



## Covid-19: What determines policy responses across Europe?

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### Abstract

This paper analyses responses of European policymakers to the Covid-19 pandemic's first and second waves. It shows that macroeconomic conditions and policy interactions appear to matter more than a country's number of Covid-19 cases. The level of government indebtedness is a significantly positive determinant of fiscal stimulus. Policy interaction also matters, but merely between financial policies –social policy in the shape of restrictions do not influence fiscal or prudential policy. In addition, unconventional policy measures support expansionary fiscal policy and loosening of prudential policy measures. The European institutional context of coordination and joint decision-making in fiscal, monetary and prudential policy probably influence these results. Finally, it appears that private initiatives such as moratoria or eased lending standards potentially substituted fiscal stimulus as the pandemic entered its second wave in Europe.

**Key words:** Covid-19; *Pandemonomics*; Policy interactions; Financial policy; Fiscal policy; Prudential policy.

### Policy summary

- This paper represents a rare empirical contribution to research on how policies interact in response to exogenous shocks; a field hitherto dominated by conceptual and theoretical discussions. The analysis of European policy responses to the Covid-19 pandemic displays the complexity faced by policymakers – visible in this paper's sometimes surprising results that differ from those of prior research.
- One key finding is that macroeconomic conditions and policy interactions appear to matter more than the severity of the crisis in terms of Covid-19 cases. What matters more is the level of government indebtedness. However, the effect of higher debt levels on fiscal spending is positive. This contrasts conventional wisdom but corresponds to findings in recent and related *pandemonomics* research. Countries' credit ratings do not matter. This may result from investors' being comforted by regional fiscal coordination including European Council's Next Generation EU - an unprecedented fiscal package adopted in summer 2020.
- Another key finding relates to policy interaction, which appears to be confined to financial policy interaction; social policy restrictions do not influence fiscal or prudential policy, which is somewhat surprising since appropriate public health measures are likely to be needed to maintain effectiveness of fiscal stimulus in pandemics.
- More expected is perhaps that unconventional policy measures support expansionary fiscal policy measures, although these policy options conceptually could act as substitutes. By pushing down interest rates, which reduces debt servicing, expansionary monetary policy facilitates additional indebtedness and provide conditions for further fiscal stimulus. For Eurozone countries, ECB has effectively provided a monetary backstop to government debt in this fashion.
- Unconventional policy initiatives were positively related to prudential policy measures in the second Covid-19 wave. This could be a results of policy confusion or that prudential policy makers did not consider that these unconventional measures could cause any excess risk taking in the financial sector that could warrant maintained or toughened prudential stances. Again, the particular European context may matter; prudential authorities in the EU are required to seek approval from the Council of the EU for using (and potentially relaxing) particular instruments, and ECB plays a decisive role for a number of macroprudential instruments in Eurozone countries.
- Private policy initiatives were positively related to prudential policy loosening in the first wave, and negatively to fiscal policy stimulus in the second wave. This may indicate that both private and public actors took policy actions in countries where the gravity and uncertainty in the initial wave were particularly severe. As uncertainty fell when the pandemic continued, policy substitution may have occurred between private and public policy. For instance, private initiatives such as moratoria or eased lending standards could potentially have substituted fiscal stimulus.

# Covid-19: What determines policy responses across Europe?

## 1 Policy determinants & interactions in pandeonomies

A decade after the great recession, we are facing something not experienced for the better part of a century. Just as the drama following the global financial crisis acted out with frightening resemblance to the great depression, the Covid-19 pandemic mirrors the Spanish flu with mass casualties and widespread fear. Both events serve as clear reminders of our societies' vulnerabilities. Both also represent major disruptions for the economy – domestically and globally.

The outbreak of Covid-19 is however an unprecedented economic shock in terms of its nature and magnitude. The economic outlook has suffered an unmatched blow following a substantial reduction in aggregate demand. Job losses have spiked, income prospects have fallen for those still employed and distancing measures have contributed to less spending. Many industries have experienced dwindling cash flows and crumbling production. This is also interrelated to sudden and substantial increase in risk and disruptions in key financial markets. Jumps in volatilities have characterised all asset classes. Fixed income has been particularly affected through rising credit spreads, and even the safest segments have experienced spikes in long-term yields (Schrimpf et al. 2020).

Financial policy makers are seeking to mitigate the impact on the real economy through extraordinary fiscal, monetary and prudential policies. Fiscal measures are widespread, such as guarantee schemes for households and firms, tax deferrals, subsidised loans and moratoria on debt payments.<sup>1</sup> Many monetary authorities have cut interest rates to support aggregate demand. Central banks have also used a variety of tools – including last resort lending operations and asset purchases – to ensure proper functioning of the financial system and an effective transmission of monetary policy. Prudential authorities have lowered capital requirements, as well as altered credit model requirements and dividend practices.

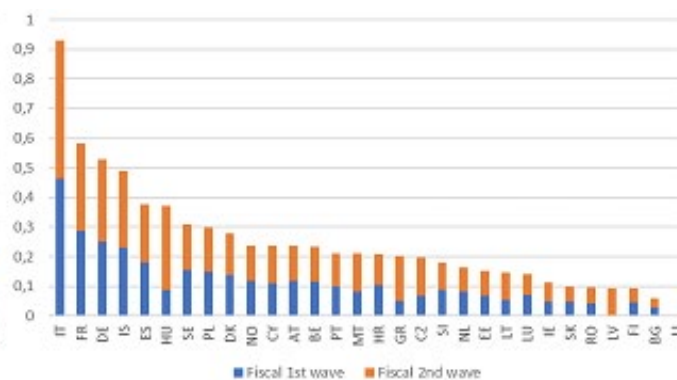
However, there appears to be large variety in the number and types of measures across countries. There are also large differences in the measures' magnitudes. The US Fed has lowered its reference rate by 1.5 percentage and many other central banks have made similar cuts. Conversely, the ECB and Bank of Japan maintained their rates. The balance sheets of the two latter are expected to increase to approx. 55 and 120 percent of GDP before the end of 2020, whereas the corresponding figures for the UK and Canadian central banks are around 35 and 20 percent respectively (Cavallino and De Fiore 2020). Macroprudential measures across the Eurozone will free up more than €20 billion of bank capital to absorb losses and support lending. Similarly, in advanced economies, budgetary measures, funding facilities and credit guarantees together amount to a staggering average of 18.7 percent of GDP (Alberola et al. 2020). However, the distribution of these amount across countries vary (even after considering GDP). Chart 1 demonstrates how Covid-19 fiscal policy responses vary across Europe, and Chart 2 shows countries' Covid-19 cases. There appears to be little relation between Covid-19 cases and the fiscal amounts spent across countries.

Chart 1 Covid-19 fiscal policy responses (% GDP)



Source: ESRB (2021)

Chart 2 Covid-19 cases (% population)



Source: ECDC (2021)

This variety in policy responses raises questions on the determinants of policy makers' actions. Arguably, policy makers across the globe have faced relatively similar conditions for making policy decisions - an unparalleled

exogenous shock characterized by radical uncertainty on transmission channels and magnitudes of impact. Can empirical *pandemonomics* explain the large variety?

This paper analyses policy measures in response to the Covid-19 pandemic's first and second waves in Europe. It reports findings from regression analyses to provide an understanding of conditions that influence policy choices (in the shape of macroeconomic and social variables) and how different social and financial policies – and policy actors - interact.

Whereas most research on Covid-19 policy has focused on the effects of policy measures in terms of their economic implications (Eppinger et al. 2020, Carlsson-Szlezak et al. 2020, Baldwin 2020, Guerrieri et al. 2020, Eichengreen et al. 2020, Mulligan 2020, McKibbin and Fernando 2020 etc.), this paper thus contributes to the small but growing literature that seeks to understand how policy choices interact and vary across countries.<sup>ii</sup> Although the bulk of this literature is conceptual and/or theoretical (cf. Reis 2020; Fisher 2014; IMF2013), exceptions include Sarker (2020), who explores variations in financial policy responses in a cross-country context. Gourinchas (2020) discusses policy interactions between social and fiscal policy over the short and long run. Elgin et al. (2020) incorporates both dimensions and consider how economic stimulus relate to the stringency of social regulation. They show that variables such as median age, public health measures and GDP per capita predict governmental responses in terms of economic stimulus. However, they show that stringency of social regulation does not explain the magnitude of economic stimulus.

Closest to this paper is Benmelech and Tzur-Han (2020) who study determinants of fiscal and monetary policy responses from the outbreak of Covid-19 until May 2020 across a sample of emerging markets and advanced economies. This paper extends the scope of that study to also include the second wave of the pandemic, and by considering additional policy interactions in the shape of prudential and social policy, as well as the role of private policy initiatives. In addition, the European context of this paper implies a more homogeneous sample of countries that also are coordinated and governed by a set of common rules, regulation and practices relating to financial policy. The empirical context is also unique as it represents the first case where loosened macroprudential policy has to interact with other policies in the European post-crisis regulatory architecture.

The results show that that macroeconomic conditions and policy interactions appear to matter more than countries' number of Covid-19 cases. The level of government indebtedness came out as a significantly positive determinant of fiscal stimulus. Policy interaction also matters, but merely between financial policies - social restrictions do not influence fiscal or prudential policy. In addition, unconventional policy measures support expansionary fiscal policy measures and loosening of prudential policy measures. The European institutional context of coordination and joint decision making in fiscal, monetary and prudential policy likely influence these results. Finally, it appears private initiatives such as moratoria or eased lending standards potentially substituted fiscal stimulus as the pandemic entered its second wave in Europe.

Apart from contributing to the literature on how (Covid-19) policy choices interact and vary across countries, these findings also add knowledge on financial policy opportunities and limitations in low interest rate environments (c.f. Bernanke et al. 201, Borio & Gambacorta 2017) and how recent extension of financial policy mandates to cover more complex risks (Giuzio et al. 2019) may manifest in practice.

The remainder of this paper is outlined as follows: Section 2 presents the data and methodology; Section 3 analyses conditions that influence policy and how different policies interact; Section 4 concludes.

## **2 Data & methodology**

### **2.1 Data**

Data was collected for 30 European countries (EU27, Iceland (IS), Lichtenstein (LI) and Norway (NO)), covering both policy stances and a number of variables (see Table 1) suggested by prior research to matter for policy makers' responses (see Section 1).

The *policy variables* includes both the financial space and the stringency of countries social regulations relating to the pandemic. Financial policy measures were constructed based on the ESRB's data on *Policy measures in response to the COVID-19 pandemic*.<sup>iii</sup> Due to the little variation in conventional monetary policy across Europe, the data focuses on unconventional monetary policy measures. Thus, financial policies include all fiscal policies, unconventional monetary policy tools and prudential measures reported. Social regulation is proxied by the composite COVID-19: Stringency Index (Hale et al. 2021). A variable that seeks to capture the role of

private policy initiatives was also included.<sup>iv</sup> *Macro variables* include government indebtedness, sovereign credit ratings, GDP-per-capita (GDP/capita) and domestic Covid-19 cases. Table 1 presents all variables used in the study and their sources.

Table 1 Variables

Name	Description	Source
<b>Policy variables</b>		
Fiscal policy ( <i>Fiscal</i> )	Combined volume in relation to end 2019 GDP of direct and off-budget post (direct grants, moratoria, tax deferrals and reliefs classified as fiscal policy by authorities).	ESRB (2021) Policy measures in response to the COVID-19 pandemic: <a href="https://www.esrb.europa.eu/home/search/coronavirus/html/index.en.html">https://www.esrb.europa.eu/home/search/coronavirus/html/index.en.html</a>
Prudential pol. ( <i>Prudent</i> )	# measures classified as microprudential or macroprudential policy such by authorities.	
Unconv. mon. pol. ( <i>Unconv mon.</i> )	# measures classified as asset purchase programs, credit or liquidity facilities by central banks.	
Social policy ( <i>Social</i> )	Covid-19: Stringency Index - a composite measure between 0 and 100 (100 = strictest) based on 9 indicators incl. school/workplace closures and travel bans.	Global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). <a href="https://doi.org/10.1038/s41562-021-01079-8">https://doi.org/10.1038/s41562-021-01079-8</a>
Private policy ( <i>Private</i> )	# measures of prudential or fiscal nature (i.e. moratoria) by industry associations and initiatives by other private actors.	ESRB Policy measures in response to the COVID-19 pandemic
<b>Macro variables</b>		
Debt-to-GDP ( <i>Gov debt</i> )	Gross debt of the general government as a percentage of GDP.	OECD General government debt: <a href="https://data.oecd.org/gga/general-government-debt.htm">https://data.oecd.org/gga/general-government-debt.htm</a>
Credit rating ( <i>CreditR.</i> )	Credit rating reflecting the credit worthiness of a country between 100 (riskless) and 0 (likely to default).	Trading economics: <a href="https://tradingeconomics.com/country-list/rating?continent=europe">https://tradingeconomics.com/country-list/rating?continent=europe</a>
GDP-per-capita ( <i>GDP/capita</i> )	GDP per capita in PPS	Eurostat: <a href="https://ec.europa.eu/eurostat/databrowser/view/tec00114/default/table?lang=en">https://ec.europa.eu/eurostat/databrowser/view/tec00114/default/table?lang=en</a>
Covid-19 Cases ( <i>C19 Cases</i> )	Cumulative confirmed Covid-19 cases in relation to population.	European Centre for Disease Prevention and Control (ECDC) Epidemic intelligence: <a href="https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea">https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea</a>

Note: CY and NO fiscal spending are based on IMF (2021) due to inconsistencies in the reporting vis-à-vis other countries.

## 2.2 Model specifications and summary statistics

The determinants of policy responses and interactions were estimated using the following specification:

$$a) \text{ Fiscal}_i = \alpha_0 + \alpha_{i1} \times \text{Policy}_{i1} + \dots + \alpha_{in} \times \text{Policy}_{in} + X_i \beta + e_i$$

$$b) \text{ Prudential}_i = \alpha_0 + \alpha_{i1} \times \text{Policy}_{i1} + \alpha_{in} \times \text{Policy}_{in} + X_i \beta + e_i$$

The dependent variable is a) aggregate fiscal spending to GDP; and b) # of domestic prudential measures. Country-level macro variables - debt-to-GDP, credit rating, GDP-per-capita and Covid-19 cases - are included in vector  $X_i$ . Tables 3-6 in the next section present results from estimating different variants of the models, where the combinations of policies and country level variables are included (standard errors in parenthesis). Robust standard errors were applied in all variants to counter heteroskedasticity.

Regressions are run on two different points in time - the first captures the situation at end July 2020 and the second at end August 2021. This seeks to capture the different conditions and interactions of the so-called first and second waves of the pandemic in Europe (Fokas 2021, Bontempi 2021).

Table 2 provides summary statistics for conditions at the end of the first and second waves. The mean fiscal spending amounts to 11% of GDP by end of the first wave, which increases to 14% at the end of the second. Unconventional monetary policies remain relatively constant over the two periods, whereas the use of prudential policy tools increase substantially in the second wave. In terms of macro variables, Covid-19 cases rose sharply in the second wave to amount to 9% of the population on average, while – or perhaps as the stringency of social restrictions decreased in the overall sample.

Table 2 Descriptive statistics

Wave 1					
Variable	Mean	Median	S.D.	Min	Max
Fiscal	0,11	0,09	0,09	0,00	0,46
Unconvmon	5,77	6,00	3,18	0,00	16,00
Prudent	1,97	1,00	1,96	0,00	8,00
Private	1,10	0,50	1,35	0,00	4,00
CreditR	76,00	76,00	22,70	0,00	100,00
C19 Cases	0,00	0,00	0,00	0,00	0,01
Social	77,50	80,60	11,00	53,70	96,30

Wave 2					
Variable	Mean	Median	S.D.	Min	Max
Fiscal	0,14	0,12	0,10	0,00	0,47
Unconvmon	6,13	6,00	3,61	0,00	16,00
Prudent	4,53	4,50	2,90	0,00	11,00
Private	1,33	1,00	1,58	0,00	5,00
CreditR	76,00	76,00	22,70	0,00	100,00
C19 Cases	0,09	0,08	0,03	0,02	0,16
Social	44,70	42,10	9,79	28,70	64,30

Govdebt	72,40	65,50	43,60	0,01	201,00
GDP capita	108,00	94,00	45,90	55,00	266,00

### 3 Analysis

#### 3.1 Base model

Table 3 shows how the different macro variables relate to Covid-19 fiscal spending measured in relation to GDP for both the first and the second wave. Columns A-D display univariate regressions for debt-to-GDP, credit rating, GDP-per-capita, and Covid-19 cases respectively. Multivariate regressions covering all macro variables are reported in column E.

Table 3 Macro variables and Covid-19 fiscal spending

Dependent variable: Fiscal

	Wave 1 A	B	C	D	E
Const	0,037	0,128 **	0,121 ***	0,083 ***	-0,031
Govdebt	0,037	0,055	0,036	0,019	0,059
	0,001 *				0,001 *
	0,001				0,001
CreditR		0,000			0,001
		0,001			0,001
GDPcapita			0,000		16,092
			0,000		9,818
C19Cases				11,052	-0,001
				7,332	0,000
N	30,000	30,000	30,000	30,000	30,000
Adjusted R2	0,206	-0,033	-0,034	0,041	0,238

Wave 2					
const	0,048	0,194 ***	0,173 ***	0,176 ***	0,059
Govdebt	0,031	0,051	0,037	0,048	0,072
	0,001 **				0,001
	0,001				0,001 **
CreditR		-0,001			0,000
		0,001			0,001
GDPcapita			0,000		0,000
			0,000		0,000
C19Cases				-0,458	-0,360
				0,424	0,444
N	30	30	30	30	30
Adjusted R2	0,277	-0,003	-0,009	-0,010	0,216

Note: \*/\*\*/\*\* denote significance at 10%/5%/1% levels.

Government indebtedness is the only variable that displays any significant impact on spending; in the univariate regression for the second wave and in the multivariate regressions for both waves. The coefficients are relatively similar in all three cases, where one percentage point higher government debt-to-GDP is associated with around 1 percent higher fiscal spending. One standard deviation (43.2) increase in government debt from the average (108.1) is thus associated with around 50% higher Covid-19 fiscal expenses. This finding corresponds to those of Benmelech and Tzur-Han (2020) both in terms of direction and magnitude. It counters conventional wisdom that suggests that it is easier for counties with lower levels to provide fiscal stimulus to compensate for reductions in private spending (Davig and Leeper 2011; Romer and Romer 2017). Other results are somewhat mixed in relation to other studies (Romer and Romer 2021). The insignificance of Covid-19 cases is similar, but the absence of significant effects for credit ratings differs (Romer and Romer 2021, Benmelech and Tzur-Han 2020). This suggests that notions that market access is more important than debt-levels do not apply in the European context.

### 3.2 Public policy interactions

Table 4 examines interactions between Covid-19 related policies, again covering both the first and the second wave. The only significant macro variable (Government indebtedness) from Table 3 is maintained for control purposes. The dependent variable is still fiscal spending to GDP, and columns A-C examines the interactive effect from social, unconventional monetary and prudential policy. Column D provides the results from regressing the combined effect of the latter two. Government debt remains significantly correlated with fiscal spending, but this also applies to unconventional monetary policy. The effect remains in both the first and second waves with a magnitude of around 0.005. This implies that each additional unconventional monetary policy tool applied by a central bank increases fiscal spending with half a percentage point. One standard deviation in the number of unconventional monetary policy tools (3.15) is thereby associated with 1.5% higher fiscal spending. This effect may suggest that while the unconventional policy measures are expansionary policy measures, they also reduce debt servicing and facilitate taking on additional debt. Monetary and fiscal policy appears to complement rather than substitute each other in this respect.

Table 4 Public policy impact on Covid-19 fiscal spending

Dependent variable: Fiscal

Wave 1	A	B	C	D
Const	0,089	0,012	0,042	0,018
	0,115	0,036	0,040	0,039
Govdebt	0,001 ***	0,001	0,001	0,001 *
	0,000	0,001	0,001	0,001
Social	-0,001			
	0,002			
Unconvmon		0,005 **		0,005 *
		0,002		0,002
Prudent			-0,007	-0,007
			0,006	0,006
N	30	30	30	30
Adjusted R2	0,184	0,204	0,195	0,191
Wave 2				
Const	-0,037	0,021	0,023	0,010
	0,056	0,030	0,036	0,034
Govdebt	0,001	0,001 **	0,001 **	0,001 **
	0,001	0,001	0,000	0,001
Social	0,002			
	0,002			
Unconvmon		0,005 *		0,004
		0,003		0,003
Prudent			0,006	0,004
			0,005	0,006
N	30	30	30	30
Adjusted R2	0,293	0,288	0,286	0,277

Note: \*/\*\*/\*\* denote significance at 10%/5%/1% levels.

Column B, which regresses the combined effect of government debt and unconventional policy measures, also has the highest predictive ability of the variation in fiscal spending (adjusted R2 amounts to 0.2). The correlation between social and prudential policy, on the other hand, are not significant – neither in the first nor second wave. Although insignificant, it is notable that in the first wave, both social and prudential policy are negatively

correlated with fiscal spending. That does not corroborate arguments that strict social regulation is necessary in pandemics to prevent surges in cases associated with fiscal stimulus (Romer and Romer 2021). Further, the negative correlation between easing of prudential requirements and fiscal spending could suggest that prudential policymakers maintain tougher policy stances in more expansive fiscal environments, as risk taking may increase in the financial system as a side effect.

Table 5 reports the results from regressing government indebtedness and other policy stances on prudential policy. The only significant effect is for the second Covid-19 wave, where unconventional policy initiatives are positively related to prudential policy measures. The coefficient is around 0.3 which implies that one standard deviation of unconventional policy implies a reduction of active prudential policy tools by one unit. This suggests that expansionary monetary policy is not perceived to lead to excess risk taking in the financial sector that warrants any prudential policy tightening. There are no effects when adding social policy (unreported in Table 5).

Table 5 Interaction of unconventional monetary and prudential policy

Dependent variable: Prudent				
	Wave 1		Wave 2	
	A	B	C	D
Const	0,733	0,821	4,073 ***	2,474 *
	0,728	1,028	1,158	1,392
Govdebt	0,017 **	0,017 **	0,006	0,004
	0,008	0,008	0,014	0,012
Unconvmon		-0,017		0,294 *
		0,102		0,161
N	30	30,000	30	30
Adjusted R2	0,114	0,082	-0,026	0,078

Note: \*/\*\*/\*\* denote significance at 10%/5%/1% levels.

### 3.3 Public-private policy interactions

Prior research indicates that private actors play important roles in financial policy. Private policy actors and networks often engage in voluntary self-regulation to pre-empt formal regulation (Mattli and Woods 2009, Milner and Moravcsik 2009, Bengtsson 2013, 2020). The analysis of how private policy initiatives influence formal Covid-19 policies is based on a hypothesis that policy initiatives in the private and public spheres influence one another. Table 6 shows that this indeed is the case. The top rows show regression results where *Prudential policy* is the dependent variable, and the lower rows *Fiscal policy*. For both dependent variables, the number of private policy initiatives is used as independent variables (column A), as well as in combination with unconventional monetary (columns B and E) and social policy (columns C and F). Again, regressions are run on the conditions at the end of both the first and second wave.

Table 6 Interactions between public and private policy

Dependent variable: Prudent						
	Wave 1			Wave 2		
	A	B	C	D	E	F
Const	0,816	0,800	-0,454	4,097 ***	2,508 *	2,774
	0,721	1,052	1,910	1,175	1,466	2,349
Govdebt	0,009	0,009	0,007	0,009	0,005	0,004
	0,007	0,007	0,009	0,015	0,015	0,018
Private	0,436 *	0,438 *	0,431 *	-0,176	-0,085	-0,119
	0,221	0,234	0,224	0,405	0,447	0,409
Unconvmon		0,003			0,290 *	
		0,104			0,169	
Social			0,018			0,037
			0,032			0,063
N	30	30	30	30	30	30
Adjusted R2	0,146	0,113	0,123	-0,056	0,044	-0,086

Dependent variable: Fiscal						
	Wave 1					
	A	B	C	D	E	F
const	0,036	0,012	0,088	0,049	0,022 **	-0,035
	0,036	0,037	0,096	0,032	0,032	0,065
Govdebt	0,001 **	0,001 *	0,001 **	0,001	0,001	0,001
	0,001	0,001	0,001	0,000	0,000	0,001
Private	-0,004	-0,002	-0,004	-0,004 **	-0,003 *	-0,001
	0,015	0,015	0,015	0,010	0,010	0,010
Unconvmon		0,005 **	-0,001		0,005	0,002
		0,002	0,001		0,003	0,002
N	30	30	30	30	30	30
Adjusted R2	0,179	0,174	0,154	0,254	0,262	0,266

Note: \*/\*\*/\*\* denote significance at 10%/5%/1% levels.

The patterns for how private policy initiatives correlate with prudential and fiscal policies are diametrically opposed. For prudential policy, private policy initiatives are positively related in the first wave. In the second wave, the effect disappears. This may indicate that both private and public actors took policy actions in countries where the gravity and uncertainty in the initial wave were particularly severe. Alternatively, private initiatives could be pre-emptive measures by private actors in expectations of policy responses from the prudential regulator.

For fiscal policy, there is no significant correlation in the first wave, but a significant – albeit small negative one in the second wave. Here, each private policy initiative is associated with around half a percentage point less fiscal spending. This could potentially result from policy substitution between private and public policy, where private initiatives such as moratoria or eased lending standards substitute expansionary fiscal policy.

## 4 Discussion

This paper represents a rare empirical contribution to research on how policies interact in response to exogenous shocks; a field hitherto dominated by conceptual and theoretical discussion.<sup>v</sup> The analysis of European policy responses to the Covid-19 pandemic displays the complexity faced by policymakers – visible in the sometimes surprising results that differ from those of prior research.

One key finding is that macroeconomic conditions and policy interactions appear to matter more than the severity of crisis. The empirical analysis shows that there is no relation between countries' fiscal responses to their number of Covid-19 cases. In contrast, what matters more is the level of government indebtedness, which came out as a significantly positive determinant of fiscal responses for both the first and second wave. The effect higher debt levels have on fiscal spending is positive, which contrasts conventional wisdom but corresponds to other recent *pandemonomics* research. However, this prior research has showed that the most important explanatory factor of fiscal spending is countries' credit ratings. This paper demonstrates no such effect, contrasting earlier studies that suggests that market access is more important than debt-levels. This could be influenced by the specific European context, where investors' might be comforted by regional common macroeconomic rules and procedures, a relaxing of budgetary rules and state aid restrictions, or perhaps more plausible the European Council's *Next Generation EU* - an unprecedented fiscal package adopted by in summer 2020.<sup>vi</sup>

Another key finding relates to policy interaction. The results presented in this paper clearly show that it matters, but it appears to be confined to financial policy interaction. Social restrictions, on the other hand, do not influence fiscal or prudential policy. This is somewhat surprising since without appropriate public health measures, stimulating aggregate demand would probably increase Covid-19 cases and thereby counteract the policy intentions of the stimulus. More expected is perhaps that unconventional policy measures support expansionary fiscal policy measures, although these policy options could conceptually act as substitutes. Expansionary monetary policy, by pushing down interest rates, also reduces debt servicing, facilitates taking on additional debt and provide conditions for further fiscal stimulus. For Eurozone countries, ECB effectively provided a monetary backstop to government debt in this fashion in 2020.<sup>vii</sup>

If one adds the use of prudential tools to the policy mix, unconventional policy initiatives were positively related to prudential policy measures in the second Covid-19 wave. Two very different arguments could potentially explain this finding. One is that expansionary monetary policy was not perceived by policy makers to cause any excess risk taking in the financial sector, and thereby warrant maintained or toughened prudential stances. The other is that policy confusion, uncertainty about the outlook or political economy constraints prevented authorities to maintain or tighten the prudential policy stance.<sup>viii</sup> Even before the pandemic downturn, policy discussions highlighted the need for a clear and common understanding of crisis conditions to find common ground and coordinate between different policy areas.<sup>ix</sup> Political economy constraints at the national level may also hinder prudential authorities to impose policies that in part may counteract fiscal policy.<sup>x</sup> Again, the particular European context may also matter- prudential authorities in the EU are required to seek approval from the European Council for using (and potentially relaxing) particular instruments, and where ECB plays a decisive role for number of macroprudential instruments for Eurozone countries.

The third key finding relate to how public and private policy interacted in the pandemic. Private policy initiatives were positively related to prudential policy loosening in the first wave, and negatively to fiscal policy in the second wave. This may indicate that both private and public actors took policy actions in countries where the gravity and uncertainty in the initial wave were particularly severe. As uncertainty fell when the pandemic continued, policy



substitution may have occurred between private and public policy. For instance, private initiatives such as moratoria or eased lending standards could potentially have substituted fiscal stimulus.

There are many potential extensions of this research that could shed additional light on the policy conundrums discussed above. One is to apply more fine-grained approaches to quantify differences in prudential and monetary policy stances. Another is to include additional factors, such as vaccination rates, unemployment rates and capex spending, and empirically investigate how and why policy stances evolve as the recovery takes hold.

## References

- Albeola, E., Arslan, Y., Cheng, G. and Moessler, R. (2020). The fiscal response to the Covid-19 crisis in advanced and emerging market economies, *Bulletin No 23*, Bank for International Settlement.
- Alesina, A. and Stella, A. (2010). The politics of monetary policy. In *Handbook of monetary economics* (Vol. 3, pp. 1001-1054). Elsevier.
- Allen, H. J. (2015). *Putting the financial stability in financial stability oversight council*. Ohio St. LJ, 76, 1087.
- Baldwin, R. (2020). Keeping the lights on: Economic medicine for a medical shock. *VoxEU.Org*. Retrieved from <https://voxeu.org/article/how-should-we-think-about-containing-covid-19-economic-crisis>
- Bartsch, E., Bénassy-Quéré, A., Corsetti, G., & Debrun, X. (2020). *It's all in the Mix. How Monetary and Fiscal Policies can Work or Fail Together*.
- Bengtsson, E. (2013). The political economy of banking regulation', *Credit and Capital Markets*, 46(3): 303-329.
- Bengtsson, E. (2020). Macroprudential policy in the EU: A political economy perspective. *Global Finance Journal*, 46, 100490.
- Bengtsson, E. (2021). Macroprudential policy in the EU-Institutional contexts and governance arrangements, in Hechmi, B. A, Ftiti, Z. and Louhichi, W. (2020) *Financial and Economic Systems: Transformations & New Challenges*, World scientific publishing.
- Bernanke, B. S., Kiley, M. T., & Roberts, J. M. (2019). Monetary policy strategies for a low-rate environment. In *AEA Papers and Proceedings*, vol. 109: 421-26.
- Blanchard, O., Dell'Ariccia, G. and Mauro P. (2010). *Rethinking Macroeconomic Policy*, SPN/10/03, IMF Staff Position Note.
- Bontempi, E. (2021). The Europe second wave of COVID-19 infection and the Italy "strange" situation. *Environmental Research*, 193, 110476.
- Borio, C., & Gambacorta, L. (2017). Monetary policy and bank lending in a low interest rate environment: diminishing effectiveness?. *Journal of Macroeconomics*, 54, 217-231.
- Carlsson-Szlezak, P., Reeves, M., & Swartz, P. (2020). Understanding the economic shock of Coronavirus. *Harvard Business Review*. Retrieved from <https://hbr.org/2020/03/understanding-the-economic-shock-of-coronavirus>
- Cavallino, P. and De Fiore, F. (2020). Central banks' response to Covid-19 in advanced economies, *BIS Bulletin No 21*, Bank for International Settlement.
- Davig, T., & Leeper, E. M. (2011). Monetary–fiscal policy interactions and fiscal stimulus. *European Economic Review*, 55(2), 211-227.
- Dehmej, S., & Gambacorta, L. (2019). Macroprudential Policy in a Monetary Union. *Comparative Economic Studies*, 61(2), 195-212.
- Eichenbaum, M. S., Rebelo, S., & Trabandt, M. (2020). *The macroeconomics of epidemics* NBER Working Paper No. 26882. National Bureau of Economic Research, Cambridge, MA.
- Elgin, C., Basbug, G., & Yalaman, A. (2020). Economic policy responses to a pandemic: Developing the Covid-19 economic stimulus index. *COVID Economics, Vetted and Real-Time Papers*, 3, 40–53.
- Eppinger, P. S., Felbermayr, G., Krebs, O., & Kukharsky, B. (2020). *Covid-19 shocking global value chains*. Kiel Working Paper No. 2167. Kiel Institute for the World Economy, Germany.
- ESRB (2021). *Policy measures in response to the COVID-19 pandemic*. <https://www.esrb.europa.eu/home/search/coronavirus/html/index.en.htm>
- Fokas, A. S., & Kastis, G. A. (2021). SARS-CoV-2: The Second Wave in Europe. *Journal of Medical Internet Research*, 23(5), e22431.

- Galati, G., Heemeijer, P., and Moessner, R. (2011). *How do inflation expectations form? New insights from a high-frequency survey*.
- Giuzio, M., Krušec, D., Levels, A., Melo, A. S., Mikkonen, K. & Radulova, P. (2019). Climate change and financial stability, *Financial Stability Review*, European Central Bank, vol. 1.
- Gourinchas, P.-O. (2020). *Flattening the pandemic and recession curves. Mitigating the COVID Economic Crisis: Act Fast and Do Whatever*. Retrieved from <http://viet-studies.net/kinhte/COVIDEconomicCrisis.pdf#page=38>
- Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I. (2020). *Macroeconomic implications of COVID-19: Can negative supply shocks cause demand shortages?* NBER Working Paper No. 26918. National Bureau of Economic Research, Cambridge, MA.
- Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S. & Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-021-01079-8>
- IMF (2021) *Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic*, IMF Fiscal Affairs Department July 2021.
- Mattli, W., and Woods, N. (Eds.). (2009). *The politics of global regulation*, Princeton University Press.
- McKibbin, W. J., & Fernando, R. (2020). *The global macroeconomic impacts of COVID-19: seven scenarios*. CAMA Working Paper No. 19/2020. The Center for Applied Macroeconomic Analysis, Australian National Univ.
- Milner, H. V. and Moravcsik, A. (Eds.). (2009). *Power, interdependence, and nonstate actors in world politics*. Princeton University Press
- Mulligan, C. B. (2020). *Economic activity and the value of medical innovation during a pandemic*. NBER Working Paper No. 27060. National Bureau of Economic Research, Cambridge, MA.
- Osinski, J., Seal, K., & Hoogduin, M. L. (2013). *Macroprudential and microprudential policies: toward cohabitation*, International Monetary Fund WP No. 13-15.
- Reis, R. (2021). *The constraint on public debt when  $r < g$  but  $g < m$* , European Central Bank Sintra conference (2021).
- Romer, C. D., & Romer, D. H. (2021). *The fiscal policy response to the pandemic*. Brookings Papers on Economic Activity.
- Romer, C. D. and Romer, D. H. (2017). New Evidence on the Aftermath of Financial Crises in Advanced Countries, *American Economic Review* 107(3), 072–3, 118.
- Sarker, P. (2020). Covid crisis: Fiscal, monetary and macro-financial policy responses, *Theoretical and Applied Economics*, 3(2020), 624.
- Schrimpf, A, Shin, H. and Sushko, V. (2020). Leverage and margin spirals in fixed income markets during the Covid-19 crisis, *Bulletin No 2*, Bank for International Settlement.
- Weder diMauro, B. (2020). *Macroeconomics of the flu*. Center for Economic Policy Research. Retrieved from <http://repository.graduateinstitute.ch/record/298218>

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<sup>i</sup> For a description of measures taken in US, CA, UK, JP and the Eurozone, see Cavallino and De Fiore (2020).

<sup>ii</sup> Including impacts on labour supply, consumption spending, financial markets, government expenditure and trade.

<sup>iii</sup> The policy data is available on: <https://www.esrb.europa.eu/home/coronavirus/html/index.en.html>. Policy measures by European Authorities (EBA, ESMA, EIOPA, ESRB, ECB, FATF) were omitted.

<sup>iv</sup> This includes examples such as when credit institutions in Estonia agreed to harmonise terms and conditions for deferral period for households and non-financial enterprises in April 2020.

<sup>v</sup> C.f. Reis (2021). An exception is Bengtsson (2021).

<sup>vi</sup> The Next Generation EU (NGEU) fund is a European Union economic recovery package to support member states adversely impacted by the COVID-19 pandemic. Agreed to by the European Council on 21 July 2020, the fund is worth €750 billion. The NGEU fund will operate from 2021–2023. It will be tied to the regular 2021–2027 budget of the EU's (MFF). The comprehensive NGEU and MFF packages are projected to reach €1824.3 billion.

<sup>vii</sup> See, for instance, Bartsch et al. (2020).

<sup>viii</sup> See for instance Dehmej and Gambacorta (2018); Blanchard et al. (2010); Galati et al. (2011).

<sup>ix</sup> See Osinski et al. (2013).

<sup>x</sup> See Bengtsson (2021).