disrupted investment decisions and affected industries asymmetrically.

In this report, we will begin by exploring first the impact on GDP and then some of the main channels through which the economic impact of COVID propagated. An initial analysis of the second quarter begins to show us the asymmetries of the economic impact, Portugal's GDP fell 13,9% in the second quarter while Sweden's fell 8,3%.



A common example of the sectoral asymmetry of the COVID-19 crisis is tourism, due to the travel restrictions and lockdowns, the tourism sector has been one of the hardest-hit sectors in the economy. Consequently, a country's dependence on that sector is one of the key factors in understanding the GDP fall.

Variables	Germany	Portugal	Sweden	Italy
<i>Tourism (% GDP)</i>	9,10%	16,50%	8,20%	13%
<i>Tourism (% Total Exports)</i>	2,90%	23,50%	6,90%	7,90%
<i>Tourism (% of Total Employment)</i>	12,50%	18,60%	9,80%	14,90%
<i>Domestic Spending vs. International Spending</i>	86%/14%	30%/70%	55%/45%	76%/24%

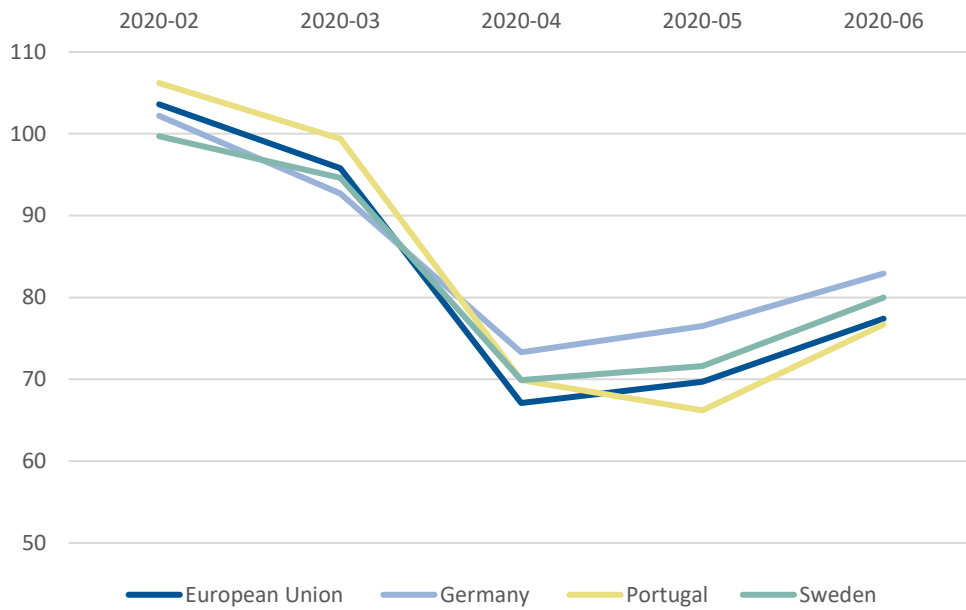
Source: World Travel & Tourism Council

If we compare the four countries in our analysis, it is clear that not only there are big differences in the weight of tourism in exports and in employment but also in the dependence on international spending. The large dependence in international spending is detrimental for a quicker recovery, since it is limited by travel restrictions, as well as by the reluctance to travel abroad that remained after the restrictions were lifted. This is especially true for Portugal which depends more on foreign tourists while Italy, on the other hand, although also very reliant on tourism, counts more on domestic spending than on international spending.

6.2. A confidence crisis

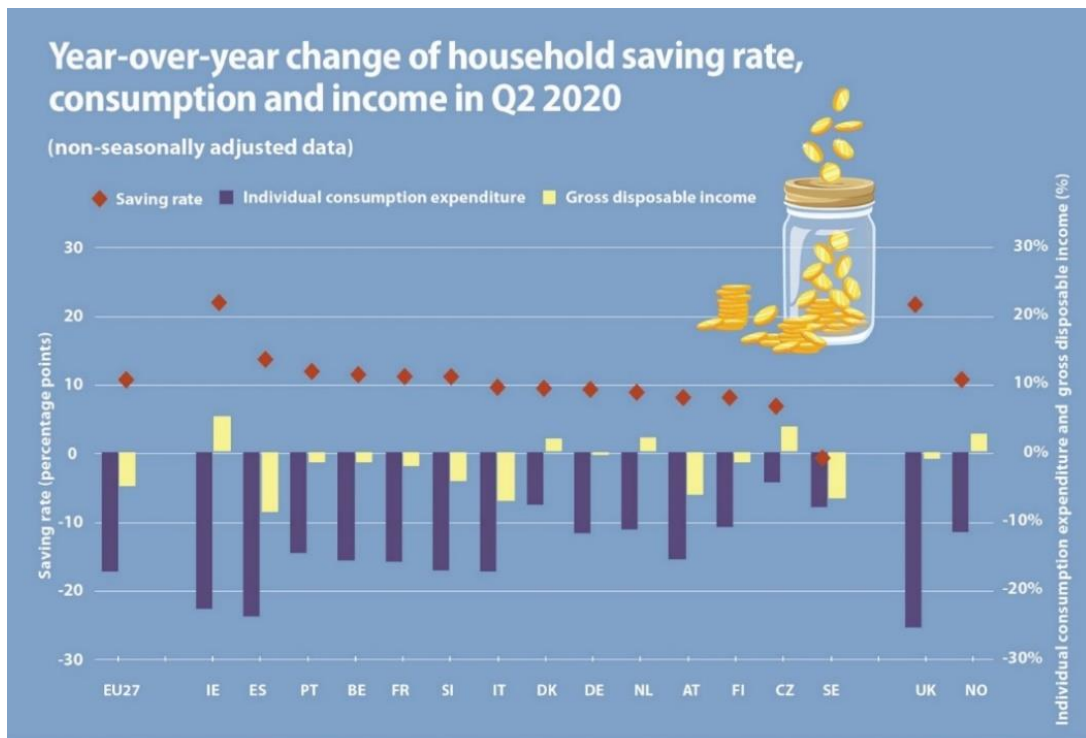
With the pandemic situation worsening every day, many countries felt the need to implement tough restrictions on movements and gatherings with some even imposing full lockdowns during the first wave. Predicting the disruption, it would have on consumption and production these decisions led to a strong deterioration on the confidence index, which is a consequence of the near-certain expectation that such an impact on supply and production chains and constriction on consumption would cause a recession. The drop was most noticeable between March and April which coincides with the peak of the first wave. As the summer approached, and restrictions were slowly lifted there was a recovery, although still not fully recovering the pre-pandemic levels. Furthermore, we can note that Sweden experienced a similar drop in the confidence index, even without some of the tougher restrictions imposed on other countries.

Graph 3.: European Commission Confidence Index



Source: Eurostata data

One of the main sources of economic distress is the constraints imposed on private consumption that result from job instability, loss of disposable income and limitations on mobility. We can begin by assessing the relationship between the loss in consumption, the increase in household savings and the loss of disposable income.



ec.europa.eu/eurostat

6.3. Impact on Consumption

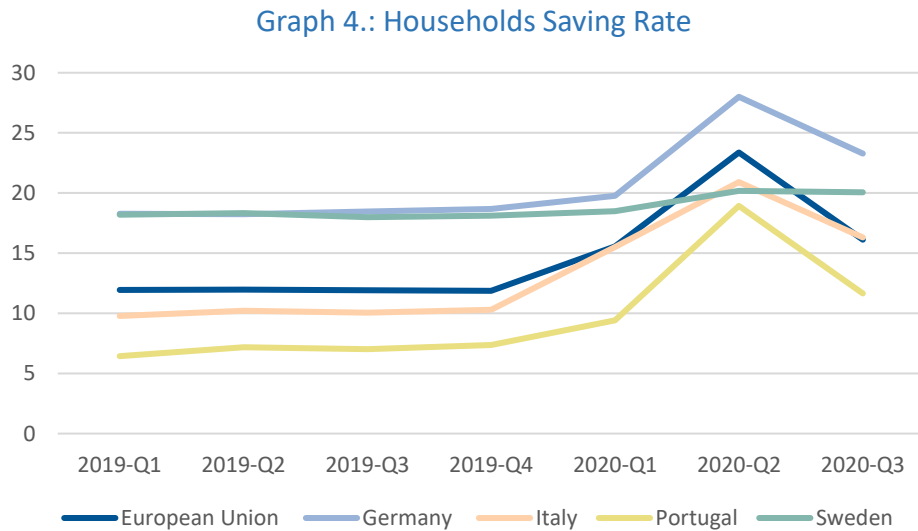
Was the fall in consumption mainly a consequence of the lockdown and the inability of consumers to access certain services and goods, or was there a loss in jobs and consequent fall in disposable income?

Looking at household savings, we can see that there was a significant upward trend throughout Europe. Countries like Italy and Portugal, which have historically low savings had the fastest increase, although still below the European average. Germany also experienced a substantial increase, with a peak of 28% in the second quarter. Sweden, on the other hand, had a much more modest increase which might be explained by the lack of restrictive policies which allowed consumers to maintain their normal consumption habits. In contrast, in Europe, individual consumption contracted largely during the second quarter of 2020. In Portugal, consumption fell by 14%, which can be largely explained by the increase in the savings rate since the drop in disposable income was modest.

Together with the drop in consumer confidence, the increase in household savings was felt to a greater extent in countries where savings were initially lower, that is, Portugal and Italy, where savings grew the fastest, although still below the European average. Unlike the confidence index, in Sweden, the variation in savings was minimal, which may be explained by the already high levels of savings and the smaller drop in consumption. If we look at graph 4., variations in household savings can be connected, to the variations in consumption, income and expectations about the future.

We can look at household savings as a way to understand short-term consumer behaviour. The strong effect of the COVID-19 crisis on the savings rate may, on the one hand, be explained by the expectations about the future, which worsened with the fear of both the health crisis and the economic consequences of lockdown, and, on the other hand, be explained by the restrictions imposed by the lockdowns on the ability to consume and access a series of goods and services. Both in Italy and Portugal, the savings rates increased by around 10% in relationship with Q2 2019. This was accompanied by a loss of 12% consumption in Portugal and 17% in Italy, with the main difference being that the loss of disposable income in Portugal was relatively modest, rounding 2 to 3%,

it was more significant in Italy, rounding 6-7%. Interestingly, while there was a similar loss in economic confidence in Sweden, the savings rate variation was close to zero and the loss of consumption seems to be mostly explained by a loss in disposable income. Finally, Germany saw a small increase in disposable income, but with similar increases in household savings rate and a loss of individual consumption.



Source: Eurostata data

6.4. Economic Measures

The full comparative analysis of the economic responses of each country presents some contextualization problems, since the policies are closely connected to the characteristics of each countries' economy, with different sectoral and industrial compositions, being hard to provide a common framework for comparison without including an in-depth look into each country. Therefore, we provided some of the most fundamental measures proposed by each country and how they impacted some of the main economic indicators, focusing on the first wave of the coronavirus, while addressing some commonalities and main differences.

Economic Measures

<p><i>Germany</i></p>	<p>To combat the COVID-19 crisis and support the recovery two supplementary budgets of €156 billion (4.9 percent of GDP) in March and €130 billion (4 percent of GDP) in June 23 were adopted. New debt worth €218.5 billion was issued in order to finance the packages. The stimulus package in June comprises a temporary VAT reduction, income support for families, grants for hart-hit SME's, financial support for local governments. expanded credit guarantees for exporters and export-financing banks, and subsidies/investment in green energy and digitalization.</p> <p>Measures with immediate impact</p> <ul style="list-style-type: none"> • Spending on healthcare equipment and R&D for vaccine development • Expanded access to short-term work subsidy to preserve jobs and workers' incomes • Temporarily expanded duration of unemployment insurance and parental leave benefits. • Expanded childcare benefits for low-income parents and easier access to basic income support for the self-employed, <p>Measures with long term impact</p> <ul style="list-style-type: none"> • €50 billion in grants to small business owners and self-employed persons severely affected by the COVID-19 outbreak in addition to interest-free tax deferrals until year-end and €2bn of venture capital funding for start-ups, • Expanded credit guarantees for exporters • Export-financing banks, and subsidies/investment in green energy and digitalization.
<p><i>Italy</i></p>	<p>In March, the government adopted a €25 billion (1.6 percent of GDP) "Cura Italia" emergency package. On May 15, the government adopted a further €55 billion (3.5 percent of GDP) "Relaunch" package of fiscal measures. It provides, among other things, further income support for families (€14.5 billion), funds for the healthcare system (€3.3 billion), and other measures to support businesses, including grants for SMEs and tax deferrals (€16 billion).</p> <p>Measures with immediate impact</p> <ul style="list-style-type: none"> • Funds for health care system and civil protection (€3.2 billion); • Measures to preserve jobs and support income of laid-off workers and self-employed (€10.3 billion); <p>Measures with long-term impact</p> <ul style="list-style-type: none"> • Measures to support businesses, including tax deferrals and postponement of utility bill payments in most affected municipalities (€6.4 billion); • Measures to support credit supply (€5.1 billion), the Liquidity Decree allowed for additional state guarantees of up to €400 billion (25 percent of GDP). The guarantee envelope from this and earlier schemes is aimed to unlock more than €750 billion (close to 50 percent of GDP) of liquidity for businesses and households.

<p><i>Portugal</i></p>	<p>Measures with immediate budgetary impact</p> <ul style="list-style-type: none"> • Additional resources for virus-related health and education spending; • Over €600 million per month (0.3 percent GDP) in financial support for those temporarily furloughed by their employer, as well as financial incentives to support progressive reopening and to normalize business activity (about €1.3 billion equivalent to {0.6} percent of GDP) <p>Measures with long-term impact</p> <ul style="list-style-type: none"> • Up to €13 billion (6.8 percent GDP) of state-guaranteed credit lines for medium, small and micro enterprises in affected sectors, operated mainly through the banking system; • €7.9 billion (3.7 percent GDP) of tax and social security contribution deferrals for companies and employees. Additional financial support is also provided for: the self-employed affected by the virus; the unemployed; people forced to stay home to care for children, the national airline and; those sick or in isolation due to the virus.
<p><i>Sweden</i></p>	<p>Based on estimates, fiscal measures were announced for 2020 which included capital injections, liquidity support and guarantees of about SEK 803 billion (16.0 percent of 2019 GDP).</p> <p>Measures with immediate impact</p> <ul style="list-style-type: none"> • Expenditure on Wage Subsidies for Short-Term leave; • Temporary Payment of Sick Leave; • Additional transfers to relevant agencies to deal with COVID; • Loans to SMEs; • Temporarily more generous unemployment benefits; • Temporary reduction of employers' social security contributions; • Supplementary housing allowances to families with children; <p>Measures with a long-term impact</p> <ul style="list-style-type: none"> • Deferral of a maximum of three months' worth of payments of companies' social contributions, VAT and payroll taxes for a period of up to 12 months; • Deferral of annual VAT for 2019 (SEK 7 billion) and deferral of SME taxes (SEK 13 billion); • Expansion of the Export Credit Agency's credit guarantee framework and the Export Credit Corporation state credit guarantees for loans to companies (extended until December 31, 2020), guarantees to the EU for loans to member states, SURE, and to the European Investment Bank for a guarantee fund to support companies (in total SEK 250 billion).

If we examine some of the commonalities among the different strategies, we can see that all governments implemented state-granted credit lines, intending to guarantee adequate levels of liquidity among the sectors that were hit the hardest. Additionally, tax deferrals were also widely adopted, allowing for a temporary relief among businesses and households, although only shifting the burden into the future. Finally, there was an overall strengthening of the social and health sectors, as well as an increase in unemployment benefits and a general eased access to state subsidies.

In addition, Portugal and Italy also created systems for temporary flexibilization of labor, allowing companies that were severely hit by the pandemic to lower their labor costs, as the government paid for a certain percentage of the employees' wages. In Portugal about 750 thousand employees, almost 15% of the labor force, benefited from state support. This allowed to contain unemployment, which only increased moderately, from 6.5% to 8% in August. In Italy, the extended coverage and eligibility criteria for wage supplementation schemes (Cassa Integrazione guadagni) was able to support labor incomes and prevent the full contraction of unemployment. There was, however, a noticeable increase in short-term and seasonal unemployment.

In Sweden, a robust social state and additional government measures were set to soften the impact of unemployment. However, there was also deterioration in the labor market, especially among flexible and short-term employees. Thereby, unemployment is expected to increase to about 9%, which represents an increase of 2.1pp compared to the second quarter of 2019. Finally, Germany was able to maintain a stable labor market during the first wave. Thanks to the expansion of subsidized short-time work schemes, unemployment only increased 1.4pp compared to mid-2019.

The long-term cost and economic implications remain to be seen but we can begin by analyzing the impact that such policy responses had on consolidated government debt (%GDP) and the ratio of net lending to net borrowing. In terms of debt-to-GDP ratio, already highly indebted countries had larger increases. Italy ended the third quarter with an estimated 154,2% debt-to-GDP ratio, while Portugal also had a significant increase, having a debt-to-GDP ratio of 130,8% in the third quarter of 2020, caused by the fall in GDP and by the increased needs for financing to fund its economic measures. In contrast, both Sweden and Germany maintained relatively low levels of debt-to-GDP. However, while Germany still experienced a significant increase, from 59,6% at the end of the fourth quarter 2019 to 70% in 2020 third quarter, in Sweden this increase was very modest, with debt-to-GDP increasing only from 35,1% to 38,4%. Looking at the net lending to net borrowing ratio, all countries experienced increased borrowing needs, resulting from the urge to finance their policy packages.

Government consolidated Debt	2019-Q4	2020-Q1	2020-Q2	2020-Q3
European Union	77,6	79,4	87,7	89,8
Germany	59,6	61,0	67,4	70,0
Italy	134,7	137,6	149,3	154,2
Portugal	117,2	119,5	126,0	130,8
Sweden	35,1	35,8	37,1	38,4

Source: Eurostata data

Net Lending (+) /Net Borrowing (-)	2019-Q4	2020-Q1	2020-Q2	2020-Q3
European Union	-0,8	-2,7	-11,6	-5,6
Germany	1,2	0,3	-9,4	-4,6
Portugal	0,0	0,4	-8,2	-7,7
Sweden	0,8	-1,3	-6,7	-2,4

Source: Eurostata data

While our analysis focuses mainly on the impact of the first wave of COVID-19, it is important to note that the consequences felt will also have a long-term impact. As such, we have included in the appendix some of the main measures taken in subsequent quarters and in 2021.

7. Conclusions

We structured our report into two distinct, although strongly interconnected, approaches. In the first part, we had an epidemiologic approach in which we compared the different policies and measures implemented, relating them to the trends verified in health indicators during the first wave of COVID-19. In the second part, we focus on the economic impact of the pandemic, looking at the changes in quarterly GDP, in economic confidence, and on the behaviour of consumption and savings.

From the analysis of the containment measures, we saw that Italy experienced the quickest rise in cases, being unable to control the number of deaths and ICU patients, near reaching the collapse of its health system. Having seen the Italian experience, Portugal and Germany were able to implement quicker and tougher restrictions which allowed them to flatten their curves. That was especially relevant in Portugal which has a much more vulnerable health system in what comes to both, personnel and investment.

In Sweden, while the rise in cases was less extreme than in Italy, the political option of not implementing measures of similar restrictiveness led to a prolonged increase in cases which culminated in higher death rates. This becomes even more meaningful when we take into account that Sweden had the lower testing rates of all four countries. All in all, we verified that countries imposing faster, and tighter strategies were the most effective in containing the disease, resulting in lower death rates.

In terms of economic impact, all countries experienced sharp losses in economic confidence. As a result, savings rates grew in all countries, except in Sweden, where this increase was minimal. This may be explained by the fact that, besides the insecurity regarding the future, higher savings were motivated by the imposition of lockdown that limited the access to goods and services. In fact, Sweden was able to have part of the impact on GDP mitigated by its liberal approach to lockdowns. However, unlike other countries where savings grew a lot, in Sweden, the loss in consumption was mostly driven by a loss of disposable income and job destruction, especially among short-term workers. In Portugal and Germany, the impact on unemployment was successfully diminished by temporary work schemes and falls in consumption were translated into higher household savings rates. The impact on consumption and exports was worse in Italy and Portugal, namely due to the strong dependence on tourism, but with different dependencies on international spending.

Across the four countries analyzed, state loan guarantees and tax deferrals were widely adopted. Additional measures implemented in each country were tailored to the need of each economy, being therefore hard to compare across borders. Still, it is clear that Sweden focused on increased social support to struggling families and unemployment benefits, while Portugal and Italy focused more on businesses as a way to prevent unemployment. Germany, on the other hand, decided to balance the two, supporting businesses and containing unemployment while easing the access to social benefits. Nevertheless, while successfully alleviating businesses and consumers, these economic stimuli will most certainly create future constraints. This is especially true in countries like Portugal and Italy that experienced sizeable increases in their debt-to-GDP ratios, which further increase the budgetary constraints and the ability to effectively relaunch the economy in the future.

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Appendix

1.1. Italy

- **Jan. 31:** Italy suspends flights to China and declares a national emergency after two cases are confirmed in Rome.
- **Feb. 20:** Man, in Lombardy tests positive after previously leaving the hospital without a test. He is believed to have spread the disease before developing severe symptoms.
- **Feb. 21:** First death related to covid-19.
- **Feb. 22:** The government announced a new decree imposing the quarantine of more than 50,000 people from the 11 municipalities in Northern Italy, penalties for violations include fine or prison time.
- **Feb. 23:** Small towns hit by the outbreak are placed under quarantine. Carnival celebrations, soccer matches, religious services and other public events are canceled.
- **Feb. 24:** Police officers assigned to patrol the quarantined areas.
- **March 1:** Council of Ministers approved a decree to organize the containment of the outbreak by dividing national territory into three areas: red zone (full quarantine), yellow zone (partial lockdown), rest of territory (safety and preventative measures only).
- **March 4:** Schools and universities are closed nationwide for two weeks as the country reaches 100 deaths from covid-19.
- **March 8:** Several northern provinces are placed under lockdown.
- **March 9:** Lockdown is extended nationwide.
- **March 11:** All restaurants and bars are closed, the government also allocated 25 billion euros for the emergency.
- **March 15:** Expected to reopen but not able to reopen.
- **March 20:** Ministry of Health ordered tighter regulations banning open air sports, parks, and closing parks, playgrounds and public gardens.
- **March 22:** Factories are closed, and all nonessential production is halted.
- **March 24:** New decree imposing higher fines for the violation of restrictive measures.
- **April 1:** Period of lockdown extended until April 13, health minister announces restrictive measures had begun to show first positive results.
- **April 13:** Expected to reopen but not able to reopen again.
- **May 3:** Expected to reopen but not able to reopen again.
- **May 13:** Schools are to remain closed for the entire rest of the school year.
- **May 16:** Government begins to plan for restrictions to be eased.

- **May 18:** Most businesses could reopen, free movement was granted to all citizens within their region, movement across regions still banned for non-essential moves.
- **June 3:** Freedom of movement across regions and other European countries was restored, ending the lockdown.

1.2. Portugal

- **March 2:** first two covid-19 cases confirmed.
- **March 6:** Demand for masks and disinfectants increased by 353.4% and 136.9% respectively.
- **March 8:** Minister of Justice suspends visits to prisons across the country on weekends, some schools begin to close due to outbreaks.
- **March 10:** Government temporarily suspends flights to and from Italy.
- **March 11:** The number of new cases skyrockets to 18, double the amount in the previous days.
- **March 12:** Portuguese government declares the highest level of alert because of covid-19 and says alert will be maintained until April 9.
- **March 16:** Schools close for all academic levels.
- **March 18:** State of emergency is declared, which allows the government to narrow individual rights in the name of the greater good.
- **March 20:** Government orders mandatory self-quarantine on all travelers.
- **March 22:** Portugal in full lockdown: mandatory to stay at home and any violation will constitute a crime, all commercial establishments closed except for supermarkets, gas stations and pharmacies.
- **March 24:** Portuguese government admits that the country can no longer contain the virus.
- **March 26:** The country enters the "Mitigation Stage", health care sites are dedicated to fighting covid-19 including all Portuguese health center groups.
- **April 2:** Parliament approved the extension of the state of emergency, which is renewed for another 15 days, until April 17.
- **April 9:** Prohibition of circulation among municipalities during Easter weekend.
- **April 30:** Portuguese Ministers' council approved a plan to start releasing the country from the covid-19 containment measures.
- **May 1:** Government prohibits inter municipal travel for the weekend.
- **May 2:** State of emergency was canceled, country enters state of calamity.
- **May 4:** Portugal started the first phase of easing restrictions: small stores reopened.

- **May 15:** Border with Spain is to remain closed.
- **May 18:** Portugal entered the second phase of easing restrictions: Nurseries and secondary schools reopened, along with restaurants, cafes, medium-sized stores and some museums, all with mandatory usage of masks and distance rules.
- **June 22:** Authorities restore some lockdown measures in Lisbon: 8pm curfew for commercial spaces and restaurants not permitted to serve drinks with 10pm curfew.

1.3. Germany

- **Jan. 27:** First confirmed case of COVID-19 in Germany.
- **Feb. 7:** Government recommendations regarding hand hygiene, respiratory etiquette, and physical distancing when sneezing and coughing.
- **March 10:** Cancellation of events and public gatherings with 1000 or more people
- **March 16:** Schools, nurseries, universities, cultural institutions bars, clubs, theatres, discotheques, pubs, operas, concert halls, public libraries, cinemas, leisure parks (indoor and outdoor), museums, trade fairs, exhibitions, zoos, special markets, amusement arcades, casinos, betting shops, prostitution businesses, brothels, ports in public and private sport facilities, swimming pools, gym and playgrounds closed.
- **March 17:** Government recommendations on physical distancing, work from home if possible and avoid travelling within the country.
- **March 20:** The state of Bavaria declared a curfew.
- **March 22:** Country shutdown (lockdown is extended nationwide):
 - Public gatherings of more than two people will be banned.
 - Gastronomy business must close. Businesses offering food delivery and collection will be allowed to remain open.
 - Service providers such as hairdressers, cosmetic, massage and tattoo studio where a 2-meter distance between people is not possible must close.
 - Businesses and centers offering medical treatments may remain open.
 - In most federal states visitors to nursing homes and hospitals are not permitted except if they are for medical reason, in case of end-of-life or parents of sick children. In all other federal states, there is a limitation on visitors to hospitals and nursing homes of maximum one visit per day for one hour.
- **April 1:** Measures were extended until April 19, through the end of the Easter holiday break.

- **April 2:** Many federal states have implemented catalogues of fines for those breaking the rules.
- **April 15:** Announcement of a plan to cautiously lift some of the lockdown measures
- **April 20:** Car dealers, bicycle shops and bookstores re-opened.
- **April 27:** Face masks mandatory in public transport and retail.
- **May 4:** Schools gradually reopen for students preparing to leave secondary and primary schools. Hairdressers could open.
- **May 6:** Easement of the restrictions: All stores could reopen, seniors in care homes in some states could start receiving visitors, in most states. Religious services resumed, reopening of cinemas, theaters and restaurants unclear, each state reviewing rules.
- **May 11:** Schools reopen in the state of Bavaria.

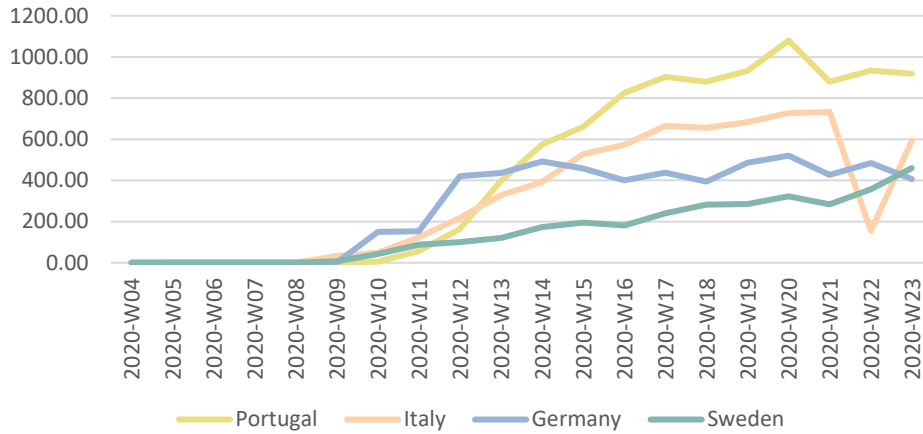
1.4. Sweden

- **Jan. 31:** First case of COVID-19 in Sweden.
- **Feb. 1:** A statement was issued saying that the virus was a danger to the public and harmful to the community, however it states that the risk for infectivity in the country was very low.
- **Feb 26:** Second case of COVID-19 in Sweden.
- **March 2:** The risk of detecting new cases in Sweden is considered "very high" and the risk of general spread in the country is "moderate". Several labs in Sweden test people for COVID-19 who had been abroad with the aim of isolating those who were infected and tracing the disease.
- **March 4:** Healthcare encouraged to increase testing.
- **March 6:** Single cases of COVID-19 cases in elderly care in Stockholm reported.
- **March 10:** The Public Health Agency of Sweden urges everyone with respiratory symptoms to stay home.
- **March 11:** The government prohibits all public gatherings with over 500 people.
- **March 14:** Ministry for Foreign Affairs advises against international travel until July 15. First death from COVID-19 in Sweden.
- **March 16:** People over 70 years old are urged to avoid social contacts. Everyone should work from home when possible.
- **March 17:** Upper secondary schools, Folk High Schools and universities are urged to move to online learning, but elementary schools are kept open.

- **March 19:** citizens are advised to avoid travel within Sweden. Unnecessary trips to Sweden were prohibited.
- **March 21:** Swedish military deploys first field hospital.
- **March 25:** Only table service is allowed in restaurants and bars. Drinking or ordering at the bar is not allowed.
- **March 27:** Public gatherings of 50 or more are prohibited.
- **March 30:** Visitor to residential care homes for older people are banned.
- **April 2:** New temporary regulation regarding schools is introduced. For example, schools can partly be open for practical examinations and to pupils with special needs.
- **May 18:** Gradually lower pressure on COVID-19 intensive care, and more focus on COVID-19 rehabilitation and how to handle healthcare during summer.
- **May 29:** Ease of restrictions announced.

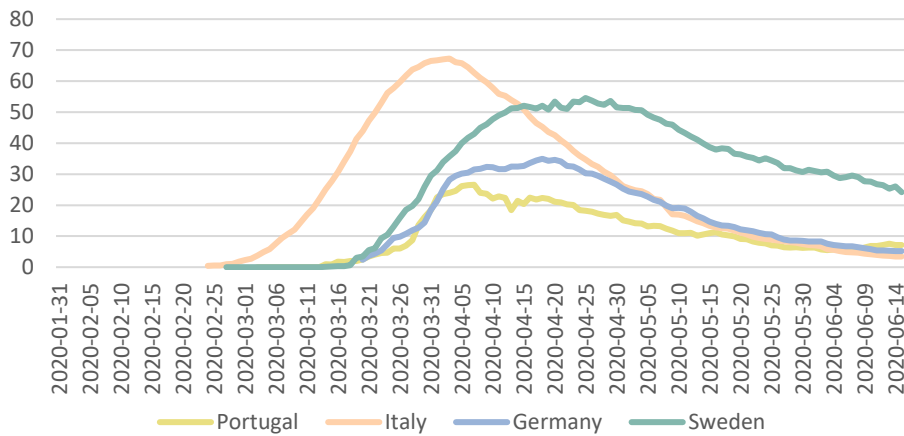
2. COVID-19 Trend

Appendix 2.1.: Testing Rates
(tests per 100 000 population)



Source: European Centre for Disease Prevention and Control

Appendix 2.2.: ICU Patients
(per million population)



Source: Our World in Data

3. Further Economic Measures

3.1. Sweden

For 2021 and 2022, the Government proposed extensive fiscal stimulus measures and reforms worth SEK 105 billion and SEK 85 billion (2.1 and 1.7 percent of 2019 GDP, respectively). On November 9, the Government proposed the extension of short-term lay-offs by seven months (until June 30, 2021), reorientation support and turnover-based support to sole traders by three months (until October 2020), and tax deferrals by one year (until March 2022). On December 10, the Government proposed to extend the state credit guarantee program for loans to companies until June 30, 2021.

3.2. Italy

On October 27, the government adopted a €5.4 billion (0.3 percent of GDP) package that seeks to provide quick relief to the sectors affected by the latest round of COVID containment actions. Measures include grants to 460 thousand SMEs and the self-employed, and further income support for families. The government has also extended social contribution exemptions for affected businesses. In mid-January 2021, the government has announced another stimulus package of about €32bn aiming at extending supports for business and workers affected by the pandemic as well as kickstarting the economy in early 2021.

3.3. Portugal

The 2021 state budget adopted on November 26 foresees further support to the national health system, employment and incomes of households and firms. Key measures include:

- Income support measures, such as temporary reduction of PIT withholdings (0.1 percent of GDP);
- Expanded subsidy for employment and resumption of activity (0.5 percent of GDP) and extended support for workers' lost income and coverage for those without access to unemployment protection (0.2 percent of GDP);

- Staff reinforcement in the civil service, particularly in health and education (0.1 percent of GDP) and an extraordinary risk subsidy in the amount of 20 percent of base salary for health professionals at the forefront of the response to COVID-19; and
- VAT tax rebate to stimulate consumption in the catering sectors, accommodation and culture by returning the VAT paid on consumption in these sectors (0.1 percent GDP).

Further policy measures for the first half of 2021 adopted on December 10 and December 22, including towards carrying out the 2021 state budget, comprise

- Employment support measures via an extension of the support for progressive resumption of economic activity for micro, small and medium-sized enterprises (50% reduction in social contributions, with wages for hours not worked paid at 100%, up to the limit of three monthly minimum wages), and renewed incentives for the normalization of activity (up to 2 national minimum wages per worker) for micro-companies with a drop in turnover above 25 percent;
- Enlarged and more flexible business support programs, such as an expansion of Apoiar.pt program (non-repayable subsidies) to medium- and large-size enterprises and easing of the access qualifications;
- Support for payment of non-housing rents (for businesses with a drop-in turnover above 25 percent), via non-repayable subsidies up to a limit of 50% of the rent;
- Tax deferrals, specifically monthly or quarterly VAT in the first half of 2021 for businesses with a drop-in turnover above 25 percent;
- New and expanded credit lines, targeting SMEs (€750 mln), exporters and tourism sector (€1,050 mln, with loans up to €4,000 per worker, of which 20 percent can be converted into a non-refundable subsidy if jobs are maintained), large companies in affected sectors (750 mln), tourism sector, including microcredit to small companies (€400 mln);
- Extension of tax benefits for investment and the entertainment and cultural sectors

3.4. Germany

In August, the government extended the maximum duration of short-term work benefits from 12 to 24 months. At the same time, through the newly created economic stabilization fund (WSF) and the public development bank KfW, the government is expanding the volume of available guarantees and access to public guarantees for firms of different sizes, credit insurers, and non-profit institutions, some eligible for up to 100 percent guarantees, increasing the total volume by at least €757 billion (24 percent of GDP). The WSF and KfW also include facilities for public equity injection into firms with strategic importance. In addition to the federal government's fiscal package, many local governments (Länder and municipalities) have announced own measures to support their economies, amounting to €141 billion in direct support and roughly €70bn in state-level loan guarantees. Parallel to the renewed lockdown to combat the second wave of COVID infections, the government introduced additional fiscal measures and enhanced existing ones to support affected businesses, including revenue compensation (of up to 75 percent), as well as public loan guarantees and basic income provision.

