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# Effects of monetary policy announcements on term premia in the euro area during the COVID-19 pandemic<sup>☆</sup>

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## ABSTRACT

We study the effects of the announcement of the ECB's Pandemic Emergency Purchase Programme (PEPP) on ten-year government bond term premia in eleven euro-area countries, while controlling for other ECB statements. We find that the term premia of government bonds in euro area countries with higher sovereign risk, as measured by sovereign CDS spreads, decreased more in response to the announcement of the PEPP. This occurred after these term premia had risen in response to a prior monetary policy press conference statement by the ECB president that the ECB was "not here to close spreads".

## 1. Introduction

The COVID-19 pandemic has inflicted economic damage on a previously unprecedented scale. Unlike climate change that is much slower moving, the COVID-19 pandemic had an immediate effect (Goodell, 2020). Some European countries were hit very hard by this crisis. In response to the COVID-19 pandemic, the ECB announced the Pandemic Emergency Purchase Programme (PEPP) on 18 March 2020, for purchases of government bonds of euro area countries and private sector securities for a total amount of €750 billion (later increased to €1.35 trillion). We study the effects of the announcement of the PEPP on ten-year government bond term premia in eleven euro-area countries, and examine whether the magnitude of these effects is related to sovereign risk, while controlling for other ECB statements.

Earlier, on 12 March 2020, the ECB president had stated that "We are not here to close spreads, this is not the function or the mission of the ECB [...] There are other tools for that and other actors to deal with those issues." (Financial Times, 2020). This statement may have been interpreted by market participants as refuting the "whatever it takes" statement by the previous ECB president Mario Draghi in July 2012, which was seen by market participants as instrumental in mitigating the euro area sovereign debt crisis.

The effect of asset purchases may be conditional on the level of sovereign risk. We therefore investigate whether and how perceived sovereign risk, as measured by sovereign credit default swap spreads (CDS), affected the reactions of government bond term premia to

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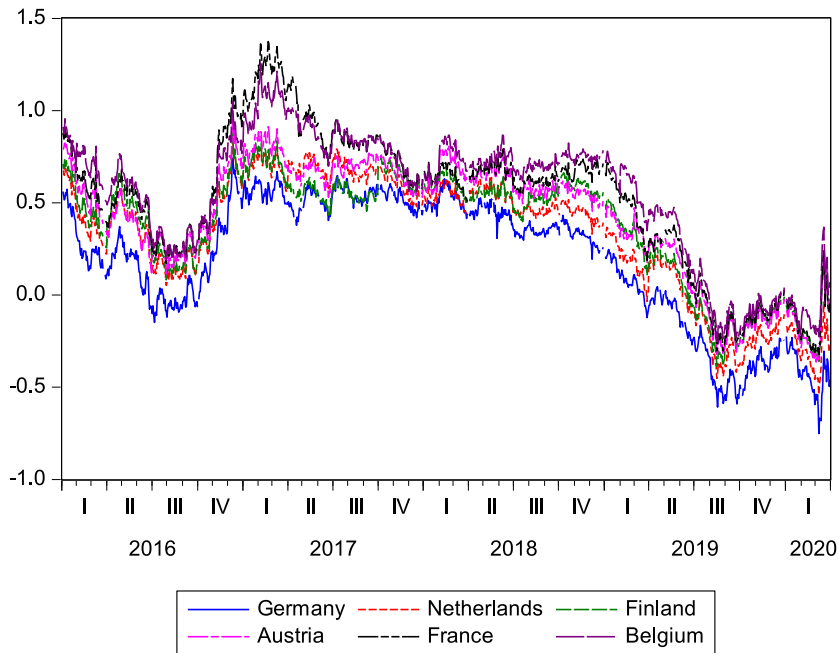


Fig. 1. Term premia of ten-year government bond yields (in percent).  
Source: NIESR.

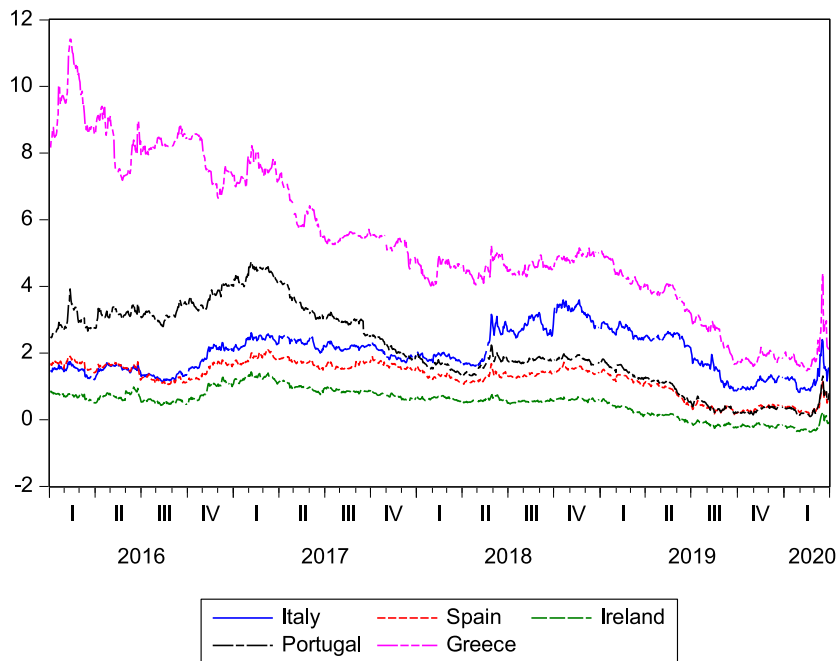


Fig. 2. Term premia of ten-year government bond yields (in percent).  
Source: NIESR.

the ECB’s monetary policy announcements during the pandemic.

The effects of ECB monetary policy announcements on government bond yields and other asset prices have been widely studied (see, for example, [Altavilla et al. 2016](#)). For a general survey of the effects of central bank communication on financial markets we refer to [Blinder et al. \(2008\)](#). Our paper is also related to the literature on the impact of the COVID-19 pandemic on finance as discussed in [Goodell \(2020\)](#).

**Table 1**  
ECB asset purchase announcements and press conference.

Date	ECB announcements
10 March 2016	Corporate sector purchase programme (CSPP) (part of Asset purchase programme (APP))
2 June 2016	Details of CSPP
8 December 2016	From April 2017, net asset purchases under APP are intended to continue at a monthly pace of €60 billion
26 October 2017	From January 2018, net asset purchases under APP are intended to continue at a monthly pace of €30 billion
25 October 2018	From October 2018 to December 2018, net asset purchases under APP are intended to continue at the new monthly pace of €15 billion
12 September 2019	Net purchases will be restarted under the APP
12 March 2020	Press conference statement by ECB president that the ECB was “not here to close spreads”
18 March 2020 <sup>a</sup>	Pandemic Emergency Purchase Programme (PEPP)

Notes: <sup>a</sup> Announced late in the evening of 18 March, so that incorporated into market prices on 19 March.

The paper is organised as follows. Section 2 presents the data, Section 3 presents the method and results, and Section 4 concludes.

## 2. Data

We use a decomposition of government bond yields into term premia and expected interest rates at the ten-year maturity for eleven euro-area countries calculated by the National Institute of Economic and Social Research (NIESR), applying the method of Adrian et al. (2013) to government bonds of Germany, the Netherlands, Finland, Austria, France, Belgium, Italy, Spain, Ireland, Portugal and Greece (Figures 1 and 2). See Chadha et al. (2017) for further details.<sup>1</sup> Daily estimates of term premia allow to conduct event studies for determining the effects of central bank announcements. Unfortunately, data for other euro area countries are not provided by this source. The sample period is 1 January 2016 to 31 March 2020. However, below we also report results if we limit the sample to the COVID-19 period.

We define a dummy variable for the press conference statement of 12 March 2020 by the ECB president that the ECB was “not here to close spreads”,  $d_{pc}(t)$ , which equals one on 12 March 2020, and zero otherwise. The ECB’s PEPP was announced late in the evening of 18 March 2020, so that it was incorporated into market prices only on 19 March 2020. We define a dummy variable for the announcement of the PEPP,  $d_{pepp}(t)$ , which equals one on 19 March 2020, and zero otherwise.

We control for other asset purchase announcements during our sample period (Table 1). One dummy variable for asset purchase announcements, related to an expansion of asset purchases,  $d_{apo}(t)$ , equals one on 10 March 2016, 2 June 2016 and 12 September 2019, and zero otherwise. A second dummy variable for asset purchase announcements related to a reduction of asset purchases,  $d_{apu}(t)$ , equals one on 8 December 2016, 26 October 2017 and 25 October 2018, and zero otherwise.

We control for conventional monetary policy by including daily changes in the three-month euro overnight index swap (OIS) rate in the regressions. We also control for the effect of macroeconomic news via Citigroup economic surprise indices for the euro area, measured as actual releases minus Bloomberg median survey expectations (Boesler, 2013). A positive value implies that data releases have on average been higher than median survey expectations.

As a measure of sovereign risk, we use data on 5-year sovereign CDS spreads for individual euro area countries. We use sovereign CDS spreads as a difference to France to provide some normalization of the CDS spreads and thereby an easier interpretation of the coefficients on the additive dummy variables, given the interaction terms. France was chosen as a country with intermediate CDS spreads. However, all results hold when using sovereign CDS spreads for each country directly, rather than as a difference to France (results available on request).

## 3. Method and results

There is an extensive literature examining the effects of monetary policy announcements on financial markets. The main idea of this research is to assess the effects of the policy announcements through the regression of changes in some financial market price (like sovereign bond yields) on event dummies (taking a value one on the date of the event, and zero otherwise) while, at the same time, controlling for all the other relevant “news” made publicly available in the period under analysis (cf. Altavilla et al., 2016). We follow this line of literature. Building on Moessner (2018), we estimate for each country  $i$ , the following model:

$$\Delta y(t) = c + a_{pepp}d_{pepp}(t) + a_{pc}d_{pc}(t) + b_1d_{apo}(t) + b_2d_{apu}(t) + g_1\Delta OIS(t) + g_2\Delta esi(t) + \varepsilon_t \quad (1)$$

where  $y(t)$  is the term premium of 10-year government bond yields,  $\Delta$  denotes daily changes,  $OIS(t)$  is the three-month OIS rate, and  $esi(t)$  is the economic surprise index for the euro area. We use Newey-West adjusted standard errors to control for heteroskedasticity and autocorrelation.

<sup>1</sup> The model used is a five-factor affine no-arbitrage term-structure model. According to such models, the yield to maturity of a government bond with a maturity of  $n$  years at time  $t$  can be decomposed into an expectation component, which reflects the average of the expected path of short-term interest rates over the life of the government bond, and a term premium component, which is the extra return that investors require to hold a longer-term government bond with a maturity of  $n$  years. The term premium is the difference between the nominal government bond yield and the expected future short-term interest rates.

**Table 2**

Effects on ten-year government bond term premia of ECB asset purchase announcements and press conference.

Dependent variable: Daily changes in 10-year term premia (basis points)								
Country	$d_{pepp}$	$d_{pc}$	$d_{apo}$	$d_{apu}$	$\Delta OIS$	$\Delta esi$	Adj. R <sup>2</sup>	No. obs.
Germany	-5.22***	-7.08***	-0.99	0.09	0.81***	0.05***	0.023	1039
Netherlands	-6.94***	1.51	1.52	0.84	0.56**	0.05***	0.022	1039
Finland	-3.98***	-0.40	1.62	-0.21	0.44	0.05***	0.010	1039
Austria	-10.31***	4.54**	2.20	-0.18	0.71***	0.06***	0.035	1039
France	-10.16***	16.99***	1.88	2.04	0.48*	0.06***	0.052	1039
Belgium	-12.97***	15.57***	2.07	-0.24	0.59**	0.05***	0.054	1039
Italy	-60.43***	72.26***	-0.28	-3.11	-0.82	0.05	0.154	1039
Spain	-36.72***	25.52***	0.015	-1.98	-0.20	0.05*	0.083	1039
Ireland	-4.69***	12.99***	2.86	0.98	0.16	0.03*	0.017	1039
Portugal	-37.00***	39.15***	2.53	5.24	-0.78	0.02	0.062	1039
Greece	-172.89***	70.29***	-6.51	-1.72	-2.90**	-0.08	0.178	1039

\*\*\*, \*\* and \* represent significance at the 1%, 5% and 10% levels, respectively. Constant not shown. Newey-West adjusted standard errors. Sample period: 1 January 2016 to 31 March 2020.

**Table 3**

Effects on ten-year government bond term premia of ECB asset purchase announcements and press conference during the pandemic, fixed effects panel regressions.

Dependent variable: Changes in 10-year term premia over $m$ days (basis points)				
$m$ :	1	2	3	5
$d_{pepp}$	-8.88***	-26.55***	-16.91***	-13.09***
$d_{pc}$	14.96***	32.04***	46.24***	61.69***
$d_{pepp} \cdot CDS^m(-1)$	-0.36***	-0.33***	-0.31***	-0.32***
$d_{pc} \cdot CDS^m(-1)$	0.18***	0.14***	0.28***	0.53***
$d_{apo}$	2.81	-2.67	-2.05	-3.38
$d_{apu}$	0.31	3.92	3.57	-1.79
$d_{apo} \cdot CDS^m(-1)$	-0.03*	-0.04*	-0.04	-0.04
$d_{apu} \cdot CDS^m(-1)$	-0.002	0.01***	0.01	0.04
$\Delta OIS$	-0.11	-0.45	-0.93	-1.22
$\Delta esi$	0.04**	0.01	0.07	0.07
$CDS^m(-1)$	-0.001	-0.003	-0.005	-0.01
Adj. R <sup>2</sup>	0.11	0.08	0.06	0.07
No. obs.	11313	11192	11137	11160

Notes:  $CDS^m$ : Sovereign CDS spread in a country minus that in France (in basis points).  $m$  corresponds to window size in days. Countries: Germany, the Netherlands, Finland, Austria, France, Belgium, Italy, Spain, Ireland, Portugal, Greece. \*\*\*, \*\* and \* represent significance at the 1%, 5% and 10% levels, respectively. Sample period 1 January 2016 to 27 March 2020. Robust (White cross-section) standard errors.

The results for equation (1) are shown in Table 2. The press conference by the ECB president on 12 March 2020 led to significant increases in 10-year government bond term premia in Austria, France, Belgium, Ireland, Italy, Spain, Portugal and Greece. The largest increases of between 25 and 73 basis points occurred in Spain, Portugal, Greece and Italy. This suggests that the press conference statement was interpreted by market participants as refuting Draghi's "whatever it takes". By contrast, 10-year government bond term premia in the Netherlands and Finland were not significantly affected, while German premia even fell significantly in response to the press conference, by 7 basis points. This could reflect views by market participants that if the ECB did not see its role anymore as buying government bonds of peripheral euro area countries, this could reduce the likelihood of transfer payments from the German government to the ECB to cover potential losses on its government bond holdings from any sovereign default of a peripheral euro area country.

The announcement of the ECB's PEPP in the following week led to a significant reduction in 10-year government bond term premia in all euro area countries. The largest reductions, of between 37 and 173 basis points, occurred in the same countries that had seen the largest increases in their term premia following the press conference in the previous week. We can also see that other asset purchase announcements considered did not have a significant effect on term premia in any country.

Next, we use fixed effects panel regressions to study the effect of sovereign risk on the reactions to monetary policy announcements. To do so, we interact the dummy variables for the monetary policy announcements with lagged CDS spreads,

$$\begin{aligned} \Delta y_i(t) = & c_i + a_{pepp} d_{pepp}(t) + a_{pc} d_{pc}(t) + a_1 d_{pepp}(t) CDS_i^m(t-1) + a_2 d_{pc}(t) CDS_i^m(t-1) + b_1 d_{apo}(t) + b_2 d_{apu}(t) \\ & + b_3 d_{apo}(t) CDS_i^m(t-1) + b_4 d_{apu}(t) CDS_i^m(t-1) + g_1 \Delta OIS(t) + g_2 \Delta esi(t) + h_1 CDS_i^m(t-1) + \varepsilon_{it} \end{aligned} \quad (2)$$

where  $\Delta y_i(t)$  are daily changes in 10-year government bond term premia in country  $i$ ,  $CDS_i^m(t)$  are CDS spreads in country  $i$  minus those in France, and  $c_i$  are country fixed effects to control for unobserved country heterogeneity. The results for equation (2) are shown in Table 3. We find that the press conference by the ECB president on 12 March 2020 led to significant increases in 10-year government bond term premia in euro area countries. We also find that the announcement of the ECB's PEPP in the following week led to a

**Table 4**

Effects on ten-year government bond term premia of ECB asset purchase announcements and press conference during the pandemic, fixed effects panel regressions when restricting the sample period to the COVID-19 pandemic.

Dependent variable: Changes in 10-year term premia over window size of $m$ days (basis points)				
$m$ :	1	2	3	5
$d_{pepp}$	-8.92***	-26.02***	-16.63***	-12.25***
$d_{pc}$	15.27**	48.34***	65.32***	98.11***
$d_{pepp} \cdot CDS^m(-1)$	-0.42***	-0.38***	-0.35***	-0.32***
$d_{pc} \cdot CDS^m(-1)$	0.13***	0.10	0.25***	0.52***
$\Delta OIS$	-0.15	-2.37	-3.29	-5.67
$\Delta esi$	0.04	-0.09	0.27**	0.29**
$CDS^m(-1)$	0.10*	0.08	0.05	-0.02
Adj. $R^2$	0.48	0.31	0.29	0.38
No. obs.	643	643	643	633

Notes:  $CDS^m$ : Sovereign CDS spread in a country minus that in France (in basis points);  $m$  corresponds to window size in days. Countries: Germany, the Netherlands, Finland, Austria, France, Belgium, Italy, Spain, Ireland, Portugal, Greece. \*\*\*, \*\* and \* represent significance at the 1%, 5% and 10% levels, respectively. Sample period 1 January 2020 to 27 March 2020. Robust (White cross-section) standard errors.

significant reduction in 10-year government bond term premia in euro area countries. These results are consistent with those we found for regression (1) above. Moreover, we find that the coefficients on the interaction terms of both dummy variables  $d_{pc}(t)$  and  $d_{pepp}(t)$  with CDS spreads are significant. The coefficient on the interaction term of the dummy variable  $d_{pc}(t)$  with CDS spreads is significantly positive, implying that term premia increased by more in response to the press conference for countries with higher sovereign risk. The coefficient on the interaction term of the dummy variable  $d_{pepp}(t)$  with CDS spreads is significantly negative, implying that term premia fell by more in response to the PEPP announcement for countries with higher sovereign risk. We also find that the dummy variables for the other monetary policy announcements,  $d_{apo}(t)$  and  $d_{apu}(t)$ , are not significant, consistent with the results for equation (1). We find a small negative coefficient on the interaction of  $d_{apo}(t)$  with lagged CDS spreads, which is only significant at the 10% level.

We have redone the estimates reported in Table 3 for a shorter COVID-19 pandemic sample period only which covers all observations in 2020 (China reported the outbreak of COVID-19 to the WHO on 31 December 2019). Our main findings for the effects of monetary policy announcements are robust to the choice of this shorter sample period (see Table 4).

Finally, we investigate whether the effects of the important monetary policy statements during the pandemic on term premia, and the relationship of these effects with sovereign CDS spreads, are longer lasting or just temporary. We do so by estimating the following panel regressions:

$$\begin{aligned} \Delta^k y_i(t) = & c_i + a_{pepp} d_{pepp}(t) + a_{pc} d_{pc}(t) + a_1 d_{pepp}(t) CDS_i^m(t-1) + a_2 d_{pc}(t) CDS_i^m(t-1) + b_1 d_{apo}(t) + b_2 d_{apu}(t) \\ & + b_3 d_{apo}(t) CDS_i^m(t-1) + b_4 d_{apu}(t) CDS_i^m(t-1) + g_1 \Delta OIS(t) + g_2 \Delta esi(t) + h_1 CDS_i^m(t-1) + \varepsilon_{it} \end{aligned} \tag{3}$$

where  $\Delta^k y_i(t)$  denotes changes in 10-year government bond term premia in country  $i$  over a window of  $k$  days,  $\Delta^k y_i(t) = y_i(t+k-1) - y_i(t-1)$ , for  $k=2, 3$  or  $5$ . The results for equation (3) are also shown in Table 3. We find that the coefficients on both  $d_{pepp}(t)$  and  $d_{pc}(t)$  remain significant for all window sizes from 2 to 5 days, and are even larger in magnitude than for the one-day window. Moreover, the coefficients on the interaction terms of the dummy variables with CDS spreads remain significant for all window sizes from 2 to 5 days. We therefore find that the effects of the important monetary policy statements during the pandemic on term premia are longer lasting and not just temporary. Moreover, the relationship of the effects of these monetary policy statements on term premia with sovereign CDS spreads remains significant for larger window sizes of 2 to 5 days.

**4. Conclusions**

Central bank asset purchase programmes may affect financial markets through several channels. One important channel is the announcement effect. There is an extensive literature examining the effects of monetary policy announcements on financial markets (see the discussion of the literature in Altavilla et al., 2016 and Moessner, 2018). This paper has examined the effect of the announcement of the ECB’s PEPP on ten-year government bond term premia in eleven euro-area countries while controlling for other ECB statements. To the best of our knowledge, this is the first paper examining the announcement effects of the PEPP. Importantly, our results not only show that this announcement affected government bond yields, but also suggest that the term premia of government bonds in euro area countries with higher sovereign risk, as measured by sovereign CDS spreads, decreased more in response to the announcement of the PEPP.

In response to the COVID-19 pandemic, governments in the euro area introduced fiscal measures to alleviate its economic effects. These fiscal measures and the economic downturn due to the pandemic led to higher expected fiscal deficits and government debt in euro area countries. Central bank purchases of government bonds can support fiscal policy by reducing the government’s financing costs. With high central bank credibility, central bank purchases of government bonds can increase fiscal space by reducing government bond yields. Our results suggest that the announcement of the PEPP helped sustain fiscal policy of the countries most affected by the COVID-19 pandemic.

**CRedit authorship contribution statement**

**Richhild Moessner:** Conceptualization, Methodology, Writing – original draft. **Jakob de Haan:** Conceptualization, Writing – review & editing.

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