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Exogenous Shock and Citizen's Satisfaction with Government Policies: A Functional Data Analysis Approach to Investigate the Role of Previous Financial Crisis and COVID-19

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ABSTRACT

The current study examine the extent to which the previous financial crisis affected the level of individual's approval with government policies in specific three areas: the economy, health and education during this pandemic situation of COVID-19. Data from the European social survey including 14 countries, approximately 195000 observations. Follow up to time series regression, respondents satisfaction level reduce with government economy policy after the crisis, while satisfaction increase for health and education policies. Separate regression for each country confirmed a reliable outline of behavior transpires, although short-range effect on satisfaction was negative and long-standing effect on satisfaction was positive reported. The modification of short-term effect into negative may be due to the effective government policies to overcome the adverse effects of crisis. The pandemic situation of COVID-19 has forced the government to revise the economic, health and educational policies before implantation. Results declared that current crises in third sector also have past influences of financial crisis as well as COVID-19 impact was also recorded.

| **KEYWORDS** | Assessment of Governmental Strategies, Exogenous Shocks, Individual Level of Satisfaction, Worldwide Financial Disaster |

Introduction

The idea for this study matured quickly, due to the strange beginning of the march 2020 with coronavirus epidemic, where work places closed down completely and same happened with schools, restaurants, bars and gyms etc. All the daily essential accomplishments were forced to work from home with all possible web resources. Literally from that one day to the next morning many things changed, our lives were affected in many ways. At the end of 2019 news agencies reported a new type of flu names COVID-19 originated from the city of Wuhan, capital of Hubei province in china with a startling expanding percentage. The thousands of peoples affected by this virus and shocking rate of death was reported that forced the government for actions. At the end of January 2020 the china government start to make strategies and lockdown imposed on more than 50 million inhabitants breathing in that city.

The epidemic virus spread in many other countries and report the acute health conditions from other countries. Soon Italy came in news with diagnosed of highest positive cases and shocking death rate was reported. Iran and Spain also followed the same pattern, gradually all other countries reported infections and death as well. The critical situation also for government of each country to make authoritarian policies to overcome this epidemic condition. The world health organization (WHO) announce the harsh warning for all countries to make strict policies for the life-threatening situation of COVID-19.

This life-threating situation is wake up call for the government it make polices about informing their citizen of the perils of the pandemic situation, make patrols for social disaffection and lockdown to control the circumstances. Thus, most countries restrictive rule to stop the movement within countries and also stop flight operation with other countries. The government of many nations cancelled all the sporting events, championship series, all gathering events and concerts. Unfortunately, tourism activities were also badly pretentious, transport, restaurants, parks and entertainment sector were also closed that directly link with a huge loss to economy of a country.

Economic activities snappishly affected because everything closed within few days, that in turn a thousand of peoples unemployed and upraised a lot of problems for lower class people. Government and central polices introduced several funds and loan schemes to overwhelmed current issue of Covid-19. Every outside activities closed, work from home become the sudden concern of universities, schools and official work. Despite the lot of problems faced, the institution managed the system through web resources, although parents claims that supervising of their children's school performance fell on them. The use of different social apps and social activities was reported at peak among youth.

The financial performance was already a challenge for underdeveloped countries, at the same time in the beginning of year 2020 a sharp decline was observed for different financial firms. The risky unpredictability has engendered billions of greenbacks in fatalities to institutional as well as private investors worldwide (Ariely, 2011). Oil prices was certain fell for West Texas Intermediate were quoted with negative breakdown (Arpino and Obydenkova, 2020). The hurdle for government is to manage financial condition of market as well as curtail the spread of virus. The government manage all it with lockdown and social distances policies, because COVID-19 is still an ongoing issue that no one can predict about ups and downs come in future. The second wave with greater intensity was reported within autumn 2020 however, some acknowledge about third wave was predicted in spring of 2021. The flawed of financial market due to COVID-19 on billions of people was felt for years to come.

The sudden government policies to curtail spread of virus, combined with the dread of diminishing the deadly virus itself, have spawned unease, stress and depression surrounded by the universal population (Fofana et al. 2020). The search for the treatment is the main problems for pharmacists and health officers, difference vaccination formula are suggested and tested on a sample of covid-19 patients. Although still he end of 2020, there was not effective medicine found, some vaccination reduce the effect of virus for long term and some vaccination formulas provide relaxation for short term with another interesting research idea is to observe sociological viewpoint to scrutinize how personages countered in the short and long-standing.

The financial crises arise at 2008 time period are not health related, it due to bankrupted of Lehman brothers and tsunami in financial crisis that rapidly affected many countries (Ervasti et al., 2019). No significant difference between found between two crises, although significance difference between people minds about both crises was reported. In 2008, many financial ups and downs and potential unemployment was also reported. The COVID-19 pandemic situation also create a huge problems for millions of peoples due to lock down, fear of virus and different unemployment but its only one aspect of financial crises. The financial crises 2008 and COVID-19 financial crises are both affected economy at macro level and both were sudden crises generated by exogenous events, these crises effected directly or indirectly many countries.

The precise objective of the study is to quantify the level of resident's satisfaction and the important standards for the appraisal of administration amenities in health, edification and commercial field. The verdict standards can be helpful for making comparison of satisfaction with COVID-19 disaster. The European Social Survey (ESS) has the suitable data for this. Respondents are asked how satisfied they are with their government, the economy, education and the health services. All these four indicators provide a reasonable assessment of how citizens evaluate their government. Although the majority of the literature is focusing on the level of trust citizens have in political and impartial institutions, investigative the satisfaction level with respect to specific policies is a more direct and real-world attitude in measuring the accomplishment or disappointment of government actions concretely.

Goals and Hypothesis

The primary objective of the study was to examine underlying structure of financial crises for different Europeans countries till 2008 and to find out the impact of exogenous role of COVID-19 lockdown polices. Similarly, the second main objective of the study was to measure the level of satisfaction of citizens towards government policies in three specific sectors: education, economy and health sector. Further the association between level of satisfaction and financial crisis also reported. The role of control variables age, gender, and religious level was also observed. Main hypothesis of the study is, on the average, 2008 financial crisis has contributed in diminishing the level of satisfaction of citizens with government performance for short term and long term. This claim test within three specific sectors in the presence of controls variables, and test the claim about the association of satisfaction and financial crisis.
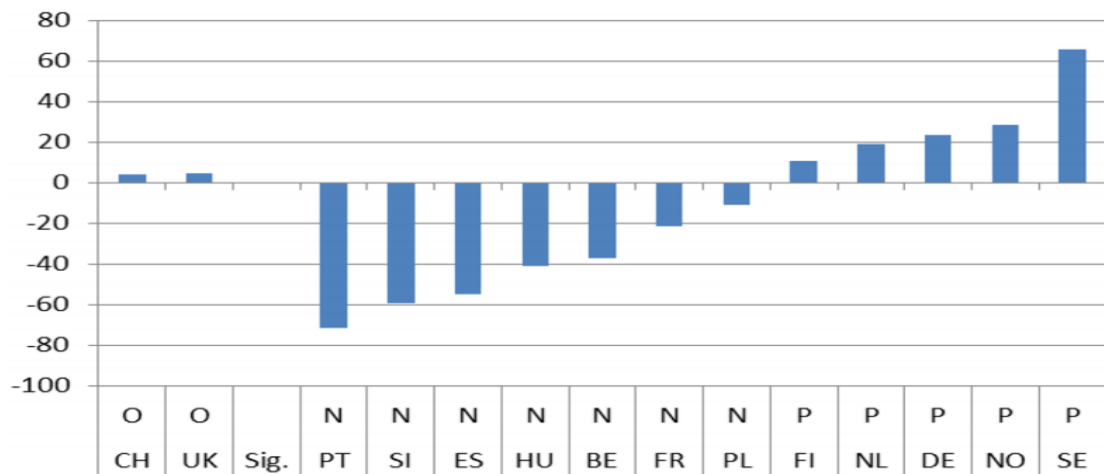

Figure 1: Government policies satisfaction association with financial crisis.

Figure 1 represent the association of citizen's satisfaction about government performance and financial crisis. Where N = negative association, P = positive correlation, O = zero or insignificant association, BE-Belgium, CH-Switzerland, DE-Germany, ES- Spain, FI- Finland, FR-France, UK-United Kingdom, HU-Hungary, NL-Netherlands, NO-Norway, PL-Poland, PT-Portugal, SE- Sweden, SI-Slovenia. It can be interpreted as satisfaction of Switzerland and United kingdom citizens does not affected by financial crisis, while satisfaction with government performance for Portugal, Slovenia, Spain, Hungary, Belgium, France and Poland citizens decrease as financial

crisis increased, and satisfaction with government performance for Finland, Netherlands, Germany, Norway, and Sweden citizens increase as financial crisis increases.

Data

To achieve the goal of the study the data used consist on 14 countries, and response was collected on each variable of the study. The survey conducted on 38 countries, but only 14 countries participate at each phase of the study (2002-2018).

Dependent variable

As the objective of the study to examine the citizen's satisfaction with government policies in three specific sectors: education, health, and economy by sudden financial crisis arises due to 2008 clashes and COVID-19. So in this analysis, I used four dependent variables, one measure for overall satisfaction and three measures for the level of satisfaction within specific sectors. All their values ranged within 0 to 10. The satisfaction measured as

How satisfied are you with

- The national government

- The economy state of the country

- The state of health services in countries during COVID-19 days.

- The state of education nowadays.

Independent variable

The independent variable for this study is European social survey (ESS) round. Nine different survey were conducted from 2002 to 2018, the values range from 1 to 9. Interpreted time series regression models was used to estimate the growth of satisfaction throughout the period under inspection, both before and after analysis and long term effect of the crisis also studied. In addition, the impact of financial crisis arises in 2008 on satisfaction also examined.

Control variable

Aforementioned studies test the claim of association between evaluation of government performance by level of satisfaction and trust, differ due to age, gender, and socio economic background (Van Ryzin et al. 2004; Christensen and Laegreid 2005; Van de Walle 2007; Van Ryzin 2015; Torrente et. al. 2019). On the path of erstwhile findings, in our research I nominated the following control variables: Age, Happiness level, social activity, political orientation, and level of subjective health, level of subjective financial status and years of education. List of the variables with descriptive measures including mean, standard deviation, minimum and maximum value of the data presented in table 1. The citizen's average satisfaction of level is high for health services of the government while it's minimum for national government, with ranged of values from 0 to 10. The average age of the respondents are 49 with standard deviation of 18, while minimum age of the respondent was 18 and maximum age is 99. While the average level of happiness is 7.45 and average rate of social activities is 4.98. The average age of education is 12.4 with standard deviation of 4, while education years observed from 0 to 30.

Variable	N	Mean	Std. Dev	Min	Max
Satisfaction with the					
National government (GOV)	221,790	4.3390	2.4095	0	10
Recent state of economy (ECO)	223,913	4.7628	2.4573	0	10
State of health services (HLT)	226,510	5.5974	2.4527	0	10
State of education (EDU)	218,300	5.6210	2.2686	0	10
Round	228,141	4.8561	2.5659	1	9
Gender	227,975	1.5260	0.4993	1	2
Religiosity	226,602	4.5372	3.0199	0	10
Age	228,014	49.431	18.002	18	99
Subjective happiness level	227,308	7.4518	1.8447	0	10
Social activity	227,657	4.9822	1.5482	1	7
Political orientation (left/right axis)	205,895	5.0476	2.1565	0	10
Years of education	228,014	12.434	4.2332	0	30
Subjective health status	227,870	2.2390	0.9018	1	5
Coping with own finances	223,618	1.9096	0.8129	1	4
Country	228,014	7.1430	3.9087	1	14

Material and Methods

In brief we consider the financial crisis as policy treatment, while the crisis are exogenous events and produce the global shocks that's the reason for the selection of almost all European countries. As it is stated above, the objective of the analysis to test the claim that financial crisis had impact on the levels of satisfaction level of the respondents. For this study, I used ordinary least square with fixed effects regression is also known as interrupted time series.

Comparison of two periods

The comparison conduct about growth of four types of satisfaction between 2008 and 2010. The regression model with fixed effect is design as

Satisfaction $_{t-}^{C}$ Crisis$_{t-2008}$ Satisfaction $_{t+}^{T}$,

Where C= the controls treatment

t- = time just before the crisis

t+ = time after the crisis

T= treated group of individuals; the impact of the financial crisis on satisfaction is measured as the difference in the mean levels of satisfaction of individuals before and after the crisis in the specific sectors, controlling for certain variables.

Comparison of two periods

The more than 2 periods used for long term inspection of the level of satisfaction effected by financial crisis or due to COVID -19. The impact of the financial crisis on satisfaction is measured as the difference in the mean levels of satisfaction of individuals before and after the crisis, controlling for certain variables.

Interrupted time series

For drawing conclusion about complete population with objective of comparison between before and after crisis satisfaction level, interrupted time series regression model is used, we estimate the slope of the dependent variable of interest. If the difference is statistically significant with positive sign, it indicates positive impact as satisfaction level increase with financial crisis increase, while if the difference is statistically significant with negative sign and it indicates negative impact as satisfaction level decline with increase n financial crisis.

Results and Discussion

Model using all countries data

Table 2 represent the estimation of dependent variable for each category by controlling other variables. On the average males are more satisfied as compare to female with all four indicator of satisfaction: national government, economy polices, health status and education services. The same positive correlation observe for political orientation and religious level of the respondents, as politician orientation increase the satisfaction of the citizens also increased. The curvilinear pattern observed for age as at the young age negative correlation observed but as you grow older opinion of the participants change about government performance in financial crisis. Similarly, as the level of happiness increased and you are more satisfied with government performance or policies in different sectors.

Social activities have found negative association of government economy performance but positive association with health and no correlation with education services. The most educated respondent seems to be dissatisfied with health and education policies now a days, nut it seems to satisfy with national government and economy status of the country.

Coefficients of independent variables

The growth of satisfaction from 2002 to until the crisis is not started is denoted by b_1, the results shows that on the average it gradually increased for all countries and statistically significant for all four models. Immediately effect of the financial crisis was reported by b_2, while the impact of time after financial crisis represented by b_3. The level of satisfaction on the average increased for economy policy and national government during 2010-2018 time period, although decline was observed for the time period of 2002-2008 and it still increase for education and health services.

 Individually countries satisfaction level

Model	1	2	3	4
Satisfaction with:	Government	Economy	Health services	Education
Male	Ref.	Ref.	Ref.	Ref.
Female	−0.0825 ***	−0.2647 ***	−0.3439 ***	−0.1115 ***
Religiosity	0.0819 ***	0.0519 ***	0.0551 ***	0.0578 ***
Age	−0.0320 ***	−0.0217 ***	−0.0513 ***	−0.0267 ***
Age X Age	0.0004 ***	0.0002 ***	0.0006 ***	0.0002 ***
Subjective Happiness level	0.1578 ***	0.2111 ***	0.1606 ***	0.1527 ***
Social meetings	−0.0209 ***	−0.0150 ***	0.0145 ***	0.0019
Political orientation	0.0925 ***	0.0639 ***	0.0314 ***	0.0230 ***
Years of education	0.0096 ***	0.0118 ***	−0.0057 ***	−0.0365 ***
Subjective Health status: 1	Ref.	Ref.	Ref.	Ref.
Subj. Health status: 2	−0.1296 ***	−0.1296 ***	−0.1490 ***	−0.0975 ***
Subj. Health status: 3	−0.2748 ***	−0.3011 ***	−0.2808 ***	−0.1887 ***
Subj. Health status: 4	−0.4061 ***	−0.4477 ***	−0.3880 ***	−0.2405 ***
Subj. Health status: 5	−0.4772 ***	−0.4542 ***	−0.6572 ***	−0.3667 ***
Cope with own finances: 1	Ref.	Ref.	Ref.	Ref.
Cope with own finances: 2	−0.2807 ***	−0.4682 ***	−0.2120 ***	−0.0906 ***
Cope with own finances: 3	−0.5971 ***	−0.9343 ***	−0.2894 ***	−0.1969 ***
Cope with own finances: 4	−0.8087 ***	−1.3243 ***	−0.3554 ***	−0.2118 ***
Country: BE	Ref.	Ref.	Ref.	Ref.
CH	1.2096 ***	1.0101 ***	−0.7023 ***	−0.0288
DE	−0.3291 ***	0.1243 ***	−2.0099 ***	−1.5427 ***
ES	−0.8385 ***	−1.1732 ***	−1.6080 ***	−1.5683 ***
FI	0.7657 ***	0.8097 ***	−0.5105 ***	1.3182 ***
FR	−0.7922 ***	−1.4589 ***	−1.0546 ***	−1.3923 ***
GB	−0.4186 ***	−0.5365 ***	−1.6102 ***	−0.7783 ***
HU	−0.3835 ***	−0.8711 ***	−3.2412 ***	−1.4132 ***
NL	0.4148 ***	0.4801 ***	−1.2870 ***	−0.4877 ***
NO	0.3576 ***	1.7012 ***	−1.1633 ***	0.1530 ***
PL	−1.0813 ***	−0.6756 ***	−3.5630 ***	−1.0409 ***
PT	−0.9045 ***	−1.4615 ***	−2.9233 ***	−2.0882 ***
SE	0.5117 ***	0.5429 ***	−1.6474 ***	−1.0094 ***
SI	−0.7226 ***	−0.9999 ***	−2.2860 ***	−1.0753 ***
(T) b1: slope 02-08	0.0280 ***	0.0174 *	0.1540 ***	0.0661 ***
(D) b2: diff 08-10	−0.3295 ***	−1.1530 ***	0.7080 ***	0.2491 ***
% change b2	−7.1456	−20.8933	13.4392	4.4893
(P) b3: diff in slopes (10-18)–(02−08)	0.0367 ***	0.2040 ***	−0.1361 ***	−0.0361 ***
b1+b3: slope 10–18	0.0647	0.2214	0.0179	0.0300
Constant	3.4780 ***	3.7054 ***	6.5282 ***	5.9860 ***
N	197259	198307	199590	193916
R-squared	.1726	.3104	.2418	.2134
aic	865387	839978	863567	817222
bic	865713	840304	863894	817548

Model	Country	b1: slope 02–08	b2: diff 08–10	b2 % change 08–10	b3: diff in slopes (10–18)–(02–08)	b1+b3: slope 10–18	N	R-squared	aic	bic
5	BE	-0.3416 ***	-2.1860 ***	-37.3710	0.5073 ***	0.1657	14,207	0.0775	60.945	61.088
6	CH	0.1943 ***	0.2237	3.7914	-0.0434	0.1509	13,336	0.1060	53.752	53.894
7	DE	0.3407 ***	0.8626 ***	23.5495	-0.2267 ***	0.1140	22,376	0.1429	96.260	96.412
8	ES	-0.1229 ***	-2.8836 ***	-54.8671	0.2649 ***	0.1420	13,486	0.1481	60.593	60.736
9	FI	0.0303	0.5469 ***	10.5267	-0.2365 ***	-0.2062	16,238	0.2086	66.690	66.836
10	FR	-0.2020 ***	-0.8958 ***	-21.6886	0.1317 ***	-0.0703	15,247	0.1037	66.026	66.171
11	GB	-0.2216 ***	0.1738	4.2735	0.1471 ***	-0.0745	16,710	0.1041	73.903	74.050
12	HU	-0.9669 ***	-2.0475 ***	-41.1154	1.0468 ***	0.0799	11,410	0.1736	52.516	52.655
13	NL	0.4780 ***	0.8753 ***	18.7790	-0.3816 ***	0.0964	15,196	0.1579	60.283	60.428
14	NO	0.2510 ***	1.2606 ***	28.5688	-0.2179 ***	0.0331	13,577	0.1102	57.230	57.373
15	PL	0.0787 **	-0.4072 *	-10.9870	0.0898 **	0.1685	11,863	0.0971	53.581	53.721
16	PT	0.1329 ***	-3.8525 ***	-71.3306	0.4883 ***	0.6212	11,171	0.1377	49.354	49.493
17	SE	-0.016	2.5335 ***	65.4183	-0.3030 ***	-0.319	13,995	0.1140	59.989	60.133
18	SI	0.0124	-3.3065 ***	-59.5389	0.2721 ***	0.2845	8447	0.1508	37.767	37.900

Asterisks denotes statistical significance levels at p-values *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

Table4 Satisfaction with economy per country

Model	Country	b1: slope 02–08	b2: diff 08–10	b2 % change 08–10	b3: diff in slopes (10–18)–(02–08)	b1+b3: slope 10–18
19	BE	-0.2452 ***	-1.5094 ***	-25.4729	0.3885 ***	0.1433
20	CH	0.4003 ***	1.3088 ***	23.1195	-0.2581 ***	0.1422
21	DE	0.4469 ***	1.2604 ***	28.9229	-0.1611 ***	0.2858
22	ES	-0.4260 ***	-5.5911 ***	-81.6921	0.8459 ***	0.4199
23	FI	-0.0086	-0.4203 ***	-6.7771	-0.0334	-0.042
24	HR	-0.2649 ***	-1.6333 ***	-37.8081	0.3560 ***	0.0911
25	GB	-0.3595 ***	-4.2390 ***	-62.6093	0.9148 ***	0.3553
26	HU	-0.7349 ***	-3.8116 ***	-65.8654	1.1527 ***	0.4178
27	NL	0.1544 ***	-1.5374 ***	-23.6134	0.1578 ***	0.3122
28	NO	0.2040 ***	2.4997 ***	43.2165	-0.3453 ***	-0.1413
29	PL	0.4860 ***	-0.1135	-2.6793	-0.1872 ***	0.2988
30	PT	0.0621 *	-3.0275 ***	-64.7193	0.4311 ***	0.4932
31	SE	0.0557 *	1.2274 ***	23.8023	-0.0852 **	-0.0295
32	SI	0.0909	-4.8656 ***	-73.5797	0.5151 ***	0.566

Asterisks denotes statistical significance levels at p-values *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$

Table 5 Satisfaction with health services per country

Model	Country	b1: slope 02–08	b2: diff 08–10	b2: % change 08–10	b3: diff in slopes (10–18)–(02–08)	b1+b3 slope 10–18	N	R-squared	aic	bic
33	BE	0.1696***	1.2257***	18.4603	-0.2513***	-0.0817	14,328	0.0874	53,639	53,783
34	CH	0.2587***	0.8701***	13.7966	-0.3064***	0.0523	13,602	0.0645	57,755	57,898
35	DE	-0.0699**	-1.0086***	-17.4783	0.3280***	0.2581	22,672	0.1283	101,230	101,383
36	ES	0.2213***	0.8192***	15.8213	-0.2930***	-0.0717	13,634	0.0719	60,961	61,103
37	FI	0.0227	-0.3603**	-5.0945	0.0742**	0.0969	16,365	0.0797	66,143	66,289
38	FR	0.1278***	0.5904***	9.4553	-0.1253***	0.0025	15,312	0.0868	65,539	65,684
39	GB	0.3056***	2.7380***	64.9598	-0.4925***	-0.1869	16,814	0.1184	73,688	73,835
40	HU	0.0037	0.7178***	21.9173	-0.0777*	-0.044	11,643	0.0672	52,314	52,453
41	NL	0.2054***	1.0254***	18.3994	-0.2152***	-0.0098	15,390	0.0813	61,375	61,520
42	NO	0.1638***	-0.2515	-4.0084	0.0730*	0.2368	13,626	0.1381	56,987	57,130
43	PL	0.0097	-0.8834***	-21.4614	0.1299***	0.1396	11,946	0.0566	53,581	53,722
44	PT	0.3486***	1.0016***	27.2526	-0.2275***	0.1211	11,286	0.1093	49,982	50,121
45	SE	0.3080***	2.3734***	52.8965	-0.4894***	-0.1814	14,433	0.0997	61,792	61,936
46	SI	0.0051	1.9532***	50.3956	-0.2584***	-0.2533	8039	0.0777	38,731	38,866

Asterisks denotes statistical significance levels at p-values *p < 0.05, **p < 0.01 and ***p < 0.001

Table 6 Satisfaction with education per country

Model	Country	b1: slope 02–08	b2: diff 08–10	b2: % change 08–10	b3: diff in slopes (10–18)–(02–08)	b1+b3: slope 10–18	N	R-squared	aic	bic
47	BE	0.1289***	0.9715***	16.4008	-0.1909***	-0.0620	14,158	0.0672	58,490	58,633
48	CH	0.1156***	0.3553*	5.5284	-0.0289	0.0867	12,922	0.0612	53,610	53,752
49	DE	-0.0357	-0.2749*	-5.5273	0.1519***	0.1162	22,195	0.0832	96,774	96,926
50	ES	0.0801**	-0.2314	-4.6366	-0.0602	0.0199	13,205	0.0559	57,611	57,753
51	FI	-0.0345*	0.3265***	4.2558	-0.0193	-0.0538	16,282	0.0617	56,447	56,594
52	FR	0.03	0.075	1.5200	-0.0342	-0.0042	15,150	0.0386	65,245	65,390
53	GB	0.1561***	1.1306***	22.5308	-0.2240***	-0.0679	16,336	0.0657	69,082	69,229
54	HU	-0.2219***	-0.2902	-5.8700	0.2121***	-0.0098	10,728	0.0594	47,601	47,739
55	NL	0.0344	-0.149	-2.4565	0.0712**	0.1056	14,544	0.0574	55,475	55,619
56	NO	0.0515*	-0.4455***	-6.4946	0.1259***	0.1774	13,515	0.0826	53,439	53,582
57	PL	0.1947***	0.4404**	8.5134	-0.1297***	0.0650	11,562	0.0801	51,093	51,233
58	PT	0.1802***	0.4207*	10.1363	-0.0603	0.1199	10,940	0.0760	46,466	46,604
59	SE	0.1514***	0.7321***	14.4499	-0.2003***	-0.0489	14,077	0.0523	59,436	59,580
60	SI	0.0135	0.1048	1.9852	-0.015	-0.0015	8302	0.0445	36,467	36,601

Asterisks denotes statistical significance levels at p-values *p < 0.05, **p < 0.01 and ***p < 0.001

After obtain some insight on aggregated satisfaction level with four sectors as national government, health sector, education sector, and economy status of the country. I run 14 separate interrupted time series OLS regression models. Tables 3, 4, 5 and 6 show the results of the models for each dependent variable of interest (satisfaction with government, the economy, health services and education). Each table contains 14 models, one for each country examined. I list the 3 coefficients of interest, b1, b2 and b3 with their statistical significance.

Long term effect

The next 4 Figures show the long-term dynamic effect of the crisis on the 4 indicators of interest. As with Figs. 1 to 4, Figs. 5, 6, 7 and 8 use the same scale on the Y-axis and have been divided into two groups based on whether the differences b_3 are statistically significant (those to the right) or not (left). Within the two groups, they have then been ranked based on the magnitude of the slope after the crisis (b_1+b_3) per country, from the smallest to the largest (dark column).
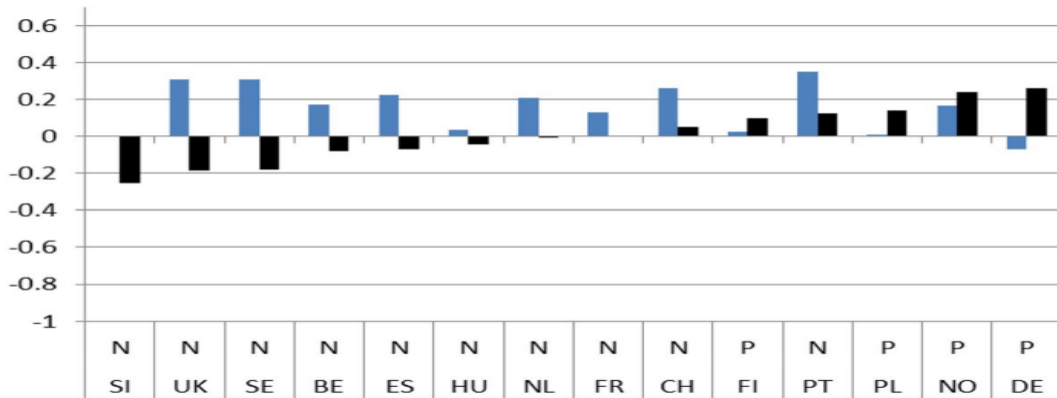

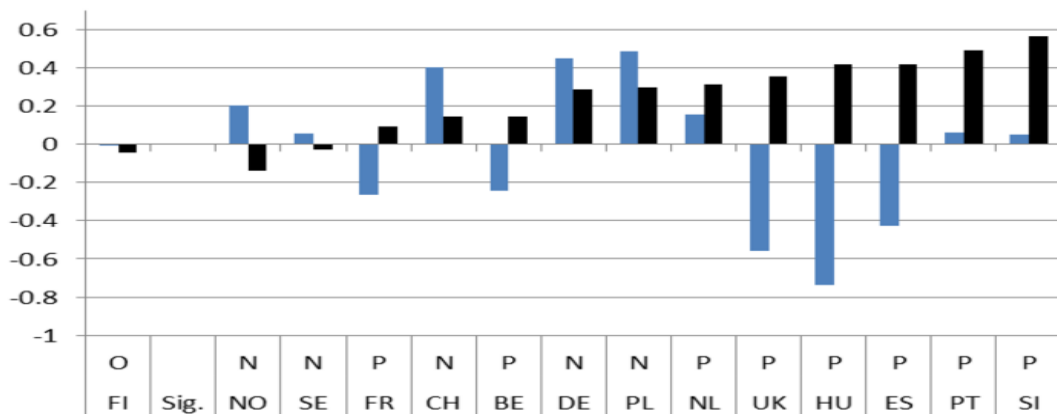Figure 2: long term effect of crisis on satisfaction of citizens with government

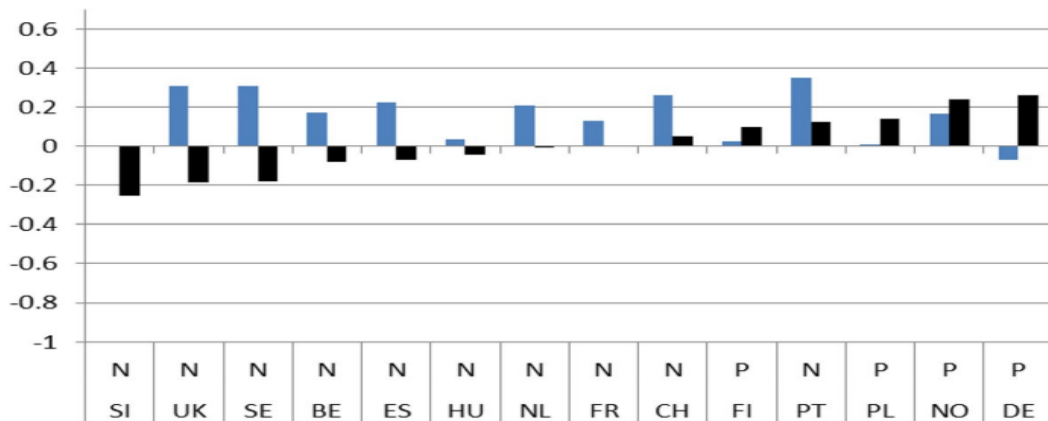Figure 3: long term effect of crisis on satisfaction of citizens with economic policies

Figure 4: long term effect of crisis on satisfaction of citizens with health services
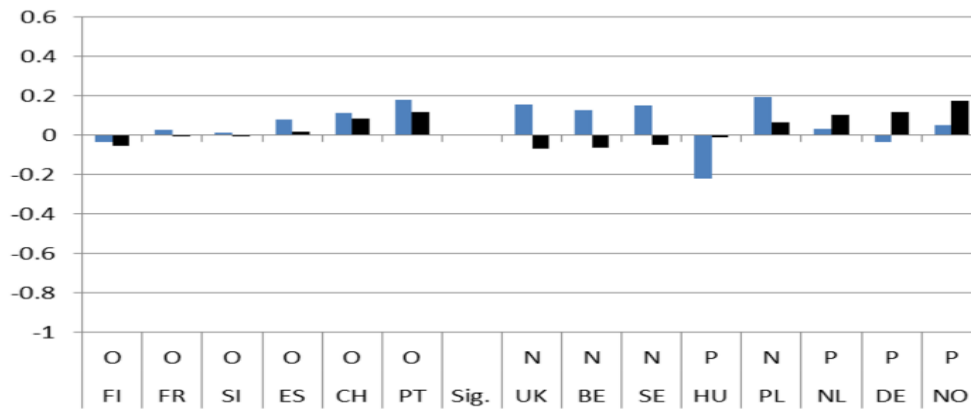
Figure 5: long term effect of crisis on satisfaction of citizens with health services

Conclusion

Evaluation of government and public sectors capabilities to handling the pandemic situation and exogenous shocks that upswing due to COVID-19 as well as previous financial crisis. The present study also contribute to tests the satisfaction of citizens towards the governmental vital policies in three sectors: the education services, economy and health services. Furthermore comparison of financial crisis and COVID-19 market impact also demeanor at different levels.

The satisfaction of the citizens vary from country to country regarding the considered predictors, in both situations before and after COVID-19 plague. The countries where death rate is relatively low, satisfaction of residents about health services is much higher than other countries such as UK, Spain, or France. However prediction about education policies satisfaction is difficult to evaluate, as it is depend on technology infrastructure in each country or whether the employers encourage work from home.

Finally, satisfaction about economy is predicted on the basis of previous financial crisis and net GDP. It can be conclude that, satisfaction of citizens is negatively correlated with net GDP loss during 2020 and 2021, because it may cause of unemployment upswings, bankruptcies and investment rate is reduced during this period. So the satisfaction of citizens with government is affected with number of COVID-19 victims and gross domestic product especially for short term.

The gratification of residents of different countries indicated by post crisis regression coefficients and slopes and it can be seen that satisfaction suddenly truncated with government economy policies. The situation for citizen's satisfaction about health and education services is observed in opposite pattern during crisis period, but the regression coefficients showed significant relationship during COVID-19 plague. Long term analysis of citizen's satisfaction showed that satisfaction is increased after crisis in 9 countries and different countries reported high level of satisfaction about government health and education policies. Individually analysis of countries showed that, satisfaction of residents with government economic performance after financial disaster was found highest in Portugal and lowest in Sweden, while satisfaction with health services was reported highest in Slovenia and lowest in Norway and satisfaction with education services was verified utmost in Norway and lowermost in UK.

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