Working Paper

CEPII

Covid 19:
a New Challenge for the EMU?

Anne-Laure Delatte[†] & Alexis Guillaume[‡]

Appendix

† CNRS (Leda), Cepii, CEPR. Email: anne-laure.delatte@cepii.fr

‡ University Clermont Auvergne and CEPII. Email: alexis.guillaume@cepii.fr

RESEARCH AND EXPERTISE
ON THE WORLD ECONOMY

Figure 1 – Sovereign Bond Spreads in the Eurozone
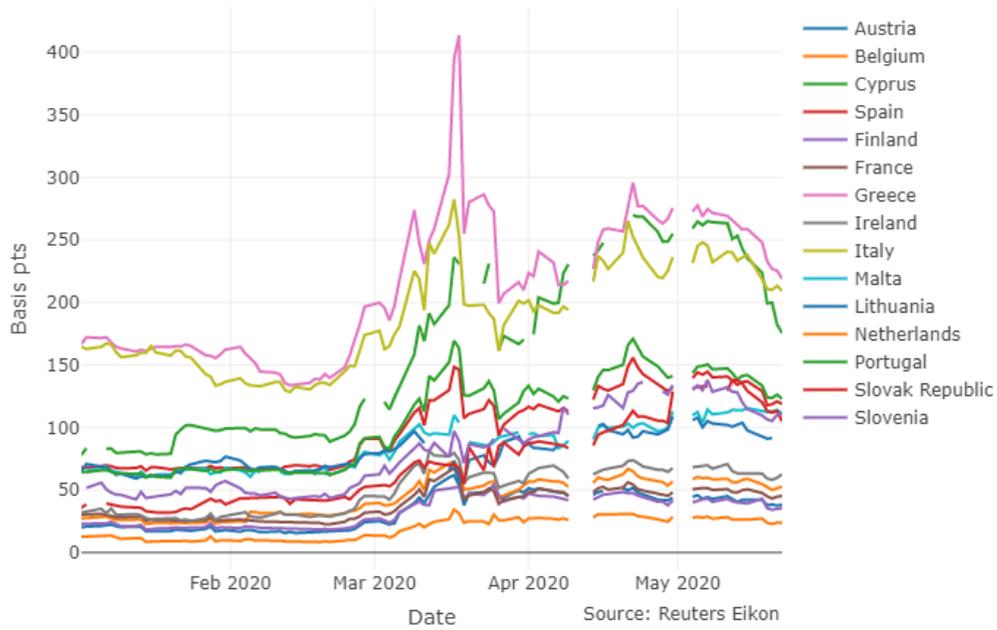
This Figure shows the 10 year bond yield spread against German bond since January 2 2020. Jumps are due to missing data in the original database. Author's calculations with Eikon Reuters data.

A   Figures

Figure 2 – Sovereign Bond Spreads in the Eurozone
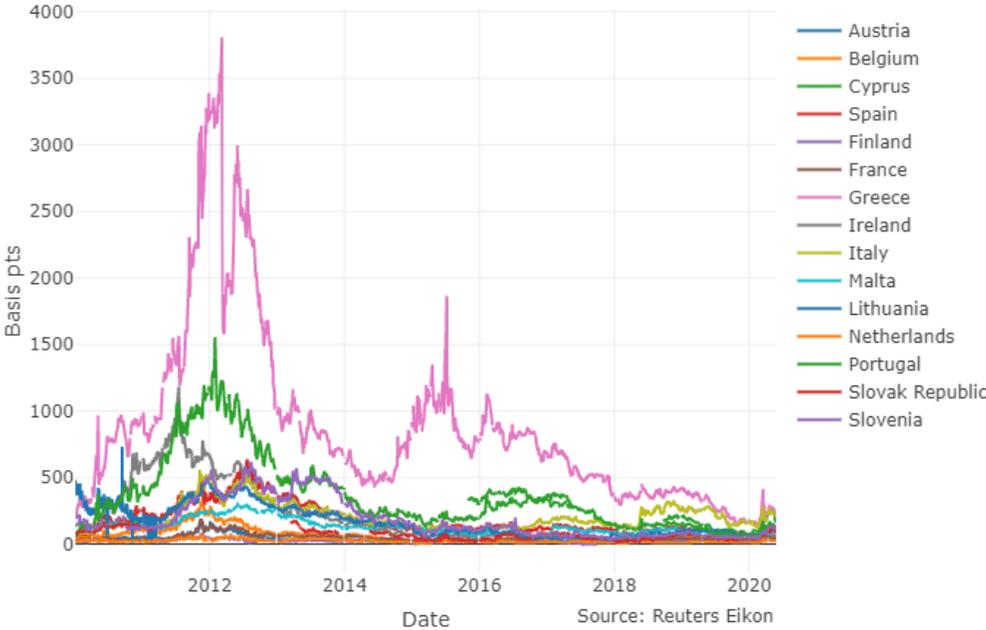
This Figure shows the 10 year bond yield spread against German bond since January 2 2010 of euro area members mostly affected in 2010. We exclude Greece which spread level dwarfs the others. We observe that the increase in bond spreads during the pandemic are limited compared to 2010. Source: Author's calculations with Eikon Reuters data.

Figure 3 – Number of death due to Covid 19 per 100,000 people
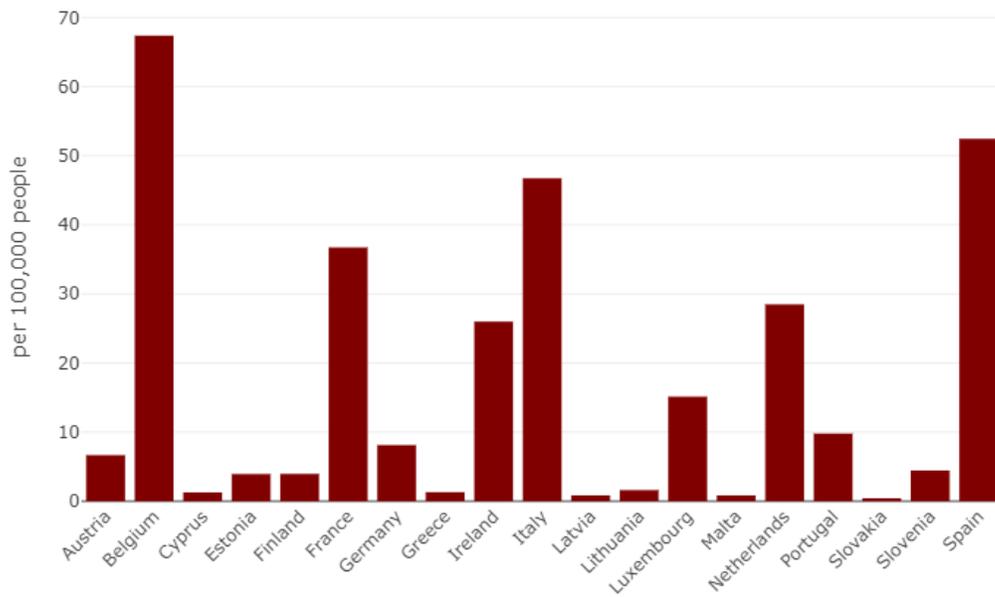
This Figure shows the number of death due to Covid 19 per 100,000 people as of May 1. Source: John Hopkins University Corona Virus Resource Center.

Figure 4 – Stringency Index
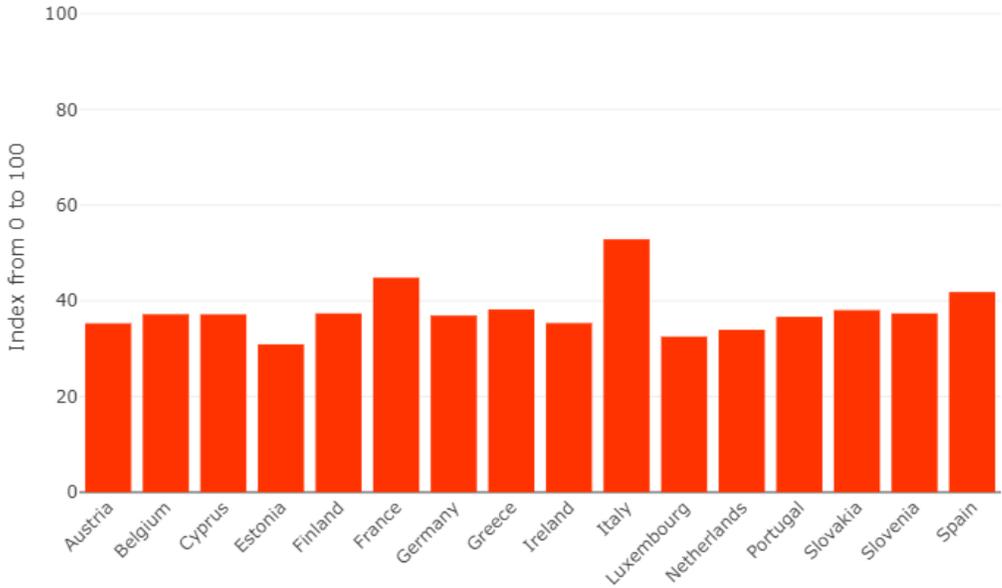
This Figure shows the Stringency Index, a number between 0 to 100 that reflects the overall stringency of the governments response. It aggregates eight containment and closure indicators as well as public information campaigns. Source: Oxford CGRT

Figure 5 – Public Debt-to-GDP
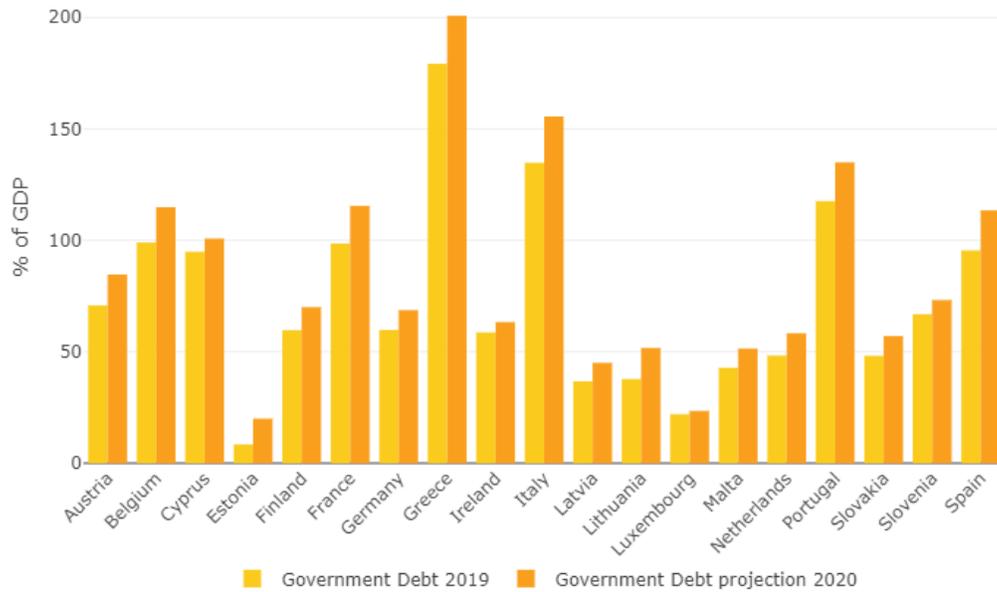
This Figure shows the level of public debt-to-gdp in 2019 and the projected debt-to-gdp in 2020. Source:IMF Fiscal Monitor 2020

Figure 6 – Fiscal Stimulus Plans
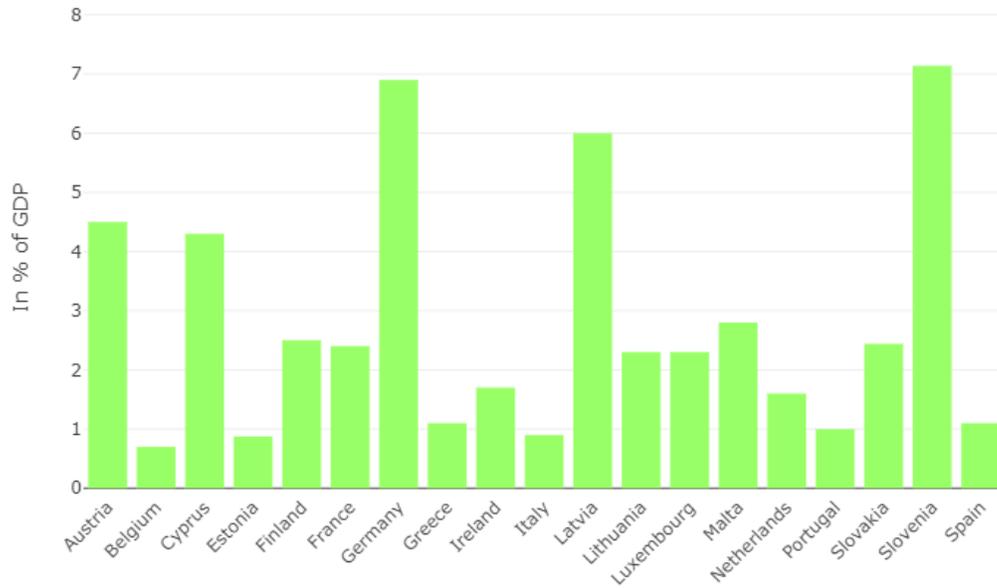
This Figure shows the different domestic fiscal packages adopted by the EA governments as a percentage of GDP (as of May 1st, 2020). The plans correspond to government spending and cancellation of tax. Source:IMF Fiscal Monitor 2020

Figure 7 – Non Performing Loans
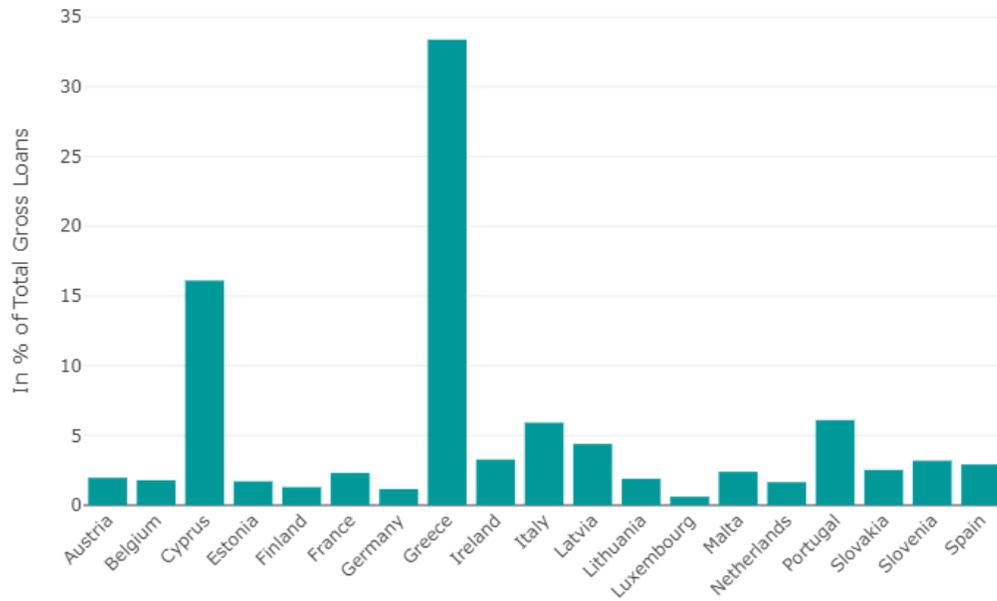
This Figure shows the level of non performing loans in the banking sectors as a percentage of total gross loans and advances. Source:ECB

B Data and sources

1. **Stringency Index:** It reports a number between 0 to 100 that reflects the overall stringency of the governments response. It aggregates eight containment and closure indicators as well as public information campaigns. This is a measure of how many of the these nine indicators a government has acted upon. It does not take into account any economic indicators or health system policies beyond public information campaigns. Source: Oxford CGRT

2. **Number of confirmed COVID-19 cases and deaths**. Source: Center for Systems Science and Engineering (CSSE) at Johns Hopkins University

3. **Euronext 100 price index**: Top 100 companies admitted to listing on Euronext, ranking and weighting based on market capitalization. Source: Eikon Reuters

4. **RVol**: the realized volatility of Euronext price index computed as the absolute daily rate changes.

5. **Public debt in 2019, Projected public debt in 2020**. Measured in percentage of GDP. Source:IMF Fiscal Monitor 2020

6. **FiscalStim:** we use two alternative measures of the domestic fiscal stimulus package; the first one is based on data of the IMF Policy Responses to COVID-19 collected May 1st 2020. More precisely, we collect the data reported in the fiscal section for each country, and we keep only the data corresponding to government spending and cancellation of tax (and not deferrals or credit guaranty);

7. **PolicyTracker:** is the COVID-19 Response Tracker (CFRT) computed by Yale University which tracks 13 economic policy responses by country and by date (Credit Facilities, Credit Guarantees, Emergency Liquidity, Fiscal Policy, Fiscal Stimulus, Interest Rate Change, Loan Guarantees, Macroprudential Policy, Market Liquidity, Monetary Policy, Swap Lines). We construct a dummy equal to the cumulative score of a country based on their responses. More precisely, we imput one the day one country implements one of the 13 policies; we then compute the cumulative score over the period. Since it is not weighted by the size of the intervention, the variable captures policy reactivity and the broadness of the policy range.

8. **EUBudget and EULoans**: the cumulative amounts of existing and additional allocated EU budget funds and package of loans to support member states. The governance process implies that EU level policy measures are announced several times at several different dates

by the European Commission, the European Parliament and the European Council. We use the date of announcement by the European Commission for budget amounts, the date of announcement by the European Investment Bank and the official conclusions of European Council meetings for loans amounts. Sources: We collect the information on the press release of the European Commission and the meeting calendar of the European Council. We cross-check all volumes and date information on Financial Times articles tagged with "Eurozone Economy" to make sure that all information are consistent with market news.

9. **PSPP, PEEP, RemAPP**: the daily variation of ECB asset securities purchase under the Public Sector Purchase Program, the Pandemic Emergency Purchase Program and the remaining programs included in the Asset Purchase Program respectively. We use a linear interpolation to transform weekly purchase data into daily data. Source: ECB Minimum Reserves and Liquidity

10. *D*0312**:** a dummy equal to one the day of the first ECB announcement of a total of Euros 120 billions securities purchase in addition to the APP and zero instead.

11. *D*0318**:** a dummy equal to one from the day of the second ECB announcement of a total of Euros 750 billions securities purchase in addition to the APP and zero before.

12. *D*0407: a dummy equal to one the day the ECB announced the easing of collateral requirement rules.

13. *D*0409**:** a dummy equal to one on April 9 2020, the day the Eurogroup agreed on a Euros 540 billion loans package and disagreed on the issue of Corona bonds.

14. *D*0505: a dummy equal to one on May 5, the day the German Court of Justice ruled on the PSPP program and declared it illegal and zero instead

15. *D*1805: a dummy equal to one on May 18, the day Angela Merkel and Emmanuel Macron announced a proposal of EUR 500 bn EU recovery fund to be discussed at the following European Council and zero instead.

16. **Non Performing Loans:** in percentage of total gross loans and advances. Source:ECB

17. **Median age**. Source: World Health Organization

18. **Number of hospital beds:** per 100,000 people in 2018. We also include its variation between 2000 and 2018.Source: OECD

19. **Health expenditures:** as a percent of GDP in 2018. We also include its variation between 2000 and 2018. Source: World Health Organization

C   Additional Tables

Table 1 – Determinants of Sovereign Bond Spreads: Standardized Coefficients

	Largely Indebted Countries					Rest of the Sample			
	Unstandardized coefft	t		Stdr marginal coefft	Average contribution	Unstandardized coefft	t	p-value	Stdr coefft
StringencyIndex	6.47469	1.291	0.219	11.191	0,00	3.44224	0.964	0.353	6.409
Rvol	206.35959	3.172	0.007	5.675	7.106	52.02491	1.814	0.093	1.431
FiscalStim	-5.39388	-0.721	0.484	-12.443	11.543	4.35786	4.26	0.001	11.543
D_1203	7.6031	0.767	0.457	7.603	7.992	7.9915	2.489	0.027	7.992
D_1803	-35.22481	-1.744	0.105	-35.225	-53.367	-18.14184	-4.123	0.001	-18.142
D_2003	12.04948	1.115	0.285	12.049	0,00	-3.61799	-0.791	0.443	-3.618
D_0704	-7.53103	-1.633	0.127	-7.531	0,00	-3.51785	-1.09	0.296	-3.518
D_0904	-19.04473	-3.304	0.006	-19.045	-25.165	-6.12029	-2.034	0.063	-6.12
D_0505	-3.47691	-0.726	0.481	-3.477	7.487	7.48674	1.859	0.086	7.487
D_1805	-5.92515	-1.784	0.098	-5.925	-5.925	-0.80825	-0.399	0.696	-0.808
RemAPP	2838.08423	0.863	0.404	2.554	0,00	50.20733	0.067	0.948	0.045
PEPP	-1.80416	-2.554	0.024	-1.718	-1.718	-0.69958	-1.309	0.213	-0.666
PSPP	-3579,00	-1.873	0.084	-2.147	-2.147	-984.67315	-1.331	0.206	-0.591
BudgetUE	0.19533	0.117	0.909	1.018	0,00	1.18678	1.235	0.239	6.185
LoansUE	5.82041	2.727	0.017	36.074	36.074	0.87383	0.999	0.336	5.416
HealthExp					-21.205	-131.62411	-3.167	0.007	-21.205
NPL					25.467	28.79542	3.063	0.009	25.467
Debt19					17.772	41.8847	1.765	0.101	17.772
Cons						120.21998	1.817	0.092	

This Table shows the standardized and non-standardized coefficients, β'_k and β_k respectively, of Eq. (1). $\beta'_k = \beta_k \times s_{x_k}$ for continuous explanatory variables with s_{x_k} the standard deviation of the explanatory variable k; $\beta'_k = \beta_k$ for dummies. In the sample of largely indebted countries, the standardized coefficients represent the marginal contribution of being included in this sub-sample so we also compute the average contribution of each explanatory variable by summing the standardized coefficient of largely indebted countries and of the rest of the sample