

The impact of political orientation on the stringency of COVID-19 lockdown measures

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Governments' responses to tackle the Covid-19 pandemic have been responding to several scenarios up to now, at times the situation required sharp and targeted interventions while in other cases a milder, gentler solution was enough. Besides, how is it possible to evaluate the extent to which the implementation of these policies resulted in the degree of stringency experienced by countries? Does a linkage between stringency and the ideological dimension or democracy type subsist? This paper-research propose itself to investigate how the level of stringency (complex indicator acquired from Our World in Data website) in some selected democracies, enforced by different executives in the diverse areas of their competences, has been influenced by the incumbent cabinet's position on the authoritarian-libertarian scale (score gathered from ParlGov website). Furthermore, by considering Lijphart's concept of executive-parties dimension (retrieved by Patterns of Democracy, 2nd edition), it is going to be examined whether a significant relationship does exist between the degree of stringency a government adopts and the level of consensualism the country may be classified into. The research which is going to be conducted will analyze, therefore, the performance of countries' cabinets reflected in the mentioned aspects and will offer some probable hints and supplementary advancement to the scope of the research question.

*Keywords: covid-19; authoritarian-libertarian score; government policies, consensualism;
stringency index*

1. INTRODUCTION

Covid-19 pandemic has represented a worldwide shaking event either in every aspect of one's life and on the government run of the country: it may be considered the very first health emergency on such a large scale since the SARS 2003/2004 which, however, had a considerably lower impact on the number of cases, deaths, policies and protocols adopted by countries to contain its spread.

The consequences produced by the pandemic demanded a rapid and comprehensive plan of action on various fronts: nationwide lockdowns were introduced during the decisive phase of the spread of the disease, the use of face masks as well as plastic gloves became necessary

to continue performing daily tasks, schools and non-essential workplaces were closed, restrictions to travel were enforced. Initially, the degree of responsiveness of countries to control the overall diffusion of the virus might be defined as somehow homogeneous and provided some of the most stringent measures on individual liberties, as well as on collective ones, democracies have ever imposed. As time passed by, governmental policies, and therefore the level of stringency, underwent modifications according to the particular circumstances countries were experiencing both geographically wise and temporally wise and, inevitably, the cohesiveness and similar intensity in policies enforced during the initial phase was replaced by focused efforts to prevent the resurface of the critical

condition and to face the damages the pandemic left behind. Namely, the development of first experimental vaccines by pharmaceutical companies, various strategies designed by government to impede the exponential diffusion of the outbreak throughout the country (e.g., the regional color system implemented by the Italian Government and updated periodically in order to provide dynamic responses, or the creation of apps employed in contact tracing).

In this framework, we opted to examine, in the first instance, what could be the factors leading cabinets to adopt different degrees of stringency observing whether certain executive leans towards less stringent measures or, on the contrary, they prefer implementing strong hand policies. Thus, through our principal hypothesis, we propose that libertarian cabinets (as classified on the ParlGov website) are more likely to implement less stringent policies due to their reluctance to restrict individual rights. Moreover, in the second instance, we are going to check if a relevant relationship between the degree of stringency countries choose to implement, and the first dimension of democracy defined by Lijphart does exist. We assume that the more consensual a democracy is, the less stringent its measures will be since we expect a consensus democracy to provide inclusiveness, compromises among political forces and cooperation. Our supposition is that the government will enforce its policies after a deep consideration and discussion of all the available alternatives to find the one which satisfies everyone. Nevertheless, it represents a tough and time-consuming process that will probably make the cabinet's response awaited while, on the other hand, majoritarian democracies might enforce more straightforward and rapid measures to tackle the concerning issue of the spread of the virus although they might experience critiques regarding their rushed maneuvers.

Following an initial review on previous works concerning the performance of the executives to tackle issues the pandemic has created and more generally what might account for the diversity in policies, we are going to present the set of data that is going to be utilized, define the methodology and models and, ultimately, perform the analysis. The next step the paper is going to address is the assessment of whether our hypothetical expectations may be fulfilled through a multiple regression analysis, and deepened further by employing the panel data regression analysis.

Finally, we are going to draw conclusions from the results and evaluate if the above-mentioned assumptions were satisfied or not and, in the final section, we are going to propose useful and insightful improvements that may be made to the research.

2. LITERATURE REVIEW

The outbreak COVID-19 is producing a rapidly growing literature on pandemic related issues. Many scholars have devoted attention to the effects of the covid crisis on several areas of interest.

Dimiter Toshkov, Brendan Carroll and Kutsal Yesilkaçit, in their paper "Government capacity, societal trust or party preferences: what accounts for the variety of national policy responses to the COVID-19 pandemic in Europe?" try to identify the determinant factors of the differences in policy responses within European countries. Indeed, even though all European countries announced some restrictive measures, both the policy mix and the timing of adopting them differed. In their paper, they distinguish a number of possible factors related to institutions, general governance and specific health-sector related capacities, societal trust, government type and party preferences (Toshkov et al., 2021) that could play a role in shaping policymakers' decisions. In particular, they analyze the possible associations between those factors and two aspects of policy responses, that is, school closures and the imposition of national lockdowns. To do that, the authors employed linear regressions and event history statistical methods. The study reveals a number of interesting associations. The most surprisingly implies a negative relationship between government effectiveness and the speed of policy responses. Indeed, less effective governments in relatively poor countries were aware of their limited capabilities of handling a pandemic and "choose to act fast and heavy-handedly" (Toshkov et al., 2021). Moreover, they found out that countries with higher freedom are more reluctant to restrict personal liberties and freedoms of citizens with the imposition of stringent measures as lockdowns. Also remarkably, they found evidence for party-political influence. Right-wing and traditional/authoritarian/nationalist governments in fact display a higher margin of rapidity in imposing national lockdowns and schools' closures.

The link between the protection of personal freedom and the adoption of restrictive measures has been studied also by (Engler et al., 2021) in their paper "Democracy in times of the pandemic: explaining the variation of COVID-19 policies across European democracies". Indeed, democratic countries face a trade-off between public health goals and the protection of fundamental rights. Based on the analysis of (Toshkov et al., 2021) the authors contribute to the discussion by seeking to understand why some European countries dealt differently with the democratic dilemma than others. From the study (conducted using cross-sectional and pooled time-series cross-sectional analyses across 34 European countries) they found out that countries where the quality of democracy is higher in normal times are reluctant to adopt

measures that are potentially in conflict with democratic principles, and therefore continue to be dedicated to individual liberties even in moments of emergency (Engler et al., 2021).

In our paper, we want to analyze more deeply the relationship between government type and the level of stringency of the measures adopted. To do that, we build on the theories presented in the aforementioned literature and suggest a new area of focus, that is, the authoritarian-libertarian score of the countries taken into examination. The libertarian-authoritarian score in covid-related discussions, was already taken into account by (Mellon et al., 2021) in their paper “How do Coronavirus Attitudes Fit into Britain’s Ideological Landscape?”. From the study the authors observe that stringent policies are most supported by voters that are more willing to accept authoritarian measures. However, our paper focuses not on voters’ position, rather on the government-parties level.

(King et al., 2020) have identified the regime type as one of four broad hypotheses that matter for research on COVID-19 political response (King et al., 2020). In their paper, however, they consider only the differences in policy responses between democracies and autocracies. We decided instead to reduce our scope of analysis to stable democratic countries to see the amount of variation within them.

3. DATA DESCRIPTION

The ongoing COVID-19 pandemic has caused a tremendous health burden and adverse effects on the world economy. Differences in political orientation across countries and regions lead to a variety of policies. In this paper, 34 countries in ParlGov project are selected to analyze the different measure implemented in suppressing disease spread. The dataset period is from January 2020 to November 2021.

stringency The stringency index is a composite measure based on nine response indicators. The dataset is part of COVID-19 Government Response Tracker project and is downloaded from ourwordindata.org. The range of index is from 0 to 100. The higher score is assigned, the stricter policy is executed. The final index used in the paper is the average of stringency score of the country during the period.

parlgov Libertarian/Authority score collected from ParlGov project is named as parlgov in the dataset. The scale value is ranged from 0 to 7. To determine the political orientation of a country, we calculate the mean of libertarian/authority score of parties which receive seats in the election within a country.

cons5 Degree of Consensualism is obtained from Patern2020 dataset.

caretaker - election Both are dummy variables retrieved from Wikipedia. The caretaker government variable is assigned 1 if the incumbent government over the period is caretaker otherwise it is gained to 0. The similar scale is applied to Election variable. If there is an election campaign during the pandemic, election is valued as 1 or else it is scaled to 0.

cases - deaths The number of new infectious cases and death per million are downloaded from ourworldindata.org. These two variable play crucial roles in tightening COVID-19 restriction of each nation. The number of new cases and death is averaged per quarter.

ICU The COVID-19 outbreak has caused the huge increased demand of intensive care units (ICU beds). The capacity of ICU beds per 100 000 inhabitants is obtained from various sources including Wikipedia, Spinger.com and Healthdata.org.

4. METHODOLOGY

Regression analysis is one of the most crucial method used for estimating the relationships between a dependent variable and one or more independent variables. By using STATA, we implement several forms of regression analysis to evaluate the impact of political orientation, especially of libertarian aspect. The figure 1 depicts the whole process of our analysis in this paper.

Descriptive statistics

Descriptive statistics is a critical step which provides the essential information of variables. In this paper, we examine the relationships between the stringency index and authoritarian-libertarian score. A scatter plot between stringency index and authoritarian-libertarian score is plotted. Then we implement the command `correlate` to build a a correlation matrix indicating the correlation coefficients between variables in the dataset.

Regression diagnostics

It is important to check if the model works well for the data at hand after performing regressions analyses. Normality test, heteroskedasticity test are carried out.

Normality test In order to testing the normal distribution of the dependent variable, the standardized residuals were plotted. Either way, we check for such normality using the command `pnorm`.

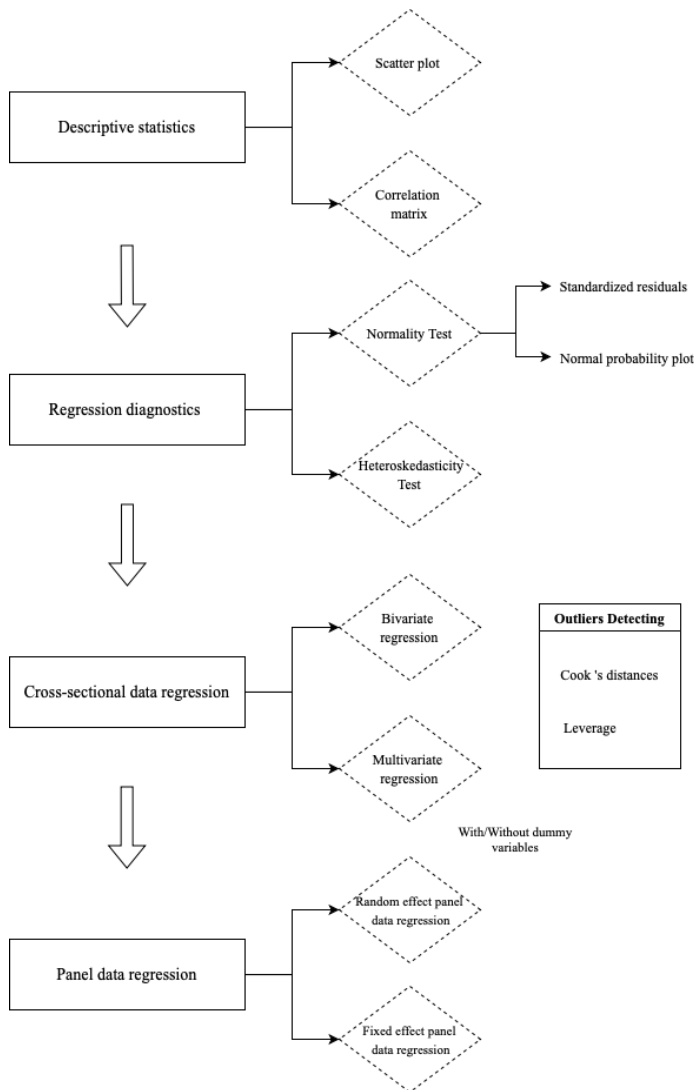


Figure 1. The diagram of linear regression analysis

Heteroskedasticity test The test is aimed to scrutinize whether the variance of the error from the regression is dependent on the values of the independent variables. The heteroskedasticity test is implemented through the command `estat hettest`.

Cross-sectional data regression

Bivariate and Multivariate regressions By utilizing the command `regress`, we built the bivariate and multivariate regression which are two main methods in the analysis cross-sectional data. While bivariate analysis is used with two paired data sets, multivariate analysis uses two or more variables to determine the influence of explanatory variables on dependent variables (stringency index).

Since there are two dummy variables in the dataset that which are caretaker and election, we separate the multivariate regression into two buckets that are the analysis including and excluding the dummy variables.

Outliers detecting Cook's distance and leverage measurements are used to detect the outliers to be omitted. Firstly, we adopt the rule of thumb that an adequate threshold for Cook's distance is $4/n$, where n represents the number of observations (35). Then we plot the standardized residuals with the associated Cook's distance, while highlighting the relative thresholds. Finally, we plot the leverage over the scaled squared residuals through the command. In order to determine the leverage threshold, we adopt the leverage $= (2k + 2)/n$, where k is the number of variables and n , as before, the number of observations. `lvr2plot`. After carefully analyzing the regression diagnostics, the choice of omitting countries could be made, which greatly enhances the adjusted R-squared of the regression.

Panel data regression

At the suggestion of Professor Marco Giuliani, we enhanced our research by including analysis of daily data spanning from December 2020 to December 2021. Fixed and random effect panel data regressions are carried out by executing the command `xtreg` in STATA. The random - effect regression is categorized into two cases of including and excluding dummy variables.

5. RESULTS

As already introduced in the previous section, we expect a negative correlation between the libertarian score and the stringency index because we expect more libertarian government to be less willing to restrict individual liberties to than more authoritarian governments. Moreover, we predict a negative relationship between consensualism and the stringency index as we assume that cabinets in consensus democracies are less prone to adopt extremely restrictive policies due to the more even distribution of power between the parliament and the executive. In this section we present the results of the statistical analyses that we performed to test our hypotheses. The analysis of cross-sectional data suggests that the position of cabinets on the authoritarian-libertarian scale does not influence the tightness of the policies adopted during the pandemic. However, panel data regressions of daily data produced different results, underlining a more significant and consistent pattern of correlation between the independent and the dependent variable.

5.1. Descriptive statistics

Before the regression analysis, a scatter plot between stringency index and authoritarian-libertarian score is plotted. Also, we built a correlation matrix and a scatter plot to infer preliminary patterns of correlation among the independent, the dependent and four control variables.

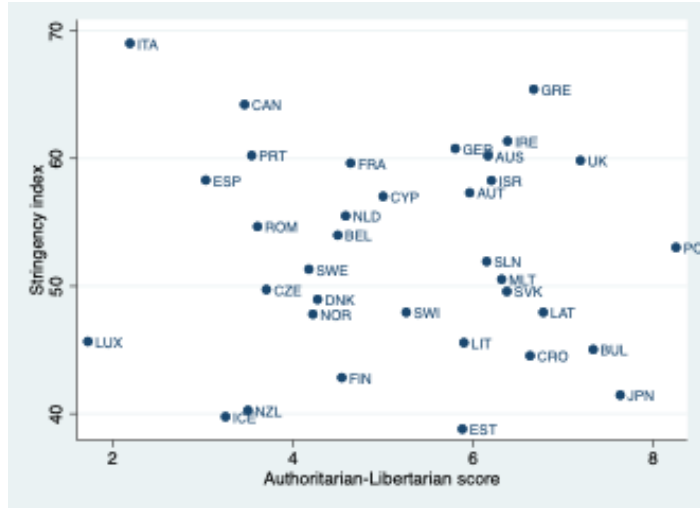


Figure 2. Scatter plot

Scatter plot in the figure 2 presents the distribution of countries on the XY space, and it is evident that it is impossible to draw whatsoever trend line able to predict the stringency of the policy according to the degree of libertarianism of the cabinet.

	string-y	parlgov	deaths	cases	cons5	ICU
stringency	1.0000					
parlgov	-0.0672	1.0000				
deaths	0.0967	0.1466	1.0000			
cases	0.0944	0.0118	0.5989	1.0000		
cons5	-0.3146	-0.1047	0.0002	0.1365	1.0000	
ICU	0.0681	-0.0935	0.1979	0.0438	0.0276	1.0000

Figure 3. Correlation matrix

Correlation matrix shows a negative relationship between the libertarian-authoritarian score and the stringency index. On the other hand, contrary to what we predicted, the negative coefficient that explains the relationship between consensualism and the tightness of the policies to contain the spread of Covid-19 suggests that consensus democracies are more prone to adopt relatively more stringent policies than more majoritarian systems. It is worth noting that the correlation coefficient in the figure 3 quantifies the linear relationship between the dependent and the independent variable is extremely low (-0.0672). Thus, we assumed that policy-making decisions on closures are not influenced by the degree of libertarianism of the government.

5.2. Regression Diagnostics

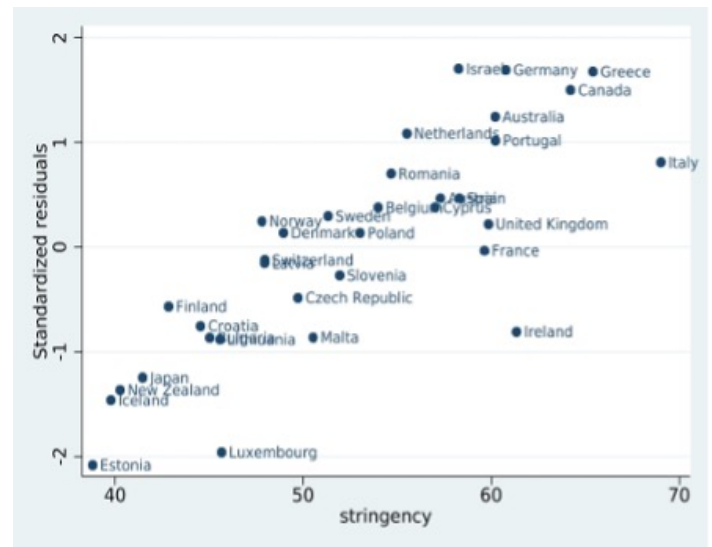


Figure 4. Standardized residuals scatter plot

Normality test Figure 4 shows a scatter plot depicting the relationship between stringency and standardized residuals while figure 5 illustrates a normal probability plot.

As we would expect in a normal distribution, 95% of the standardized residuals are within the -2/+2 interval, whereas 99% of the residuals are within the -3/+3 interval. According to the maximum likelihood theorem, we could assert that these residuals are normally distributed, since the original variables are.

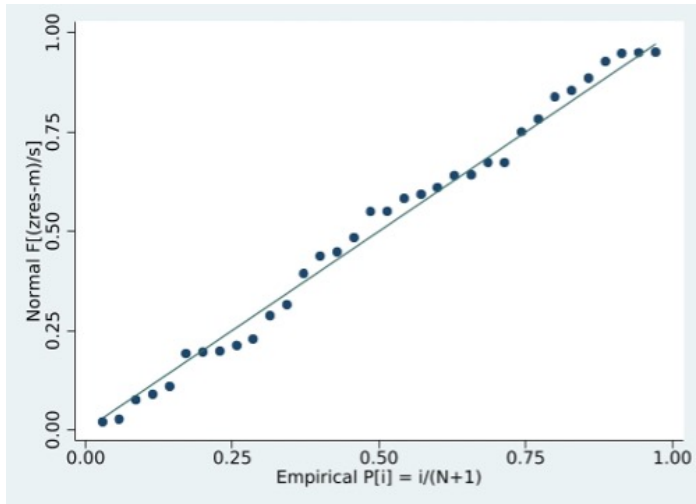


Figure 5. Normal probability plot

Heteroskedasticity test yields a p-value of 0.5096, hence we are unable to reject the null hypothesis stating that there is no omitted variable bias.

5.3. Cross-sectional data regression

Bivariate and multivariate regression analysis provided further evidences in favour of the rejection of our initial main hypothesis.

Source	SS	df	MS	Number of obs =	35
Model	11.8555767	1	11.8555767	F(1, 33)	= 0.19
Residual	2098.44451	33	63.3468034	Prob > F	= 0.6681
Total	2110.30009	34	61.8323555	R-squared	= 0.0056
				Adj R-squared	= -0.0245
				Root MSE	= 7.9591

stringency	Coefficient	Std. err.	t	P> t	[95% conf. interval]
parlgov	-.3696595	.8544819	-0.43	0.668	-2.108116 1.368797
_cons	54.44219	4.614558	11.80	0.000	45.0538 63.83058

Figure 6. Bivariate regression

Bivariate regression The figure 6 presents the results of the bivariate regression of the stringency index on the libertarian authoritarian score. The p-value > 0.05 by a great margin confirms that the relationship between

libertarianism and the tightness of closures during the pandemic are not statistically correlated.

Source	SS	df	MS	Number of obs =	34
Model	279.137795	5	55.8275591	F(5, 28)	= 0.86
Residual	1814.22154	28	64.7936265	Prob > F	= 0.5189
Total	2093.35934	33	63.4351314	R-squared	= 0.1333
				Adj R-squared	= -0.0214
				Root MSE	= 8.0494

stringency	Coefficient	Std. err.	t	P> t	[95% conf. interval]
parlgov	-.5111069	.897081	-0.57	0.573	-2.348694 1.32648
deaths	.134067	1.192826	0.11	0.911	-2.309327 2.577461
cases	.0139572	.0252229	0.55	0.584	-.0377095 .0656239
cons5	-3.239627	1.689297	-1.92	0.065	-6.699995 .2207414
ICU	.0648684	.2958483	0.32	0.755	-.3568007 .4865216
_cons	53.75995	6.106172	8.69	0.000	41.08815 66.43175

Figure 7. Multivariate regression without dummy variables

Multivariate regression without dummy variables The results of the multivariate regression summarized in The figure 7 show that including a set of control variables assumed to be relevant does not change the nature of the relationship between X and Y. The slight decrease in the p-value of the independent variable (from 0.668 to 0.573) is not large enough to consider significant the relationship between libertarianism and the stringency index. Even though the results of the multivariate regression do not provide sufficient evidence to change our perspective on the relationship between the independent and the dependent variable, they show a mild correlation between the measure of consensualism of the institutional set-up of the countries and the restrictiveness of policy. The coefficient is significant at the 10 percent level of two-tailed test and the coefficient is negative. Thus, as expected, countries more similar to prototypes of consensus democracies adopts less stringent policies to limit the spread of Covid-19.

Multivariate regression with dummy variables In the figure 8 we report the results of a third multivariate regression in which two dummy variables were added to set independent variables tested before. The variable “caretaker” distinguishes between political and non-political cabinets, and the variable “elections” takes different values according to whether the country hold elections or not. The higher R-squared suggests that this regression is better than the previous two at predicting

Source	SS	df	MS	Number of obs =	34
				F(5, 28) =	0.86
Model	279.137795	5	55.8275591	Prob > F =	0.5189
Residual	1814.22154	28	64.7936265	R-squared =	0.1333
				Adj R-squared =	-0.0214
Total	2093.35934	33	63.4351314	Root MSE =	0.0494

stringency	Coefficient	Std. err.	t	P> t	[95% conf. interval]
parlgov	-.5111069	.897881	-0.57	0.573	-2.348694 1.32648
deaths	.134067	1.192826	0.11	0.911	-2.389327 2.577461
cases	.0139572	.0252229	0.55	0.584	-.0377895 .0656239
cons5	-3.239627	1.689297	-1.92	0.065	-6.699995 .2207414
ICU	.0648684	.2958483	0.32	0.755	-.3568007 .4865216
_cons	53.75995	6.186172	8.69	0.000	41.88815 66.43175

Figure 8. Multivariate regression with dummy variables

the variation of Y. The increased explanatory power of this analysis may be affected by the introduction of the dummy “caretaker” whose coefficient is positive and statistically significant at the 5% level. Moreover, controlling for electoral campaigning and caretaker cabinets increased the significance of the coefficient for consensualism up to a value at which we can consider it significant at eh 5 percent value. However, it is worth mentioning that the strong explanatory power of the variable “caretaker” is likely to be determined by the fact that only two countries were governed by non-political cabinets during the pandemic and in both the policies were considered particularly restrictive. In addition, the encoding of countries in which only one of the different cabinets that governed during the period under analysis was classified as caretaker was particularly problematic and provoked intense disputes, thus the results shall not be considered generalizable. The analysis of daily data will provide more reliable results on the relationship between caretaker governments and the stringency index because of more consistent encoding of this variable. On the other hand, the presence of elections (and of electoral campaigns) during the pandemic does not seem to be an efficient predictor of variations in the stringency index.

Outliers detecting Analysis of the Cook’s distance outlined that 5 countries including Ireland,Italy,Isarel, Luxembourg and Germany shall be excluded from the dataset to reduce the variability in our data. The figure 9 shows that Ireland and Italy exhibit a slightly above threshold Cook’s distance, while the three remaining nations present a combination of high Cook’s distance and high standardized residual. It can be argued that Ireland

and Italy could be kept in the analysis, both because they possess a modest residual and because they represent the only cases in which a caretaker government occurred.

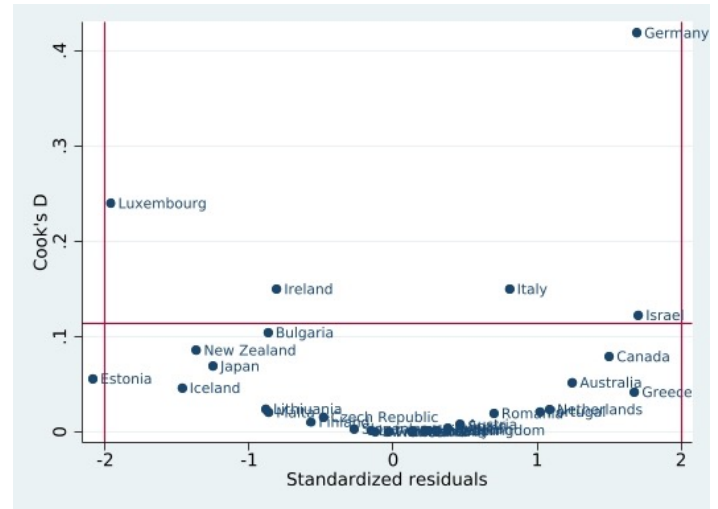


Figure 9. Standardized residuals scatter plot with the associated Cook’s distance

Again, it can be seen in the figure 10 that Ireland and Italy exercise the lowest leverage among the candidates outliers, which suggests that the two European states do not dangerously harm our analysis. While Ireland and Germany surpass the leverage threshold, only the latter is associated with a high standardized residual.

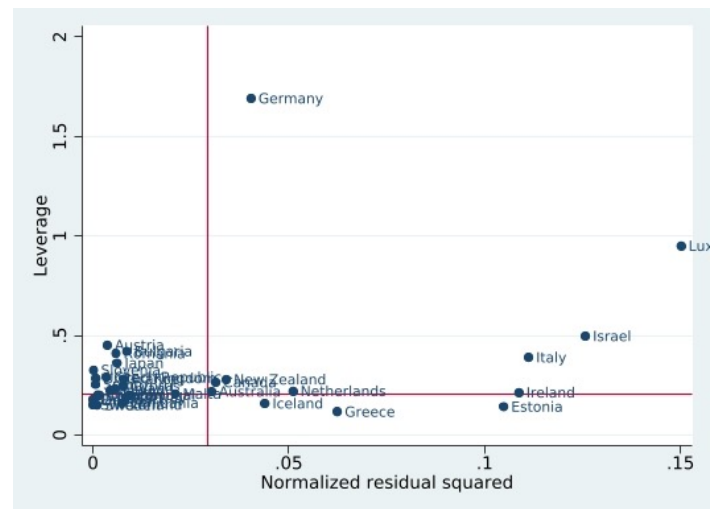


Figure 10. Leverage plot

Multivariate regression without outliers Omitting the 5 outliers (Italy, Germany, Israel, Ireland, and Luxembourg) led to a considerable increase in the significance of the coefficients for consensualism and libertarianism, despite the latter is still non-significant at the 10% level(11. To conclude, the analysis of cross-sectional data did not yield any significant results in favour of our initial assumption that libertarian governments are less likely to implement stringent policies. However, the results of the regression analysis corroborate with the second hypothesis being the relationship between consensualism and restrictiveness of policy negative and statistically significant.

Source	SS	df	MS	Number of obs =	29
Model	620.463756	6	103.410626	F(6, 22) =	2.41
Residual	944.821501	22	42.9464319	Prob > F =	0.0618
				R-squared =	0.3964
				Adj R-squared =	0.2318
Total	1565.28526	28	55.9030449	Root MSE =	6.5534

stringency	Coefficient	Std. err.	t	P> t	[95% conf. interval]
parlgov	-1.219666	.9163772	-1.33	0.197	-3.120116 .6807835
elections	-4.825361	2.891564	-1.72	0.099	-10.63545 .984728
caretaker	0	(omitted)			
deaths	-.4396541	1.091162	-0.40	0.691	-2.702585 1.823277
cases	.0253935	.0223619	1.14	0.268	-.0209023 .0717692
consS	-4.543318	1.434547	-3.17	0.004	-7.518387 -1.568249
ICU	.2349868	.3051095	0.77	0.449	-.3977715 .8677452
_cons	56.61377	6.127065	9.24	0.000	43.90701 69.32052

Figure 11. Multivariate regression without outliers

5.4. Panel data regressions

Initially, we expected the type of data not to be crucial at determining the nature of the relationship between the libertarianism of cabinets and the tightness of policies adopted to limit the spread of Covid-19. However, the results presented in this section turned out to be radically different from those discussed in the previous one. Despite the results achieved in the first part of the analysis suggests that the degree of cabinet’s libertarianism has no impact on the stringency of the policies, we did not change our initial assumptions. Thus, we assume that a more accurate data selection in the form of daily data will have a significant impact on the analysis and will highlight the assumed positive relationship between the libertarian-authoritarian index and the stringency index. Figure 12 and 13 presents the results of both fixed-effect and random-effect panel data regression in which we tested for a possible relationship between the libertarian authoritarian index and the restrictiveness of policies. Simply by looking at the p-value of the coefficient of the independent variable we can trace a very difficult

Stringency	Coefficient	Std. err.	t	P> t	[95% conf. interval]
Libaut	-4.30079	.6926345	-6.21	0.000	-5.650397 -2.943102
_cons	74.54476	3.558548	20.95	0.000	67.56978 81.51974
sigma_u	9.9577943				
sigma_e	19.103949				
rho	.21364729	(fraction of variance due to u_1)			

F test that all u_i=0: F(34, 23749) = 114.56 Prob > F = 0.0000

Figure 12. Fixed-effect panel data regression without control variables

Stringency	Coefficient	Std. err.	z	P> z	[95% conf. interval]
Libaut	-2.768903	.537868	-5.15	0.000	-3.823105 -1.714701
_cons	66.67837	3.072267	21.70	0.000	60.65684 72.69991
sigma_u	7.9095442				
sigma_e	19.103949				
rho	.14633381	(fraction of variance due to u_1)			

Figure 13. Random-effect panel data regression without control variables

pattern of correlation from that observed in figure 6 (same regression but with cross-sectional data). In fact, the independent variable is still negatively correlated with the dependent variable, but the relationship is highly significant only when we analyse panel data. Figure 14 shows that the same result is observed when we include a set of control variables that includes both time-variant and time-invariant variables.

Confirmed cases and deaths per million people, “elections” and “caretaker” were coded as time-variant variables. The first two encode the daily number of new confirmed cases and deaths per million people in each country, while “elections” and “caretaker” are dummies that take the value of 1 if elections were held and if the cabinet in charge was a caretaker government, respectively. Dealing with daily data made the encoding

Random-effects GLS regression		Number of obs	=	20,082	
Group variable: country		Number of groups	=	32	
R-squared:		Obs per group:			
Within	= 0.1382	min	=	601	
Between	= 0.0031	avg	=	627.6	
Overall	= 0.0377	max	=	660	
corr(u_i, X) = 0 (assumed)		Wald chi2(7)	=	86.89	
		Prob > chi2	=	0.0000	
(Std. err. adjusted for 32 clusters in country)					
Stringency	Robust Coefficient	std. err.	z	P> z	[95% conf. interval]
Libaut	4.760589	1.376251	3.46	0.001	2.063186 7.457992
casesmIn	-.0046649	.0020548	-2.27	0.023	-.0086922 -.0006376
deathsmIn	1.416234	.232877	6.08	0.000	.9598039 1.872665
icu	.184621	.142672	1.29	0.196	-.095011 .464253
cons	-1.947409	1.966689	-0.99	0.322	-5.802049 1.90723
elections	.9989486	4.243419	0.24	0.814	-7.317999 9.315896
caretaker	8.113015	3.451897	2.35	0.019	1.347421 14.87861
_cons	27.83128	8.14913	3.42	0.001	11.85928 43.80328
sigma_u	8.7998941				
sigma_e	13.64704				
rho	.29364473	(fraction of variance due to u_i)			

Figure 14. Random-effect panel data regression with control variables

of the dummy “caretaker” more precise and consistent because we could distinguish between the periods in which caretaker cabinets were in office and the periods in which the cabinets were purely political. Whilst encoding this variable using averages this process was not possible because each country had to be coded either 1 or 0. Instead, the number of intensive care units and the consensus score were encoded as time-invariant variables

In conclusion, controlling for the list variables above changes the sign of the coefficient of the main independent variable. In fact, regression table summarized in figure 14 suggests that more authoritarian cabinets (associated with higher scores of the libertarian-authoritarian index) are more prone to adopt stricter measure to tackle the pandemic, while more libertarian cabinets are less willing to restrict individual liberties to limit the spread of the virus. The cross-sectional analysis and the panel data regression differ also in terms of their results on the relationship between consensualism and the stringency index. The multivariate regression in figure 8 depicted a negative and significant correlation between the two variables, instead the coefficient of “cons” in figure 14 lacks explanatory power because the p-value is smaller than 0.05

6. CONCLUSION

The socio-economic impact of the coronavirus pandemic has posed several challenges on the governments’ capacity to effectively manage the crisis and its consequences.

The effects produced by the pandemic required a prompt and comprehensive response by the political class. However, the degree of stringency of the measures adopted differed among countries. This paper, aimed at investigating how the level of stringency of stable democracies, varies according to the incumbent cabinet’s position on the authoritarian-libertarian score. Our first hypothesis implied that libertarian cabinets are more likely to implement less stringent policies due to their reluctance to restrict individual liberties. Moreover, we assumed a negative relationship between consensualism and the stringency degree of the measures adopted. Consensual democracies need in fact to find a compromise that accommodates the interests of the different political forces, resulting in the adoption of policies that correspond to the position of the median voter. To test our hypothesis, we employed multiple regression analysis and panel data regression analysis together with control variables. We collected data for thirty-four stable democracies for a period starting from January 2020 up to November 2021. From the analysis of cross-sectional data, the relationship between libertarian-authoritarian score and the stringency index results as non-significant. The association still appears to be insignificant even by performing multiple regression analysis controlling for other variables. On the other hand, a relationship between the measure of consensualism of the institutional set-up of the countries and the restrictiveness of policies seems to exist. Indeed, our second hypothesis is confirmed by the results of multivariate regression analysis and becomes even more significant when the dummy variable “caretaker” is considered. Although the cross-sectional results do not seem to corroborate with our initial hypothesis, we assumed that a more accurate data selection in the form of daily data would have a significant impact on the analysis and will highlight the assumed positive relationship between libertarian-authoritarian score and the stringency index. We therefore performed panel data regression analysis by including daily data spanning from December 2020 to December 2021. By adopting this new methodological approach, we obtained a radically different result from those derived by conducting cross-sectional data analysis. Indeed, the relationship between authoritarian-libertarian degree and the stringency index is still negative, but it is highly significant only when we analyze panel data, thus confirming our first hypothesis. Therefore, the more authoritarian the cabinets are, the more they are prone to adopt stricter measures to tackle the pandemic. Conversely, libertarian cabinets (associated with lower scores of the libertarian-authoritarian index) are less willing to restrict individual liberties to limit the spread of the virus. Moreover, the cross-sectional analysis and the panel data regression differ also in terms of their results on the relationship between consensualism and

the stringency index, which now becomes insignificant. To conclude, the methodological approach employed seems to have an influence in the decision of acceptance or refusal of our hypotheses. Indeed, the two types of analysis performed, show different and sometimes even contradicting results. The variability of the results obtained between cross-sectional analysis and panel data regression may be limited by adopting some further improvements on our analysis. Indeed, in order to present a complete and exhaustive picture in which our research can be considered to be well performed and functional, it may be convenient to make some changes that were avoided for the sake of time and workload of human resources involved. A further expansion and improvement to the proposed research question could involve the increase in diversity of the dataset on which the analysis has been performed: our initial dataset included thirty-four countries and solely four of them were extra-European countries (Australia, Canada, Israel and Japan) constraining the research into a homogeneous setup. Implementing a more heterogeneous dataset by including democratic entities from different geographic locations of the world could offer major implications in the analysis also making a great deal for generalization purposes. Moreover, another significant modification concerns the number of caretaker governments: in our analysis just two countries, namely Ireland and Italy, experienced the lead of caretaker governments in tackling the pandemic. An effort to include more of them should be made since the policies enforced by these governments may be of key importance in assessing whether their performance (level of stringency) was in line with other countries taken into consideration or not (as observed in the analysis both Italy and Ireland might be regarded as outliers). However, in the case an effective caretaker government is missing, governments' crises could embody an efficient proxy to capture differences in performance.

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