

Do epidemics impose a trade-off between freedom and health? Evidence from Europe during Covid-19.

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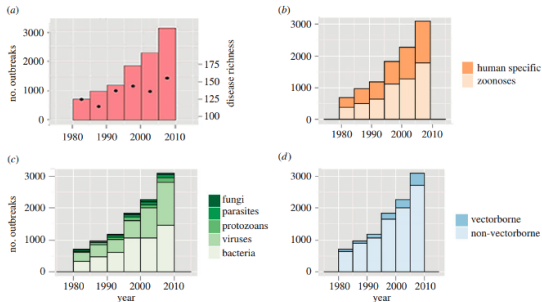
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Motivation

Figure: Increasing outbreaks of infectious diseases



Source: Smith et al., 2014, Global rise in human infectious disease outbreaks, Journal of the Royal Society Interface, Volume: 11, Issue: 101

Epidemics are becoming part of "the new normal", so **how do we deal with them, without coming at the expense of the economy, society and wellbeing?**

Motivation

Two policy options (Harari, 2020)

- centralized control and enforcement, as in China
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- economy contracted more in European countries that introduced more stringent policies (-23% correlation)
- PTSD, depression, anxiety, insomnia, confusion and stress increased heavily

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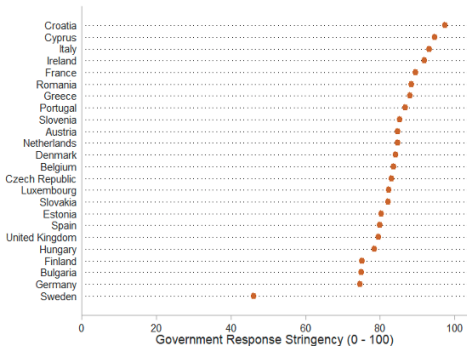
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What happened in Europe?

Differences in Stringency in Europe



Source: [Our World in Data](#), 2020.

Our Contribution

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Why trust?

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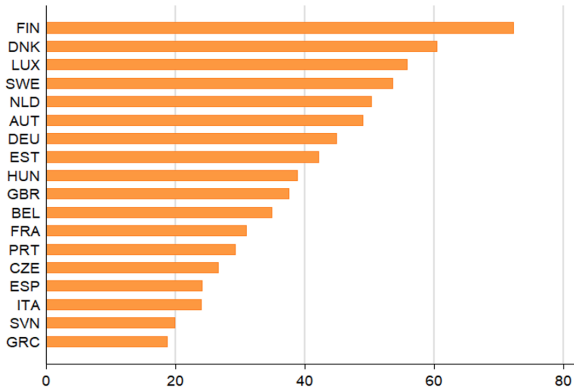
We hypothesise that **TRUST in others and institutions** are at the root of differences in containment policies in European democratic countries.

Why trust?

- Trust in others solves large-scale collective problems and increases cooperation (Putnam 2000), necessary to limit contagions without limiting freedom
- Governments in countries where trust in others is low may have little confidence in citizens' cooperation → more coercive measures
- Trust in institutions is a determinant of citizens' compliance with public health policies
- In countries where trust in institutions is low, governments expect low citizens' compliance → more coercive measures

Differences in trust in Europe

Figure: Index of confidence built on two trust questions per European country



Source: own elaboration of EQLS data, 2016

Main findings

What is the relationship between trust and the stringency of Covid-19 containment policies?

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Our finding: countries with higher pre-existing trust adopted less stringent policies, without sacrificing health outcomes.

- less stringent governments' policies
- were more effective in controlling the spread of contagion
- more effective in reducing mortality

Data

Period of analysis is the first wave of the Covid-19 pandemic until May 2020, in 27 European countries.

Main dependent: Government response stringy measured at the peak of contagions (0-100)¹ DCGRT

Trust: Index of confidence built with PCA. ($\alpha = 0.95$). PCA

- "would you say most people can be trusted or that you can't be too careful in dealing with people?"
- "how much you personally trust each of the following institutions" (government, parliament, local authorities, police, the press and judicial system.)

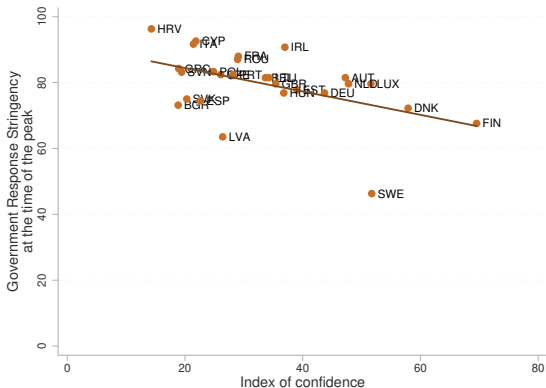
Other dependent variables:

- new deaths at the time of the peak
- new positive cases at the time of the peak
- rate of decrease of new contagions

¹Our World in Data: <https://ourworldindata.org/grapher/covid-stringency-index?tab=table>

Response stringency and Confidence

Figure: Countries where trust in others and institutions is high adopted less stringent policies.



Source: own elaboration of data from Oxford Covid-19 Government Response Tracker (OxCGRT) and the 2016 wave of the European Quality of Life Study (EQLS).

Correlation coefficient = -0.51 (significant at 1%)

Method

$$GovtResponse_c = \alpha + \beta_1 \cdot Confidence_c + \beta_2 \cdot X_c + \varepsilon_c \quad (1)$$

- *GovtResponse*: policy response stringency index as measured in each country
- *Confidence*: index of confidence in others and in institutions observed in 2016
- *X*: control variables that account for possible confounding factors affecting governments' policy decisions

$$Y_c = \alpha + \gamma_1 \cdot Confidence_c + \gamma_2 \cdot Z_c + \varepsilon_c \quad (2)$$

- *Y*: the speed of decline of new contagions, mortality rate, and new positive cases
- *Confidence*: index of confidence in others and in institutions observed in 2016
- *Z*: control variables - logarithm of GDP per capita, the Gini index, the expected number of life years free from chronic diseases, the government response stringency one week before the peak of new infections, a dichotomous variable identifying countries with young democracies

Results: government response stringency

	Government Response stringency
Index of confidence	-0.474*** (-2.68)
GDP per capita in 2018 (constant 2010 US Dollars, log)	0.0543 (0.14)
Gini index	0.149 (0.73)
Total deaths before the lockdown (x 1 million)	-0.0707 (-0.53)
Total number of ICU beds (x 100,000)	0.0898 (1.13)
Average number of life years with chronic disease	0.185 (1.23)
Young democracies	-0.555* (-1.80)
Constant	0.179* (1.83)
Observations	27
Adjusted R^2	0.212

Note: OLS estimates with robust standard errors. t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

[Full table](#)

Results: measures of efficacy

	Speed of decline Model 1	New deaths Model 5	New cases Model 9
Index of Confidence	-0.873** (-2.61)	-0.773* (-1.74)	-0.169* (-1.85)
Log GDP (constant 2018 dollars)	0.0916 (0.05)	1.187 (0.61)	2.242*** (4.09)
Gini Index	0.0686 (0.18)	-0.137 (-0.16)	0.620** (3.12)
Government response stringency one week before the peak	-0.0470 (-0.19)	-0.381 (-1.02)	-0.136 (-1.34)
Average number of life years with chronic disease	-0.0362 (-0.19)	-0.321 (-1.29)	-0.0354 (-0.55)
Eastern European countries	-0.903 (-1.04)	-1.653 (-0.88)	0.461 (1.13)
Constant	0.393 (0.21)	0.134 (0.06)	-1.648** (-3.25)
Observations	19	27	27
R^2	0.466	0.332	0.789

Note: OLS estimates with robust standard errors. t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

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Results

Quantitative evidence that pre-existing levels of trust in others and in institutions are negatively related to governments' policy stringency (-0.474^{**})

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This did not come at the expense of public health: higher trust correlates with faster decline of new contagions after the peak, less new death, and less new positive cases, holding stringency constant.

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Results are robust to a number of different specifications of the confidence index, and a range of different controls.

Conclusions

Societies where trust is high, faced the epidemics

- with less stringent policies
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- faster
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Our results suggest that the trade-off between freedom and health imposed by epidemics depends on the level of trust prevalent in a country: **the more people trust others and institutions, the more the trade-off fades.**

Thank you for your attention

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Results

Table: Association between the index of confidence and government response stringency after controls. Results are robust to various specifications of the index of confidence and to the inclusion of a varied list of control variables.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	str7
Index of confidence	-0.274** (-2.68)	-0.474*** (-3.88)	-0.423*** (-4.00)	-0.429** (-3.52)	-0.429** (-3.50)	-0.421** (-2.93)			
GDP per capita in 2018 (constant 2010 US Dollars, log)		0.0543 (0.14)	-0.0373 (-0.09)	0.504 (1.39)	0.344 (0.56)		0.101 (0.27)	0.0744 (0.19)	0.0495 (0.12)
Gini index		0.149 (0.73)	-0.0314 (-0.12)	0.145 (0.73)	0.0913 (0.35)	0.0982 (0.42)	0.0784 (0.45)	0.0482 (0.28)	0.171 (0.82)
Total deaths before the lockdown (x 1 million)		-0.0707 (-0.53)	-0.0460 (-0.43)	0.0102 (0.10)	-0.000161 (-0.00)	-0.0672 (-0.48)	-0.0583 (-0.47)	-0.0177 (-0.16)	-0.0984 (-0.63)
Total number of ICU beds (x 100,000)		0.0898 (1.13)	0.143 (1.29)	0.129 (1.58)	0.138 (1.37)	0.111 (1.01)	0.0538 (0.67)	0.125 (1.60)	-0.0487 (-0.47)
Average number of life years with chronic disease		0.185 (1.23)	0.161 (1.17)	0.162 (1.10)	0.163 (1.08)	0.172 (1.20)	0.137 (1.01)	0.133 (1.00)	0.147 (0.93)
Young democracies		-0.555* (-1.80)	-0.476 (-1.38)			-0.491 (-1.41)	-0.546* (-1.88)	-0.427 (-1.47)	-0.627* (-1.83)
Share of people who meet rarely			-0.159 (-1.21)						
Eastern European countries					-0.148 (-0.40)				
public debt as a share of GDP (2019)						0.0766 (0.75)			
Index of confidence ₁							-0.493*** (-3.99)		
Index of confidence ₂								-0.473*** (-4.14)	
Trust in others									-0.456** (-3.08)
Constant	0.179* (1.83)	0.523 (0.98)	0.426 (0.71)	-0.168 (-0.50)	-0.00750 (-0.01)	0.494 (1.45)	0.423 (0.85)	0.350 (0.69)	0.599 (1.06)
Observations	27	27	27	27	27	27	27	27	27
Adjusted R ²	0.212	0.311	0.350	0.288	0.255	0.326	0.338	0.362	0.176

Note: OLS estimates with robust standard errors. † statistics in parentheses. * $p < 0.1$. ** $p < 0.05$. *** $p < 0.001$.

Results

Table: Association between the index of confidence and three measures of efficacy in facing the epidemic: speed of decline of new contagion and the number of new deaths and new contagions at the peak.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Index of confidence	-0.373** (-2.61)				-0.773* (-1.74)				-0.169* (-1.85)			
GDP per capita in 2018 (constant 2010 US dollars, log)	0.0916 (0.05)	0.461 (0.26)	0.501 (0.32)	0.164 (0.07)	1.187 (0.61)	1.805 (0.98)	1.774 (0.99)	1.504 (0.78)	2.242*** (4.09)	2.257*** (4.07)	2.209*** (3.91)	2.309*** (4.42)
Gini index	0.0686 (0.18)	-0.0279 (-0.06)	0.0178 (0.04)	0.0781 (0.17)	-0.137 (-0.16)	-0.280 (-0.29)	-0.315 (-0.35)	-0.111 (-0.11)	0.620** (3.12)	0.589** (2.90)	0.607** (2.79)	0.586** (3.17)
Government response stringency one week before the peak	-0.0470 (-0.19)	0.00421 (0.02)	-0.0266 (-0.11)	0.120 (0.46)	-0.381 (-1.02)				-0.136 (-1.34)	-0.138 (-1.35)	-0.129 (-1.29)	-0.138 (-1.39)
Expected number of life years with chronic disease	-0.0362 (-0.19)	-0.109 (-0.49)	-0.148 (-0.65)	-0.0415 (-0.19)	-0.321 (-1.29)	-0.409 (-1.62)	-0.413 (-1.59)	-0.401 (-1.68)	-0.0354 (-0.55)	-0.0533 (-0.90)	-0.0532 (-0.87)	-0.0523 (-0.83)
Eastern European countries	-0.903 (-1.04)	-0.721 (-0.81)	-0.600 (-0.72)	-0.664 (-0.63)	-1.653 (-0.88)	-1.029 (-0.60)	-1.079 (-0.67)	-0.832 (-0.46)	0.461 (1.13)	0.462 (1.12)	0.495 (1.16)	0.463 (1.19)
Index of confidence ₁		-0.854** (-2.56)				-0.658 (-1.53)				-0.175* (-1.86)		
Index of confidence ₂			-0.815** (-2.91)				-0.745* (-1.88)				-0.133 (-1.28)	
Trust in others				-0.691 (-1.36)				-0.309 (-0.69)				-0.201** (-2.42)
Constant	0.393 (0.21)	-0.103 (-0.05)	-0.227 (-0.13)	0.365 (0.15)	0.134 (0.06)	-0.416 (-0.20)	-0.400 (-0.20)	-0.113 (-0.05)	-1.648** (-3.25)	-1.688** (-3.32)	-1.641** (-3.23)	-1.733** (-3.44)
Observations	19	19	19	19	27	27	27	27	27	27	27	27
R ²	0.466	0.461	0.488	0.305	0.332	0.294	0.325	0.238	0.789	0.790	0.780	0.797

Note: OLS estimates with robust standard errors. *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

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Descriptive statistics

Table: Descriptive statistics

Variable	mean	sd	min	max	obs
Government response stringency at the time of the peak	79.59	9.967	46.30	96.30	27
Index of confidence	33.59	13.76	14.29	69.54	27
Confidence in the government	24.98	12.77	8.487	56.34	27
Confidence in the parliament	24.33	15.50	7.270	61.29	27
Confidence in local authorities	40.58	13.90	11.67	66.59	27
Confidence in police	52.32	16.64	22.52	91.10	27
Confidence in the press	26.10	10.29	10.43	61.24	27
Confidence in juridical system	34.45	19.33	10.87	79.61	27
Trust in others	32.37	17.61	9.101	78.62	27
Rate of decrease of new contagions	-6.826	5.336	-22.50	-2.200	19
New deaths at the time of the peak (per one million)	4.242	6.384	0	27.12	27
New cases at the time of the peak (per one million)	62.62	61.67	8.868	265.0	27
Government response stringency one week before the peak	32.12	20.71	0	70.84	27
Total deaths before the lockdown (per one million)	0.821	1.368	0	4.891	27
Total number of ICU beds (per 100,000)	11.90	6.368	4.200	29.20	27
GDP per capita in 2018 (constant 2010 US dollars, log),	10.33	0.617	9.065	11.61	27
Gini index	31.85	3.621	25.40	37.40	27
Expected number of life years with chronic disease	18.59	4.378	9.163	25.88	27
Share of people that rarely meets others	17.55	6.736	7.616	28.77	27

Countries

Table: The list of countries available for the analysis varies depending on the dependent variable

Austria	Belgium	Bulgaria*	Croatia*
Cyprus*	Czech Republic	Denmark	Estonia
Finland	France	Germany	Greece
Hungary	Ireland*	Italy	Luxembourg
Netherlands	Portugal	Romania*	Slovakia*
Slovenia	Spain	Sweden	United Kingdom

* Data on speed of decline of new contagions is not available.

PCA

Table: Principal components/correlation

	Eigenvalue	Difference	Proportion	Cumulative
Trust in others	5.57306	4.96316	0.7962	0.7962
Trust in local authorities	.609897	.249217	0.0871	0.8833
Trust in Government	.36068	.0948031	0.0515	0.9348
Trust in police	.265877	.128519	0.0380	0.9728
Trust in press	.137358	.103424	0.0196	0.9924
Trust in judicial system	.0339336	.0147361	0.0048	0.9973
Trust in Parliament	.0191975	.	0.0027	1.0000

Table: Principal components (eigenvectors)

	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Unexplained
Trust in others	.3762374	-.1222118	.6160532	-.4124211	.3319554	.2885711	-.3169058	0
Trust in local authorities	.3797146	-.0663725	-.5787159	.2189593	.6554693	-.1781435	.084742	0
Trust in Government	.3960443	.1598452	-.3471788	-.1493004	-.6223762	.3822085	-.3759512	0
Trust in police	.3665981	-.4053516	.2954157	.6380707	-.2303055	.2385113	-.3113888	0
Trust in press	.3073862	.8286617	.2522926	.3341093	.0697803	-.1966197	.004938	0
Trust in judicial system	.4049941	-.3145648	-.0356096	-.016018	-.1133136	-.7983909	.2919522	0
Trust in Parliament	.405599	.0718846	-.1133279	-.4905662	-.0454275	-.0770278	-.754206	0

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Oxford Covid-19 Government Response Tracker

The Oxford Coronavirus Government Response Tracker (OxCGRT) project calculate a Stringency Index, a composite measure of nine of the response metrics.

The nine metrics used to calculate the Stringency Index are:

- school closures
- workplace closures
- cancellation of public events
- restrictions on public gatherings
- closures of public transport
- stay-at-home requirements
- public information campaigns
- restrictions on internal movements
- international travel controls

The index on any given day is calculated as the mean score of the nine metrics, each taking a value between 0 and 100. A higher score indicates a stricter response (i.e. 100 = strictest response).

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