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Working Paper

Does the European Central Bank speak differently when in parliament?

ECB Working Paper, No. 2705

Provided in Cooperation with:

European Central Bank (ECB)

Suggested Citation: Fraccaroli, Nicolò; Giovannini, Alessandro; Jamet, Jean-François; Persson, Eric (2022) : Does the European Central Bank speak differently when in parliament?, ECB Working Paper, No. 2705, ISBN 978-92-899-5290-3, European Central Bank (ECB), Frankfurt a. M.,
<https://doi.org/10.2866/851865>

This Version is available at:

<https://hdl.handle.net/10419/269112>

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EUROPEAN CENTRAL BANK

EUROSYSTEM

Working Paper Series

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Does the European Central Bank speak differently when in parliament?

Revised December 2022

No 2705 / August 2022

Disclaimer: This paper should not be reported as representing the views of the European Central Bank (ECB). The views expressed are those of the authors and do not necessarily reflect those of the ECB.

Abstract

Parliamentary hearings are a fundamental tool to hold independent central banks accountable. However, it is not clear what type of information central banks provide when they communicate with parliaments compared to other existing information channels. In this article, we address this question by comparing the communication of the European Central Bank (ECB) in parliamentary hearings to its communication in the regular press conferences that follow monetary policy decisions. Using text analysis on the ECB President's introductory statements in parliamentary hearings and press conferences from 1998 to 2021, we show that the ECB uses parliamentary hearings to discuss topics that are less covered in press conferences. We also find that the ECB's policy stance in the hearings tends to reflect the stance in press conferences, and that the degree of language complexity is similar in the two fora. These findings support the view that the ECB mainly uses parliamentary hearings to further explain policy decisions first presented at press conferences but also to put them in a broader context.

Keywords: Central Bank Accountability, Central Bank Communication.

JEL classification: E02; E52; E58.

Non-Technical Summary

The regular hearings of the European Central Bank (ECB) in the European Parliament (EP) are arguably the main mechanism in place to hold the central bank accountable. This paper looks at what and how the ECB communicates in this context. Specifically, the paper compares the text of the ECB President's introductory statements in parliamentary hearings and in the regular press conferences that follow monetary policy decisions. The latter provides a clear and helpful benchmark as the aim of press conferences is primarily to explain the monetary policy decisions of the ECB Governing Council immediately after the meeting of its members based on an analysis of the euro area's economic outlook.

In comparison, the primary objective of the quarterly public parliamentary hearings is for Members of the European Parliaments (MEPs) to hold the President of the ECB accountable. In those hearings, the President of the ECB is expected to explain and justify the central bank's policies before MEPs and answer their questions. At the same time, the hearings are streamed live on a freely accessible online platform and the introductory statements by the ECB President are published. Therefore, the potential audience goes beyond MEPs, and include the media, financial markets and the broader European public. Given the potential for multiple audiences, parliamentary hearings may be used by the ECB for broader communication purposes.

The paper applies text analysis techniques to textual data consisting of the transcripts of the ECB's introductory statements before the EP and at press conferences from 1998 to 2021. On this basis, the paper identifies the differences and similarities in the ECB's communication between the two fora. The results indicate that the ECB covers a broader range of topics when speaking in the hearings compared to press conferences. On the other hand, the ECB President's speeches at parliamentary hearings reflect similar policy positions and sentiments to those expressed in press conferences, rejecting the possibility that the ECB uses the hearings to communicate new information on monetary policy. This is consistent with the idea that the hearings are used to further explain monetary policy decisions first announced at press conferences. The analysis also shows that the central bank adopts a comparable degree of language complexity when speaking in the EP and at press conferences, suggesting that the hearings do not serve a pedagogical purpose.

The paper also assesses what has changed in the ECB communication toward the EP in the

period of the Covid-19 crisis. While it is too early to provide a fully-fledged empirical assessment, the analysis offers some stylized facts. First, if anything, the pandemic has reinforced the role of hearings as a tool to discuss broader topics: the ECB has dedicated more time to discuss issues related to Economic and Monetary Union (EMU) governance (including fiscal policy), financial stability and the environment when in parliament. Second, the ECB starkly reduced its degree of language complexity both in the press conferences and in the hearings. This change likely stems from the ECB's Strategy Review concluded in July 2021, which placed specific emphasis on enhancing the accessibility of its communication ([European Central Bank, 2021b](#)).

The evidence presented in paper is particularly relevant for the debate on the ECB's accountability. While the paper does not directly tackle normative considerations about which type of communication is the most desirable for accountability purposes, its results confirm that parliamentary hearings are used by the central bank to further explain monetary policy decisions first announced at press conferences, while also elaborating on topics that are related to its policy decisions, but are not the focus of its press conferences.

1 Introduction

The regular hearings of the European Central Bank (ECB) in the European Parliament (EP) are arguably the main mechanism in place to hold the central bank accountable ([Bank for International Settlements, 2009](#); [Fraccaroli, Giovannini and Jamet, 2018](#)). Although during these hearings the ECB President physically speaks before the Members of the European Parliament (MEPs), the central bank potentially communicates to multiple audiences. Since the hearings are streamed live on a freely accessible online platform¹ and the introductory statements of the ECB President are published, the potential audience includes the MEPs, the media, financial markets and, more broadly, European citizens.

The central question we tackle in this article is: what does the ECB use its speeches in the parliamentary hearings for? To understand what and how the ECB communicates in parliamentary hearings, we compare the text of the ECB's introductory statements in the hearings and in the regular press conferences that follow monetary policy decisions. The latter indeed provides a clear and helpful benchmark to investigate the central bank's communication in parliament.

The aim of press conferences is primarily to explain the monetary policy decisions of the ECB Governing Council immediately after the meeting of its members and to provide an informative outlook about the future course of monetary policy. While, over the years, the ECB has stepped up its efforts to reach wider audiences through its press conferences ([European Central Bank, 2021b,a](#)), the latter remain mainly directed to market participants, as described by a wide strand of research ([Ehrmann and Fratzscher, 2009](#); [Berger, De Haan and Sturm, 2011](#); [Coenen et al., 2017](#); [Altavilla et al., 2019](#); [Möller and Reichmann, 2021](#)). In comparison, the primary objective of the quarterly public parliamentary hearings is for MEPs to hold the President of the ECB accountable. In those hearings, the President of the ECB is expected to explain and justify the central bank's policies before MEPs and answer their questions. At the same time, given the potential for multiple audiences discussed above, parliamentary hearings offer the possibility to the ECB to use parliamentary hearings for broader communication purposes. First, hearings could be used as a pedagogical tool to explain the central bank's decisions to MEPs and the European public. Under this hypothesis, the ECB would mainly aim to further explain the monetary policy decisions first

¹While the live stream of the hearings has been introduced only in August 2009, the written transcripts of the hearings have been accessible to the public since their inception.

announced at press conferences. This could entail an effort at using a simpler and more accessible jargon. Second, they could be used as a channel to communicate new policy information to financial markets and expert audiences in addition to regular press conferences. Third, the hearings could be a helpful tool to provide more information on ancillary topics of relevance to the ECB's policies that are less the focus of press conferences than price stability (its primary objective), such as financial stability or the protection of the environment.

We use text analysis to explore how the ECB communicates in the parliamentary hearings. Our textual data consists of the transcripts of the ECB's introductory statements before the EP and at press conferences from 1998 to 2021. The introductory statement of the ECB President is indeed common to both fora and are carefully prepared before each meeting. Therefore, these statements (different from the Q&A sessions) reflect what the central bank intends to proactively communicate.² Through the use of different text analysis techniques, we are able to draw the differences and similarities in the ECB's communication between the two fora.

We show how the ECB's introductory statements in the EP differ from those in press conferences as regards topic coverage, language complexity, hawkish/dovish stance and sentiments. Our results indicate that the ECB covers a broader range of topics when speaking in the hearings compared to press conferences. On the other hand, the speeches in the hearings reflect similar policy positions and sentiments to those expressed in press conferences, rejecting the possibility that the ECB uses the hearings to communicate new information on monetary policy. This is consistent with the idea that the hearings are used to further explain monetary policy decisions first announced at press conferences. We also find that the central bank adopts a comparable degree of language complexity when speaking in the EP and at press conferences, suggesting that the hearings do not serve a pedagogical purpose.

Our evidence is particularly relevant for the debate on the ECB's accountability. While we do not directly tackle normative considerations about which type of communication is the most desirable for accountability purposes, our results confirm the parliamentary hearings as an important channel for the central bank to elaborate on topics that are related to its policy decisions, but that are not the focus of its press conferences. In our article, we also zoom in on the period of the Covid-

²As we explain in more detail in the next section, the communication in the introductory statement differs from that of the Q&A session. In the Q&A, the President of the ECB replies to the questions of the legislators and the journalists, which hence influence the topics (and arguably the tone and language complexity) of the ECB's communication.

19 crisis to assess what has changed in the ECB communication toward the EP over this period. While it is too early to provide a fully-fledged empirical assessment, our results point to some stylized facts that are worth of attention. First, if anything, the pandemic has reinforced the role of hearings as a tool to discuss broader topics: the ECB has dedicated more time to discuss issues related to Economic and Monetary Union (EMU) governance (including fiscal policy), financial stability and the environment when in parliament. Second, the ECB starkly reduced its degree of language complexity both in the press conferences and in the hearings. This change, however, likely stems from the ECB's Strategy Review concluded in July 2021, which placed specific emphasis on enhancing the accessibility of its communication (European Central Bank, 2021b), rather than from the pandemic. These findings contribute to the emerging strand of research that examines how central bank communication has evolved during the Covid-19 pandemic (Benchimol, Kazinnik and Saadon, 2021; Yang, Correa and Londono, 2020).

We also contribute to the wider literature on the communication of the ECB, which has examined separately the text of the ECB's press conferences (Ehrmann and Fratzscher, 2009; Coenen et al., 2017; Altavilla et al., 2019; Möller and Reichmann, 2021; Parle, 2022) and of the ECB's parliamentary hearings (Collignon and Diessner, 2016; Fraccaroli, Giovannini and Jamet, 2018, 2020; Fraccaroli et al., 2022; Ferrara et al., 2021; Diessner, 2021; Massoc, 2022).³ Previous studies analyzed the similarities of the two types of ECB speeches from a qualitative perspective and based on limited samples (Eijffinger and Mujagic, 2004; Claeys, Hallerberg and Tschekassin, 2014). To our knowledge, this work is the first to compare empirically the ECB's statements in parliamentary hearings and press conferences.

The next section provides a brief overview of the ECB's hearings and outlines the main hypotheses around how the ECB may interpret its communication in this forum. Section 3 describes the textual data and Section 4 the methodology we use to analyze these texts. Section 5 outlines our main results, while Section 6 focuses on the period of the Covid-19 crisis. The final section concludes.

³Other works analyse the parliamentary hearings of other central banks, such as the Federal Reserve and the Bank of England (Bisbee, Fraccaroli and Kern, 2022; Schonhardt-Bailey, 2022; Schonhardt-Bailey, Dann and Chapman, 2022).

2 Background and Hypotheses

2.1 Background

The quarterly hearings of the ECB before the EP arguably represent the main tool to hold the ECB accountable in line with Article 284(3) of the Treaty on the Functioning of the European Union (TFEU). In these public meetings, also known as “Monetary Dialogues”, the President of the ECB appears before the EP’s Committee of Economic and Monetary Affairs (also referred to as ECON Committee). The hearings, chaired by the Chair of the ECON committee, begin with an introductory statement of the ECB President, which is the speech that we analyze in this article. Following this speech, MEPs from different parties and Member States address their questions to the ECB President.

In this work we focus solely on the introductory statements since they reflect what the central bank proactively intends to communicate, whereas the central bank’s answers in the Q&A session depend on the questions of MEPs, which are not handed to the ECB President before the meeting.⁴ Before each hearing, the ECON Committee selects two topics to discuss in the hearings and invites a panel of experts from academia and think tanks to prepare briefing papers on these topics.⁵ The ECB President generally covers these topics in the introductory statement (Claeys, Hallerberg and Tschekassin, 2014).

Press conferences are similar to the hearings as they begin with an introductory statement and are followed by a Q&A session with journalists. However, they differ from the hearings as the main purpose is to inform market participants on monetary policy decisions just taken. Press conferences take place immediately after the publication of the Governing Council’s monetary policy announcement and have a relevant impact on the markets (Ehrmann and Fratzscher, 2009; Altavilla et al., 2019).⁶ These differences are exploited in our empirical analysis.

⁴While a study of the Q&A sessions goes beyond the scope of our research, recent works found that party ideology is a relevant determinant of the topics MEPs choose to cover (Fraccaroli et al. 2022; Ferrara et al. 2021).

⁵The practice of inviting a panel of monetary experts to brief MEPs before the hearings started on 19 April 1999, i.e. on the date of the second hearing in the history of the ECB. For the period until April 2004, the corresponding documentation can be found on the European Parliament’s website at this link: https://www.europarl.europa.eu/comparl/econ/emu/5th_leg_en.htm.

⁶Another notable difference is that press conferences are more frequent: since they follow the Governing Council’s decisions, they have taken place every month until December 2014 and every six weeks subsequently, while the hearings occur four times per year.

2.2 Hypotheses

We formulate three hypotheses on what type of communication the ECB uses when speaking in parliament. The empirical comparison with press conferences is helpful to understand which of these hypotheses hold.

H1: The ECB uses the hearings to further explain its monetary policy decisions.

H1a: The ECB uses a simpler language in hearings.

First, the ECB may use the hearings to further explain its monetary policy decisions (H1). This would be consistent with the aim of accountability, defined as the legal and political obligation of an independent central bank to explain and justify its decisions to citizens and their elected representatives (Fraccaroli, Giovannini and Jamet, 2018). While monetary policy decisions are first announced at press conferences, hearings offer an opportunity to subject these decisions to the scrutiny and questions of elected representatives. H1 would be supported in case the ECB keeps its main focus on price stability and remains consistent with the stance expressed at press conferences.

In a variant of this hypothesis (H1a), the ECB may use a simpler language in the hearings to make communication more accessible to the broader European public. This hypothesis would be consistent with central banks' recent efforts to make their communication more accessible to the wider public (Haldane, 2018; Bholat et al., 2019; Haldane and McMahon, 2018; Ferrara and Angino, 2021; European Central Bank, 2021a).⁷

H2: The ECB uses the hearings as a channel to signal shifts in its policy stance.

The second hypothesis is that the ECB uses the hearings as a channel to communicate new policy intentions. In this context, the central bank would use the hearings also as a tool to signal shifts in its policy stance, thereby conveying new information on policy rather than merely

⁷It should be noticed, however, that a simpler language does not necessarily imply better communication and higher accountability if it becomes simplistic (Istrefi, 2019).

explaining past decisions. According to anecdotal evidence, the Federal Reserve uses its congressional hearings to announce new policy intentions (Claeys, Hallerberg and Tschekassin, 2014). In the case of the ECB, existing evidence shows that the hearings do not affect financial markets (Collignon and Diessner, 2016). We test this second hypothesis by looking at the policy stances of the ECB in the introductory statements in the hearings compared to press conferences.

H3: The ECB uses the parliamentary hearings to discuss in more details topics that are less the focus of press conferences.

Under a third hypothesis, the central bank would use the hearings to clarify how its monetary policy could have implications on financial stability, employment, the governance of the EMU, or climate change. In this scenario, the function of the hearing would be in line with the accountability purpose of explaining and justifying monetary policy decisions. Under this hypothesis, we expect the ECB to focus more evenly on a wider range of topics when speaking in the hearings than in press conferences.

3 Data

We collect textual data on two types of ECB speeches: the introductory statements (ISs) of the ECB President before the regular hearings at the EP and those of the ECB President before the regular press conference. All texts are reported in English. The data covers the period from 8 July 1998 to 27 September 2021, i.e. the terms of all the four presidents of the ECB.⁸

The first corpus of text consists of the ECB President's ISs before the EP. The second corpus of text consists of the ECB President's ISs that open the press conferences. Table 1 summarizes the main features of the textual data broken down by speech type. Press conferences compose the majority of the database since they are more frequent than EP hearings. The ISs in the EP hearings tend to be longer than those in press conferences: the average number of words used by the ECB in the hearings is almost twice as large as in press conferences.

⁸Wim Duisenberg (1 June 1998 – 31 October 2003), Jean-Claude Trichet (1 November 2003 – 31 October 2011), Mario Draghi (1 November 2011 – 31 October 2019), and Christine Lagarde (1 November 2019 – present).

Table 1: Descriptive Statistics of ECB texts

Speech Type	# of Texts	Average # of Words	Years
IS at European Parliament Hearings	90	2,550	1999-2021
IS at Press Conferences	249	1,464	1998-2021
Total	339	1,752	1998-2021

4 Methodology

We employ different text-based indicators to obtain quantitative measures of how the ECB communicates in the EP compared to press conferences.⁹

4.1 Topics

Dictionary techniques are helpful in capturing the focus of the ECB on specific topics (Fraccaroli, Giovannini and Jamet, 2020). To identify whether the ECB discusses a topic, we create a list of terms related to that issue and inspect how frequently those terms feature in different documents. We apply the same procedure for each topic we select. We look at seven topics that the ECB is likely to discuss during the hearings and press conferences: price stability, financial stability, employment, EMU governance, international developments, payment issues and the environment.¹⁰

The following equation captures the focus of the ECB on each topic $k \in \mathbb{K}$, where $\mathbb{K} = \{PriceStability, \dots, Environment\}$, for each speech i in date t :

$$Topic_{it}^k = \frac{Matches_{it}^k}{N_{it}} \quad (1)$$

Where N is the total number of words in a speech. $Matches$ is the total number of terms related to topic k that are matched in a speech.¹¹

⁹We pre-process the text of the speeches to ensure comparability. In particular, we remove stop words and lower case all terms to make sure that capital letters do not prevent matches. After pre-processing the text, we compute a number of indicators depending on the aspect of communication we intend to capture.

¹⁰Section A1 in the Appendix provides the full list of terms we select to capture each topic. Terms can be unigrams ('inflation'), bigrams ('price stability'), or trigrams ('multiannual financial framework'). In rare cases, we include terms composed of four or five words. The list of keywords for the topics of price stability, financial stability and employment are from Fraccaroli, Giovannini and Jamet (2020), while we created the lists for other topics.

¹¹We weigh the number of terms matched by the number of terms contained in a text to avoid that longer texts report higher scores due to their length, and not due to a higher focus on a certain topic.

4.2 Policy Stances and Sentiments

We compute the hawkish/dovish stance based on the lexicons by [Apel and Blix-Grimaldi \(2014\)](#). This lexicon was originally constructed to predict the monetary policy stance of the Swedish central bank based on the text of the minutes of its Monetary Policy Committee. Based on their article, we construct an indicator of the net hawkish stance, which is given by the difference between hawkish and dovish matched terms divided by the total number of terms. Higher values of this index are associated with a more hawkish stance, while lower values indicate a more dovish stance.

To measure sentiments, we match textual data with the sentiment lexicon provided by [Hu and Liu \(2004\)](#). This indicator is different from the net hawkish stance, as it focuses on positive and negative sentiments more broadly, and not on hawkish and dovish policy stances, which is instead the focus of the previous indicator. The lexicon in [Hu and Liu \(2004\)](#) consists of 2,006 terms that capture positive sentiments and 4,791 terms for negative sentiments. While this lexicon was constructed based on movie reviews, it has been successfully used to capture sentiments in central banks' texts ([Fraccaroli, Giovannini and Jamet, 2020](#); [Fraccaroli et al., 2022](#)). As for previous measures, we weigh the number of matches by the total number of words contained in each text. We then compute an indicator of net sentiments by taking the difference between positive and negative sentiments for each speech. The degree of net sentiments is a helpful indicator to identify the ECB's perspective over the economic outlook, which is likely to influence its policy stance.

4.3 Language Complexity

We use two metrics of language complexity developed in the field of psychology and education, and recently applied to the ECB's speeches [Ferrara and Angino \(2021\)](#). The first is the Flesch-Kincaid Grade Level score (FK) ([Flesch, 1948](#); [Kincaid et al., 1975](#)). This metric estimates the degree of complexity in a text based on its number of sentences, syllables and words. One of the benefits of this score is that it can be easily interpreted as the number of years of education generally required to comprehend the text under analysis. Formally, for each speech i on date t we compute the following indicator on the basis of the following equation proposed in [Kincaid et al. \(1975\)](#):

$$FK_{it} = 0.39\left(\frac{N_{it}}{Sentences_{it}}\right) + 11.8\left(\frac{Syllables_{it}}{N_{it}}\right) - 15.59 \quad (2)$$

Where N_{it} is the total number of words in a speech, $Syllables_{it}$ is the total number of syllables, and $Sentences_{it}$ the total number of sentences.

The second indicator is the Gunning-Fog (FOG) index. This measure is similar to the FK but replaces syllables with complex terms. Complex terms include all words that have three or more syllables and that are not proper nouns, familiar words, or compound nouns (Ferrara and Angino, 2021). We compute FOG as follows:

$$FOG_{it} = 0.4\left[\left(\frac{N_{it}}{Sentences_{it}}\right) + 100\left(\frac{ComplexWords_{it}}{N_{it}}\right)\right] \quad (3)$$

For both indicators, higher scores indicate higher language complexity, i.e., a higher number of years of education needed to understand the text. According to Haldane and McMahon (2018), central bank publications generally have an FK score of 14-18, which corresponds to a college-level education. Ferrara and Angino (2021) use both measures to study the trend of language complexity in ECB speeches at aggregate level and find the mean FK score of ECB speeches to be 14.4, that is within the general range of central bank publications.

5 Results

Our findings confirm hypotheses H1 and H3: the ECB uses the hearings to further explain its monetary policy decisions, while discussing in more details topics that are less the focus of press conferences. But we reject hypotheses H1a and H2 as we find the ECB adopts a comparable degree of language complexity and expresses similar policy positions and sentiments when speaking in the EP and at press conferences.

5.1 Topics

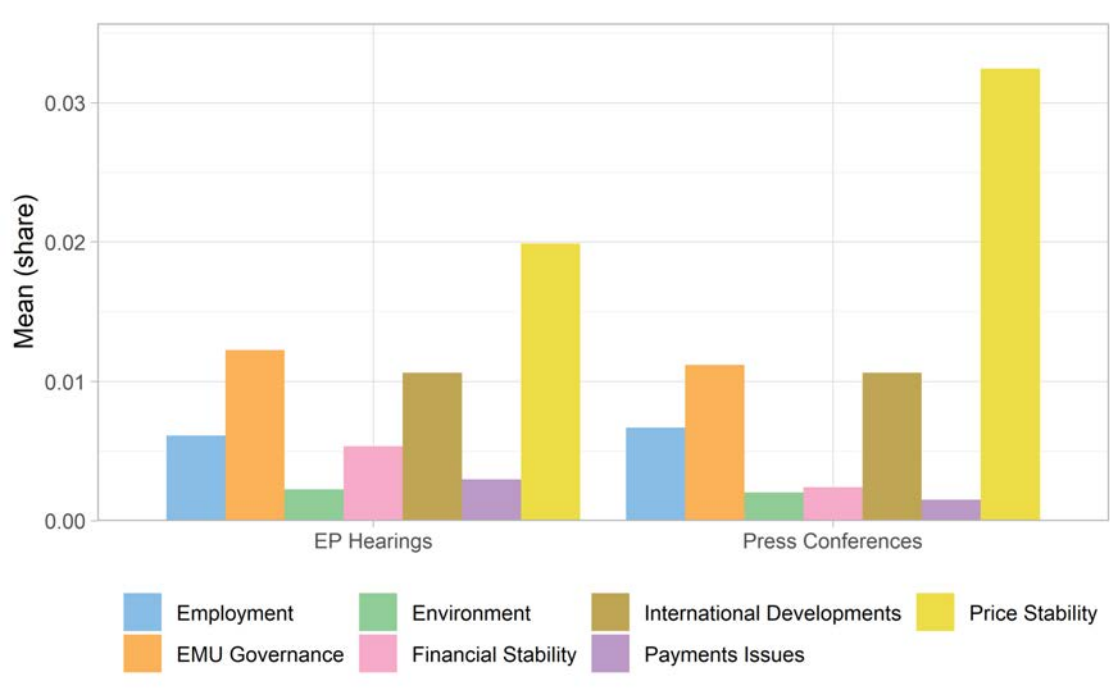
We compare the average focus of the ECB on seven topics in the EP hearings and press conferences. It is however essential to keep in mind that ISs of parliamentary hearings are significantly longer than ISs of press conferences. A similar topic share implies that a topic is discussed in more details in parliamentary hearings.

Figure 1 presents the average focus of the IS in the hearings and press conferences for each

of the topic under consideration. The percentage scores represent the share of terms contained in each lexicon over the total number of terms contained in that speech. For this reason, the scores are low by construction. The percentage scores should hence be interpreted as estimates of how much a topic is covered, but do not necessarily represent the percentage of a speech that is covering a certain topic.

Price stability is the most frequent topic in both the hearings and press conferences, which confirms that the hearings retain a key focus on explaining the rationale for its monetary policy decision in line with its primary mandate (Figure 1). This is consistent with H1.¹²

Figure 1: Average Focus on Topics in EP Hearings and Press Conferences



Note: the figure displays for each topic the share of terms matched over the total number of terms in a document, divided by type of speech. The bars on the left are the results for the ECB hearings, the bars on the right are for the ECB press conferences.

Topics such as the environment, EMU governance, employment and international developments represent a similar share of hearing and press conference topics. The significantly higher length of EP ISs implies that they are discussed in more details in parliamentary hearings than in press conferences. Moreover, topics such as financial stability and payment issues represent a

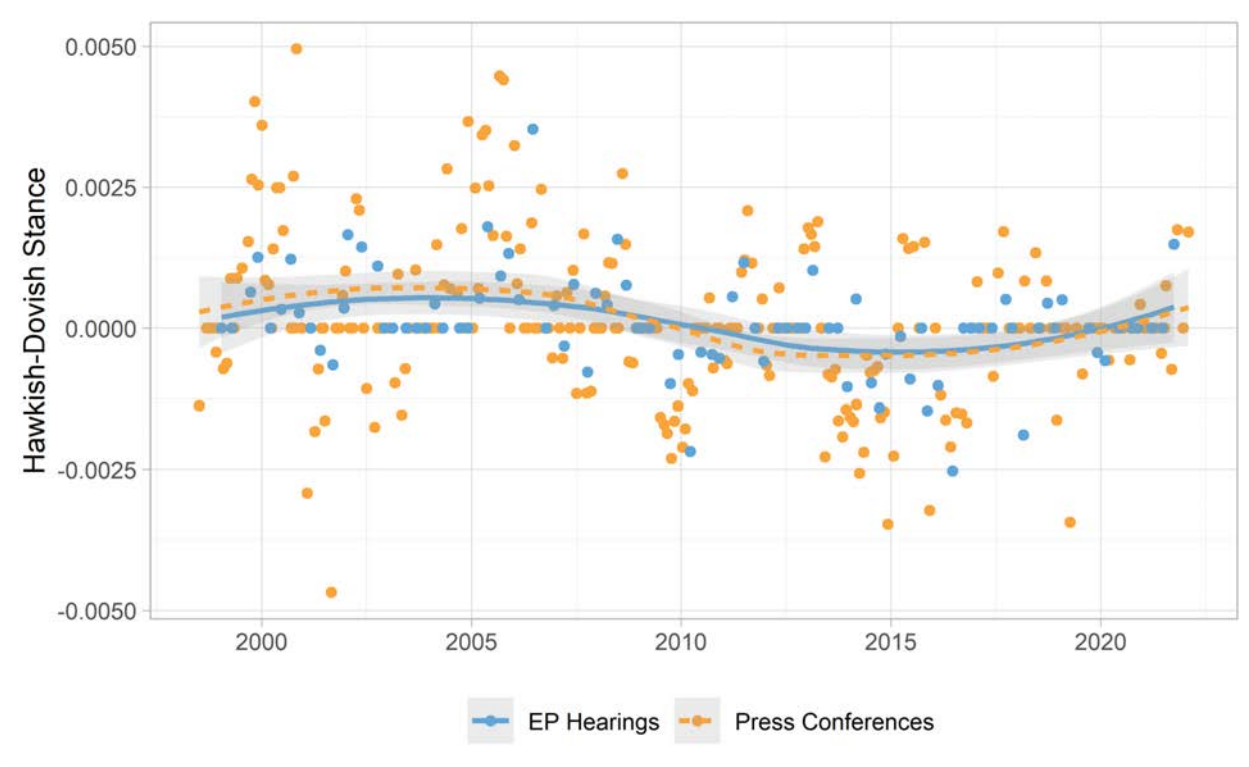
¹²Even if the shares look different across the two fora, it is important to look at the relative share compared to other topics, as the absolute share may be driven by the ability of the dictionary techniques to fit the jargon of a given forum.

higher share of terms used in hearings, signaling that additional weight is placed on those topics in the EP context, consistent with the ECB’s role in advising the EU legislator on financial legislation.¹³ These results are quite stable over time¹⁴ and support H3.

5.2 Policy Stances and Sentiment

Looking at the index of hawkish-dovish policy stances, no major difference in the ECB’s policy stance in the two fora emerges (Figure 2).¹⁵

Figure 2: Net Hawkish-Dovish Stances in EP Hearings and Press Conferences, 1998-2021



We complement this first assessment by the sentiment index. The ECB may indeed signal its policy stance using negative and positive terms which are not listed in the hawkish and dovish

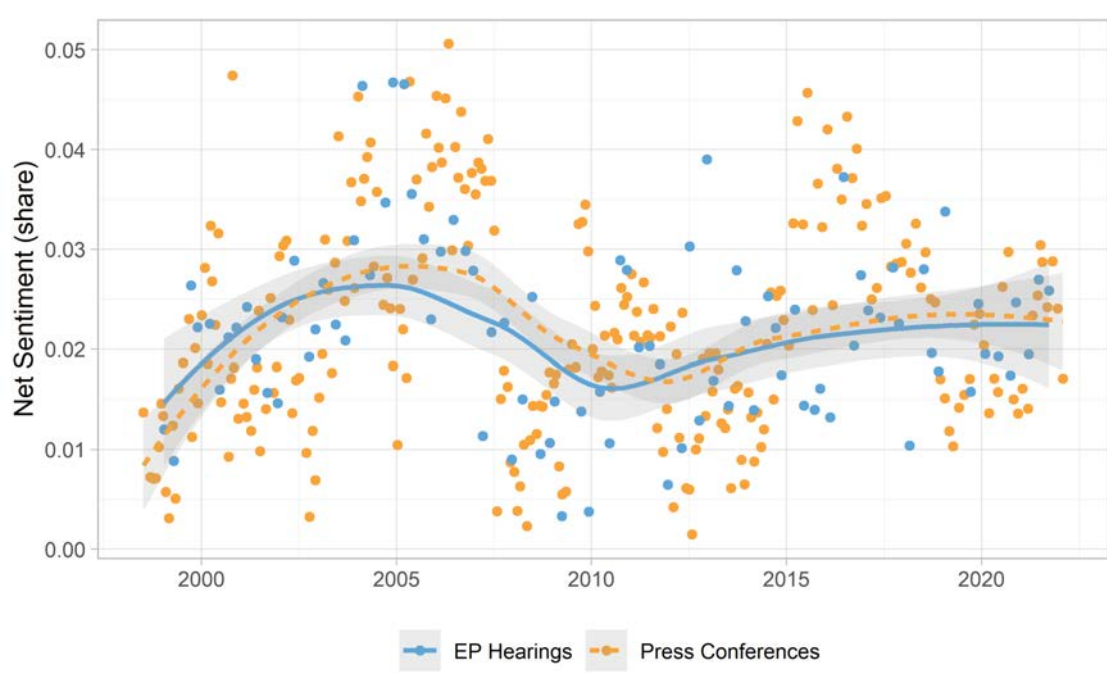
¹³ Article 127(4) of the Treaty on the Functioning of the EU provides that the ECB must be consulted on any proposed Union act falling within its fields of competence.

¹⁴ The distribution of topics in the EP hearings and press conferences has not encountered major changes throughout the history of the ECB (Figures A1-A6 and A2 in the Appendix). The strong focus of the hearings on financial stability is particularly interesting in light of previous works that examined the monetary dialogues as a forum of cooperation between the ECB and the EP during the crisis (Torres, 2013).

¹⁵ The scores are low by construction, as they represent the difference between share of terms that indicate a hawkish or dovish stance over the total amount of terms contained in a text.

dictionaries. As described in the previous section, we create an indicator of net sentiments based on the weighted difference of positive and negative terms matched in the text. Also in this case, the two types of speeches present similar trends (Figure 3).

Figure 3: Net sentiments in EP Hearings and Press Conferences, 1998-2021



Moreover, we run a Granger causality test (Granger, 1969)¹⁶ and find that sentiments in press conferences are good predictors of sentiments in the hearings during the same or next quarter, while the opposite is not true.¹⁷

Overall, these results reject H2 and lend further support to H1: in parliamentary hearings, the ECB tends to reiterate the policy message from its press conferences, with no significant difference in terms of monetary policy stance.

5.3 Language Complexity

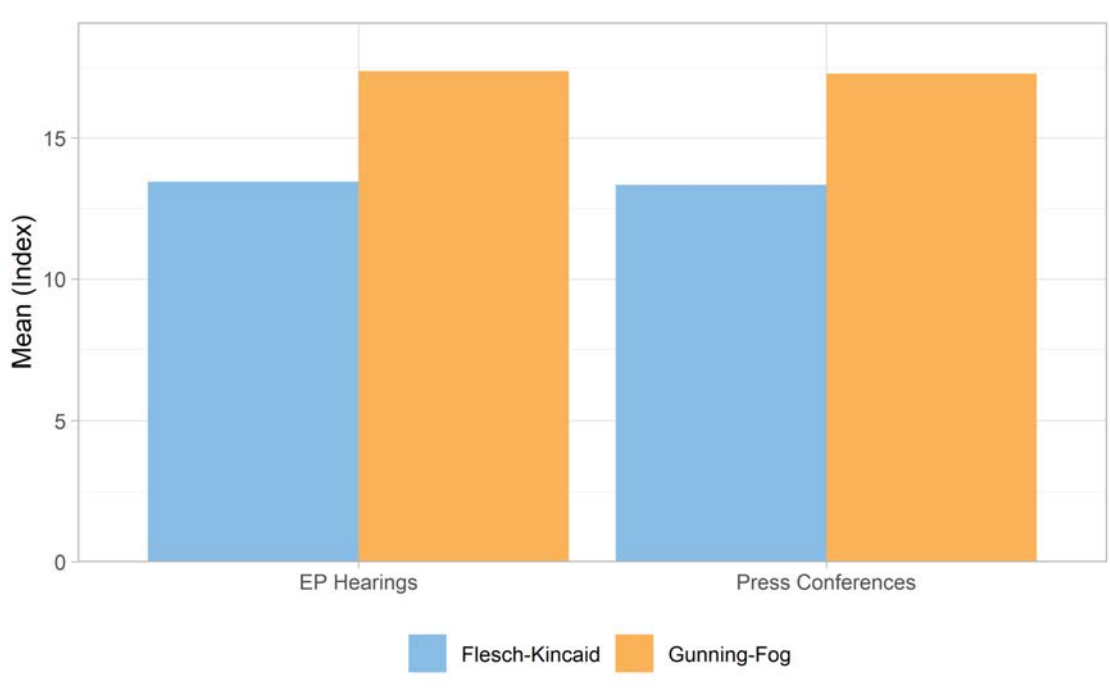
We then look at average language complexity in the ECB's IS in parliamentary hearings (EP hearings) and press conferences, using the FK (blue bar) and FOG (red) indexes. Both types of speeches

¹⁶The Granger causality test rejects the null hypothesis that lagged values of sentiments in press conferences do not cause sentiments in the hearings ($Prob > \chi^2$ statistics is 0.024).

¹⁷Sentiments in EP hearings tend to reflect sentiments in preceding press conferences but do not constitute a good predictor of sentiments in following press conferences. Therefore the ECB does not appear to give a signal in EP hearings of the sentiments that will prevail at the following press conference.

show similar level of language complexity across the two indicators (Figure 4). The average FK score for the ECB parliamentary speeches is 13.44, which is slightly higher, but very close to, the 13.35 of the press conferences. Both estimates are below the average score of all ECB speeches estimated by Ferrara and Angino (2021), that is 14.4. This means that in both fora speeches are slightly less complex than the average ECB speech. Language complexity remains similar when comparing the two types of speeches using the FOG indicator.

Figure 4: Average Language Complexity in EP Hearings and Press Conferences based on FK and FOG

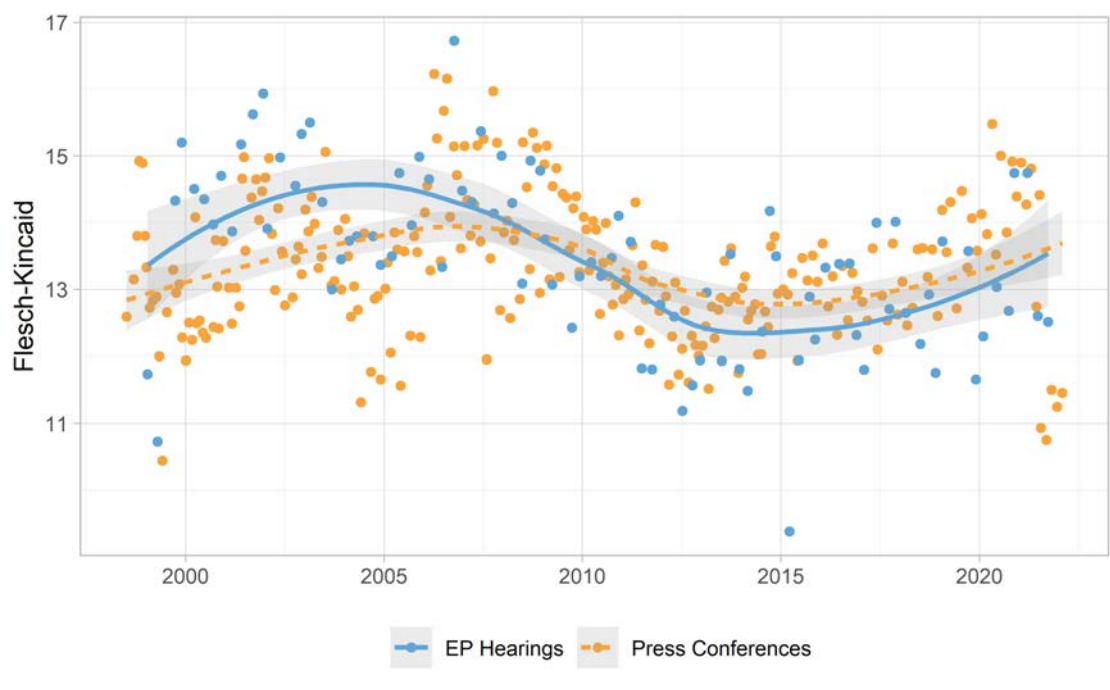


We further investigate how complexity has evolved over time, looking at the FK scores of each speech in parliament (red dots) and in press conferences (blue dots).¹⁸ The two types of speeches followed very similar historical trends (Figure 5). Language complexity progressively decreased from 2005 onwards in both types of speeches. However, this decline was sharper for parliamentary speeches, that reached the lowest complexity score of the whole sample in 2015. While in the period before the Great Recession (1999-2007) parliamentary speeches tended to be more complex than press conferences, they became on average less complex in the years that

¹⁸We fit the data using a local non-parametric regression to describe the evolution of observations across time. The grey area represents the 95% confidence level interval. We provide the same figure for FOG scores in the Appendix (Figure A7).

followed.¹⁹

Figure 5: Language Complexity in EP Hearings and Press Conferences based on FK, 1998-2021



Overall, this evidence rejects hypothesis H1a that the ECB uses the parliamentary hearings to communicate in simpler terms to MEPs or the broader public. Alongside the estimates on sentiment, the evidence on sentiments further rules out the idea that the ECB uses a different language style or tone in parliament. Rather, it suggests that the ECB uses the hearings in parliament to further explain the decisions communicated at press conferences, while avoiding to depart from the stance or tone of the latter.²⁰

6 Covid-19 Crisis: Has Anything Changed?

In this section we briefly document whether any of the trends we have just described have changed since the start of the Covid-19 pandemic crisis. Recent evidence on the US Federal Reserve shows

¹⁹This gap is even more pronounced when we compare the FOG scores (Figure A7 in the Appendix).

²⁰We corroborate the evidence in this section by exploring the correlation between the speech type and each dependent variable through a simple regression analysis with robust standard errors. This basic analysis shows that price stability is statistically more frequently discussed in press conferences, whereas financial stability, EMU governance and the payment system are more likely to be discussed in the EP hearings. The coefficients of the other indicators are not statistically significant. This indicates that, in line with our analysis, sentiments, hawkish-dovish positions, and language clarity do not vary significantly across speeches. Results are available upon request.

that the American central bank's communication policy changed drastically during the pandemic in terms of topics and sentiments (Benchimol, Kazinnik and Saadon, 2021). In addition, in the euro area the pandemic coincided with two other main changes that have potentially influenced the ECB's communication. First, the beginning of the mandate of the new ECB President Christine Lagarde in November 2019, some months before the start of the pandemic. Second, the implementation of the ECB Strategy Review in the summer of 2021, which explicitly set the aim to simplify the central bank's communication.

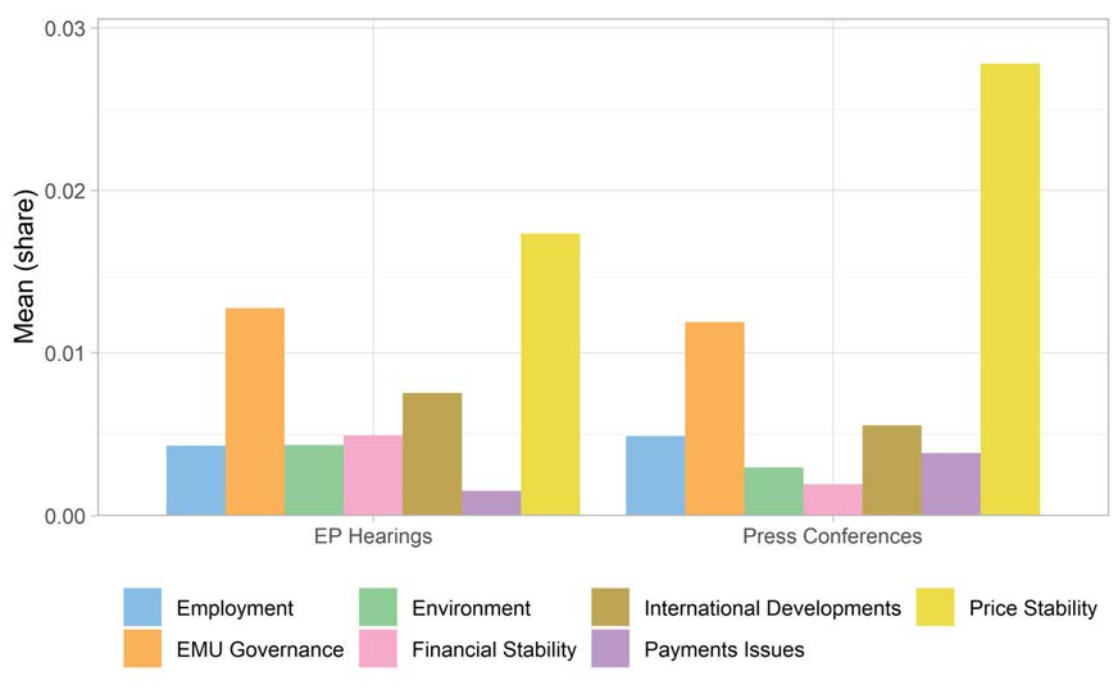
6.1 Topics

When we look at the evolution of topics from the start of the pandemic onwards, the attention of the ECB on price stability remains high in both press conferences and EP hearings. The focus on price stability has rapidly increased in both types of speeches at the beginning of 2021 (Figure A8 in the Appendix) and the same results are evident also for financial stability and employment (Figures A9-A10). This likely stems from the volatility that the pandemic shock has implied for inflation dynamics, employment and financial markets.

We notice an increase in the focus on EMU Governance during the pandemic, especially in the EP (Figure 6). The prominence of EMU Governance likely stems from the ECB's call to coordinate monetary policy with fiscal efforts at national and European level, and the attention to the innovations in European fiscal instruments to address the crisis and support the recovery. Interestingly, our data shows that the ECB uses the EP as the main channel to convey this message.

In addition, the hearings display a higher focus on international developments and the environment compared to press conferences during the pandemic. These results likely reflect the global nature of the pandemic shock and spillovers to the euro area, as well as the increased focus on sustainability, which the ECB can address in more details in the EP consistent with our findings for the pre-pandemic period.

Figure 6: Average Focus on Topics in EP Hearings and Press Conferences from 6 February 2020 to 28 October 2021



6.2 Policy Stances and Sentiments

In line with the previous results, policy stances in the hearings tend to reflect those of the press conferences (Figures 7 and 8), although with some lag – which is inevitable given the lower frequency of the hearings - and lower emphasis (Figure 7). Net sentiments display a higher convergence between the two types of speeches at the start of the pandemic. This result suggests that the ECB has aligned its communication efforts to convey a more positive tone during the pandemic in both fora.

Figure 7: Net Hawkish-Dovish Stances in EP Hearings and Press Conferences, 26 February 2018-28 October 2021

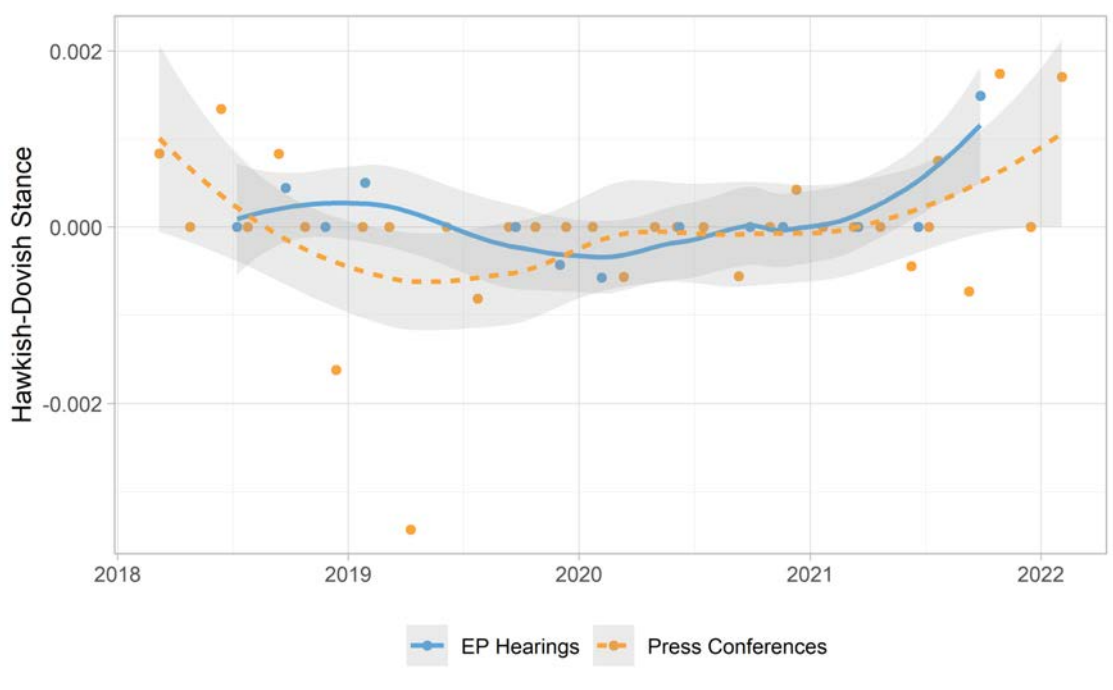
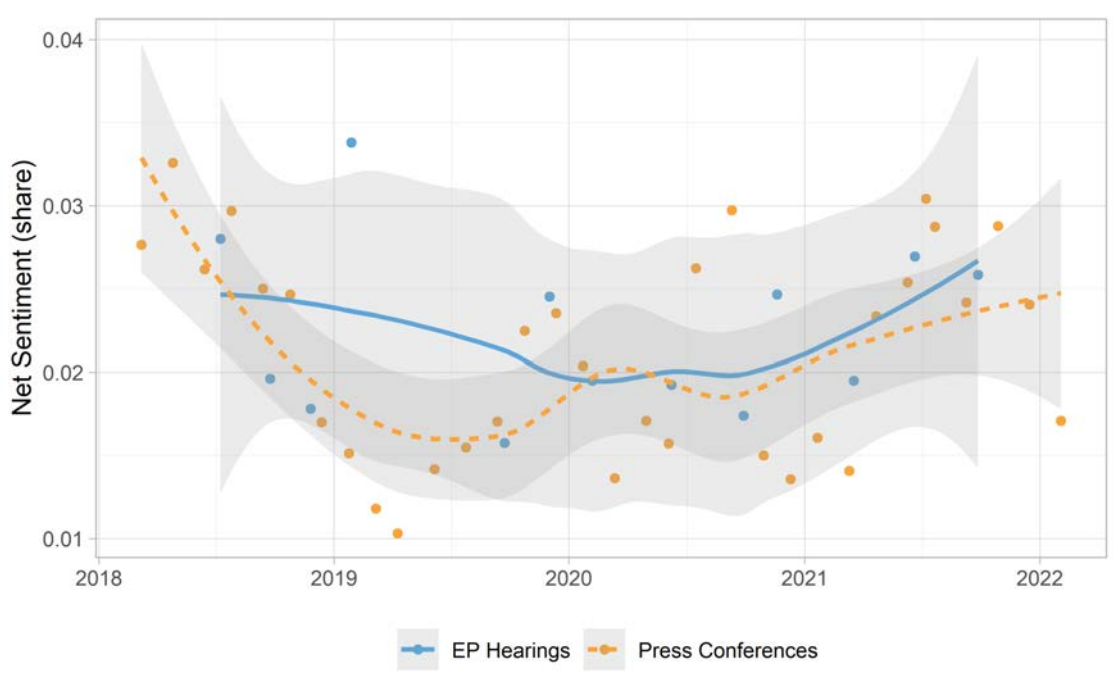


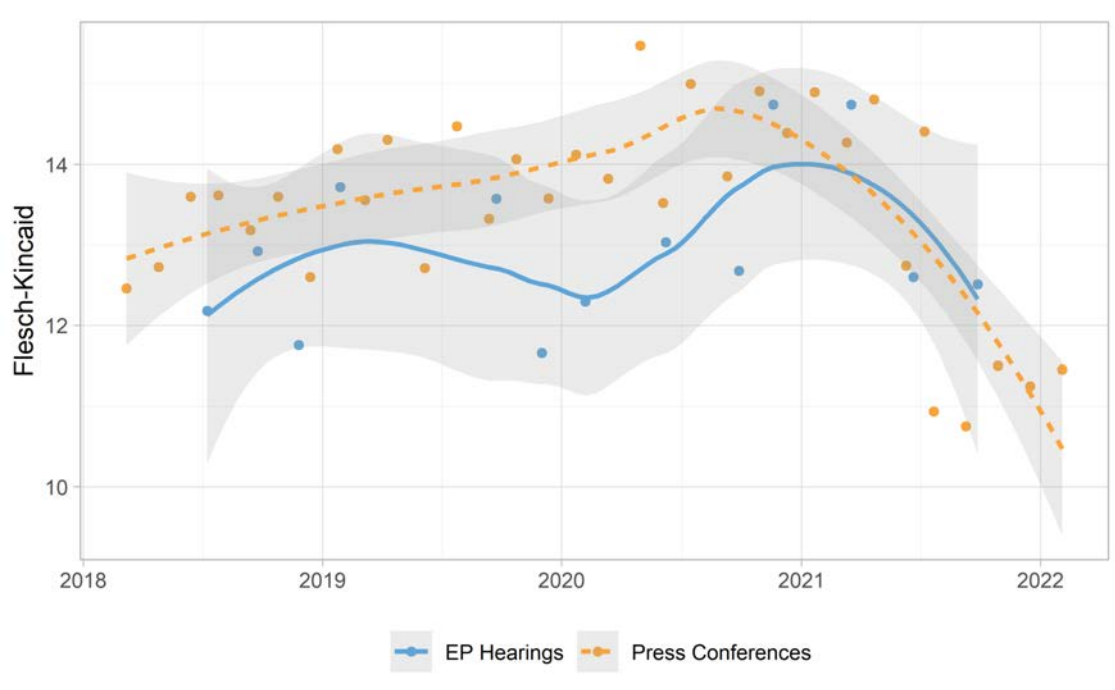
Figure 8: Net sentiments in EP Hearings and Press Conferences, 26 February 2018-28 October 2021



6.3 Language Complexity

Figure 9 shows that the language complexity index kept rising until 2020 but sharply declined in 2021. While the time series is too short to provide a statistically sound assessment of the causes of this change, the lower language complexity coincides with the implementation of the ECB's strategy review. The latter aimed at improving the clarity of the ECB language, "with a view to enhancing the information provided and its accessibility for various audiences" (European Central Bank, 2021b; page 15). Interestingly, clarity improves both in the EP and in press conferences, consistent with the prevailing alignment in language style identified in the pre-pandemic period.

Figure 9: Language Complexity in EP Hearings and Press Conferences based on FK, 26 February 2018-28 October 2021



7 Conclusions

The comparison of the ECB's introductory statements at the EP and in press conferences is helpful to understand how the central bank decides to communicate in its main accountability forum. This decision is not trivial, as the audience of the hearings is heterogeneous and includes MEPs, market participants, the media, and the European public. In this article we have shown that the

ECB uses the hearings to provide more information on aspects of its policy that are less covered in press conferences, such as the implications of its policy for financial stability, EMU governance or the environment.

In addition, our findings are helpful in showing what the ECB does not do in the hearings. They show that the ECB tends not to use the hearings to signal shifts in its policy stance. While this is likely to decrease the media attention on the hearings, it is not necessarily a negative sign for accountability. If the central bank were to use the hearings to signal changes in its policy intentions, it would certainly attract more attention, but not for accountability purposes. Moreover, we find that the ECB does not use the hearings to explain its monetary policy decisions in a more comprehensible jargon. This may signal that efforts to facilitate ECB accountability through simpler language are constrained by the need not to deviate too much from the vocabulary of the press conference to avoid confusing markets. A simplification of the language in parliament would first seem to require a simplification of language in the press conferences.

Although it is early to assess how the ECB's communication has changed with the Covid-19 pandemic, we show some preliminary trends. We document a sharp reduction in language complexity both in press conferences and in the hearings in 2021, likely reflecting the outcome of the ECB's Strategy Review. Future works could assess whether this change is sustained over time.

The evidence in this paper opens interesting avenues for future research. Further analysis could explore the relationship between topics and sentiments, assessing in particular to what sentiments differ across topics, which could affect overall sentiment depending on the choice of topics. Future studies could also compare the Q&A sessions of the hearings and press conferences. While recent works have explored how legislators speak to the ECB during the hearings ([Frac-caroli et al., 2022](#); [Ferrara et al., 2021](#); [Massoc, 2022](#)), several questions stand out. Do MEPs and journalists cover similar topics when speaking to the ECB? Does the central bank adapt its answers to different interlocutors (legislators versus journalists)? Our article offers a starting point to undertake these analyses.

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A Appendix

A.1 Text Analysis Lexicon

Price Stability:

price(s), inflate, inflation, inflationary, HICP, CPI, PCE, PCE index, PCE inflation, deflation, deflator, deflationary, deflate, hyperinflation, hyperinflationary.

Financial Stability:

financial (in)stability, bank (in)stability, (financial) crisis, financial stress, financial risk, systemic risk, contagion, financial shocks, bubble, financial imbalance, misalignment, credit growth, banks, insurers, hedge funds, investment funds, financial markets, securities markets, leverage, capital, derivatives, off-balance sheet exposures, special purpose vehicles, off-balance sheet vehicles, payment systems, settlement systems, central securities depositories, non-performing loans, npls, non-performing exposures, foreign currency loans, correlated exposures.

Employment:

employ(-ee/-er), (un)employment, underemployment, firing, fixed-term, full-time, part-time, inactivity, job(s), jobless, labo(u)r, labo(u)r force, labo(u)r market, self-employed, temporary, vacancy(-ies), work(er), workers, working, working (age/time), works.

International developments:

Trade, International, Global*, Cross-border, Emerging markets, Emerging economies, Outside the euro area, Outside the EU, Geopolitic*, China, Chinese, Lehman, United States, The US, USA, America*, Canada, Canadian, Japan, Japanese, Russia, Russian, India, Indian, Turkey, Turkish, Argentina, Argentinian, Brexit, United Kingdom, England, Norway, Norwegian, Enlargement, Developing economies, Developing countries, World Bank, IMF, War, Middle East, Far East, OPEC, WTO, Exchange rate, Sweden, Swedish, Oil, Gas, Commodity, G7, G20, Korea, Korean, Northern Rock, Terrorism, Terrorist, Africa, African, Asia*, Australia*, Oversea, External representation, IRE, Dollar, Pound, Ruble, Yuan, Yen, Renminbi, LTCM, External demand, Exports, Imports, Advanced economies, Value chain, US Treasuries, Fed, Federal Reserve, Bank of England, Scotland, Scottish, PBOC, Basel, Bank of International Settlements, BIS, Washington, New York

Payments issues:

Payment, Payment systems, CCP, Clearing, Market infrastructures, Digital euro, Wholesale transactions, Bitcoin, Stablecoins, Libra, Diem, Instant payments, CBDC, Cash, Banknotes, Coins, Card, E-money, Private money, Central bank money, Digital dollar, TARGET, TARGET2, T2S, real-time gross settlement, SEPA, TIPS, Payment, Settlement, DLT, Ledger, Blockchain, Token, Digital currency, Cryptocurrencies, Crypto-currencies, Crypto-assets, Cryptoassets, Big tech firms, Big techs.

EMU governance:

Fiscal policy, Fiscal rules, Fiscal Board, Bailout, Bail-in, Single Supervisory Mechanism SSM, Single Resolution Mechanism, SRM, Banking supervision, Microprudential, Macroprudential, Prudential policies, Macroeconomic policies, Five Presidents' Report, Four Presidents' Report, Economic and Monetary Union, EMU, EU budget, Multiannual financial framework, MFF, SURE, Stability and Growth Pact, SGP, Stability and growth, Banking Union, Deposit insurance, EDIS, NGEU, Next Generation, Recovery and Resilience, Fiscal capacity, BICC, Risk-sharing, Transfer union, Policy mix, International role of the euro, IRE, Moral hazard, Financial assistance, Troika, European Stability Mechanism, ESM, Corrective arm, Budget, Capital Markets Union, CMU, Integration, Deepening, Country Specific Recommendations, CSRs, Euro adoption, Changeover, Convergence, Divergence.

Environment:

green*, climate, climate change, green bond*, sustainable finan*, wildfire*, hurricane*, natural dis-

aster*, emission*, co2, carbon dioxide, fossil fuel*, pollut*, greenwashing, carbon, brown, harm, fossil, fuel, environmental, environment, transition, ecology, ecological, taxonomy, greening, pollution, polluting, biodiversity, emissions, weather.

Hawkish adjectives:

increasing, faster, stronger, higher (including slow, weak, low, etc.).

Dovish adjectives:

decreasing, slower, weaker, lower.

Nouns associated with hawkish and dovish sentiments:

inflation, cyclical position, growth, price, wages, oil price and development.

A.2 Other Figures

Figure A1: Share of Topics in ECB Parliamentary Hearings, 1999-2021

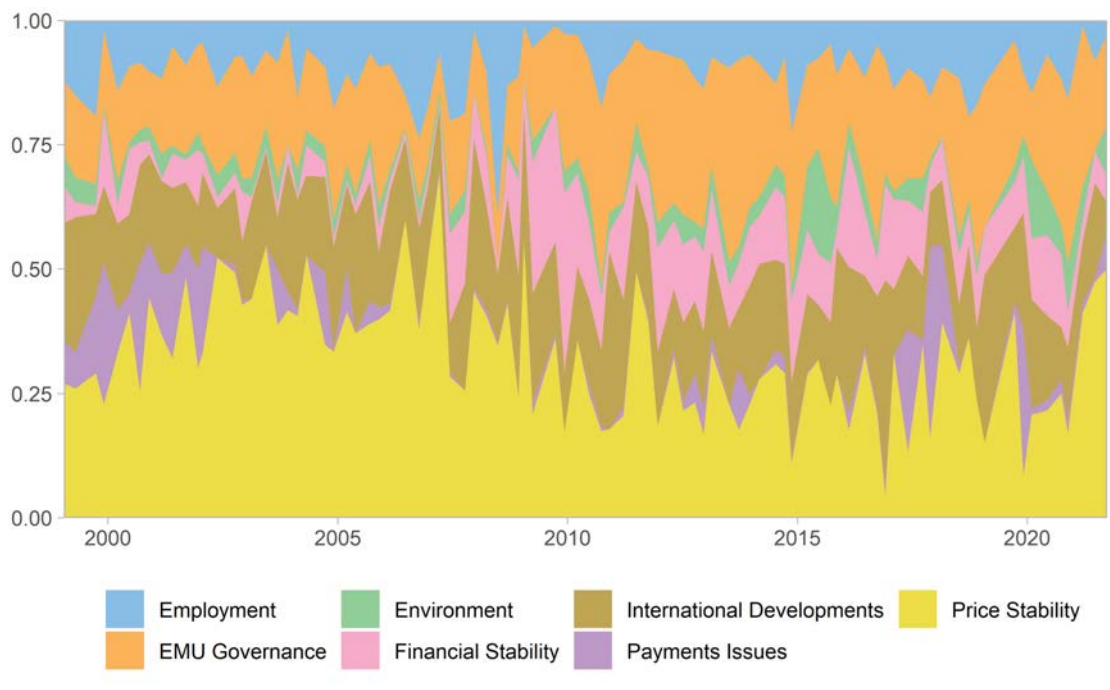


Figure A2: Share of Topics in ECB Press Conferences, 1998-2021

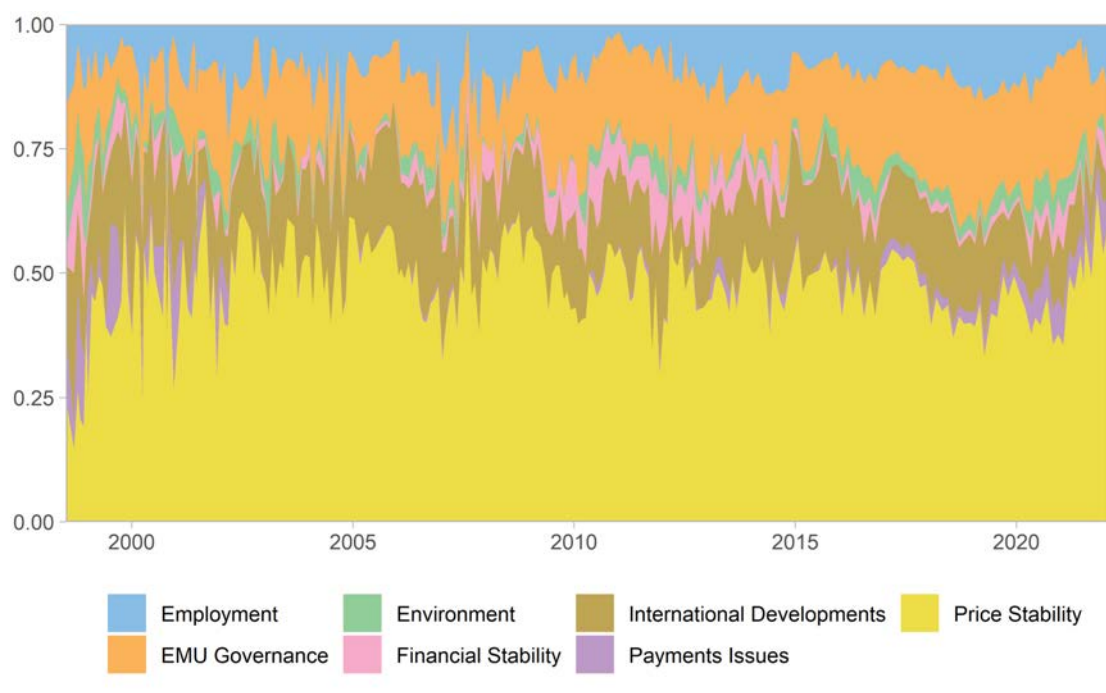


Figure A3: Price stability Topic in EP Hearings and Press Conferences, 1998-2021

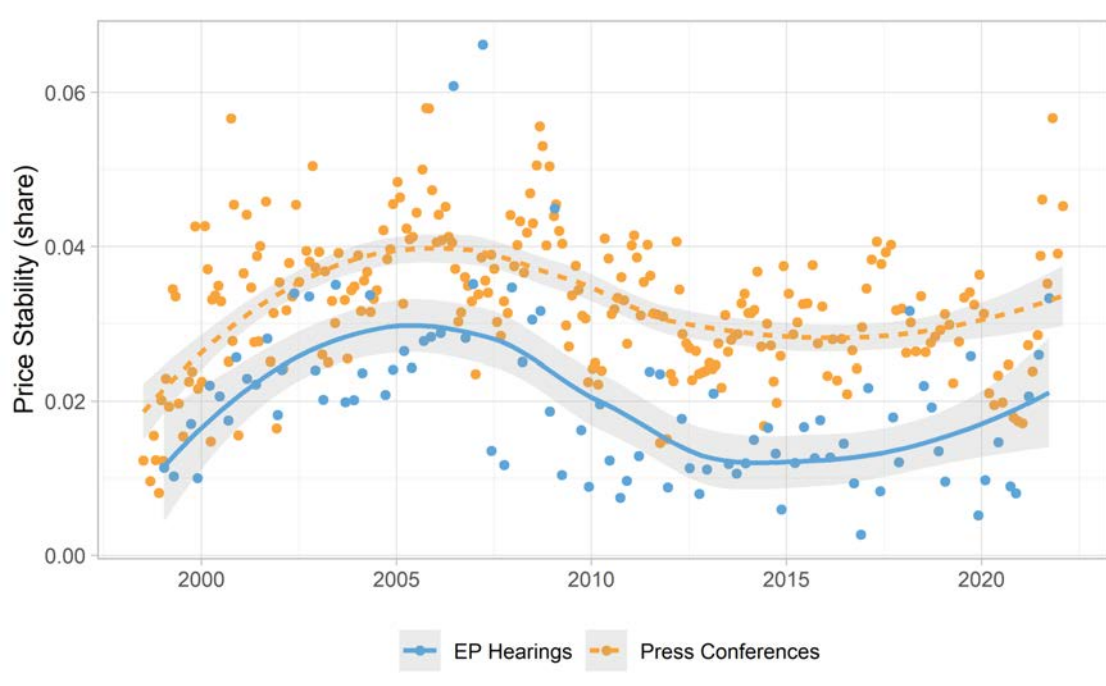


Figure A4: Financial stability Topic in EP Hearings and Press Conferences, 1998-2021

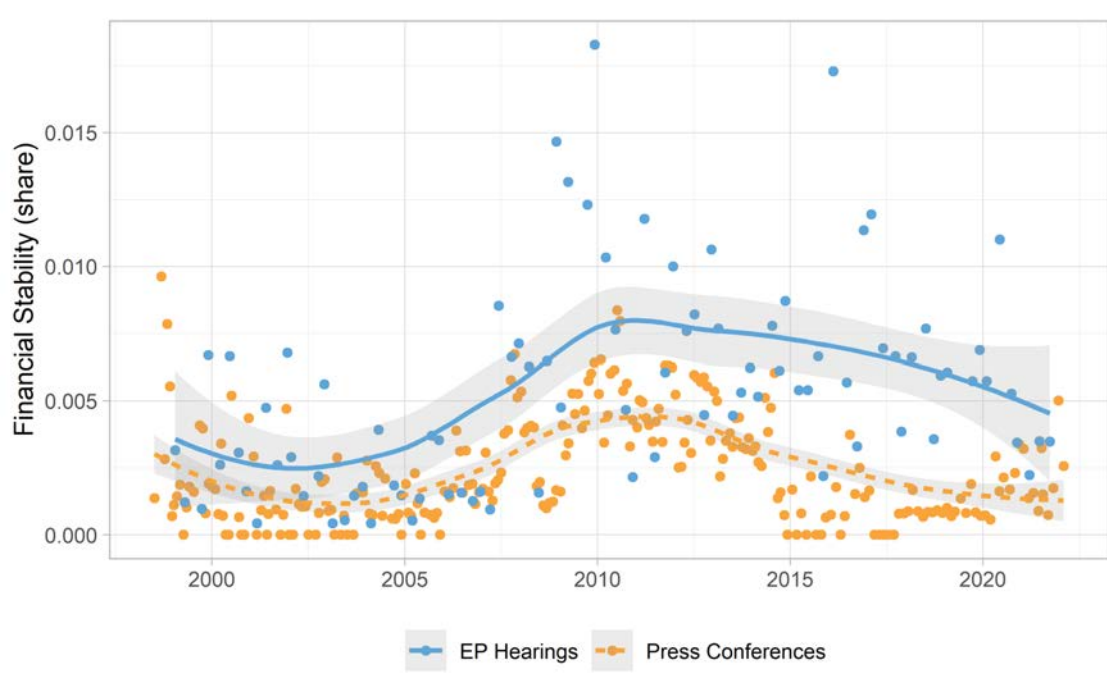


Figure A5: Employment Topic in EP Hearings and Press Conferences, 1998-2021

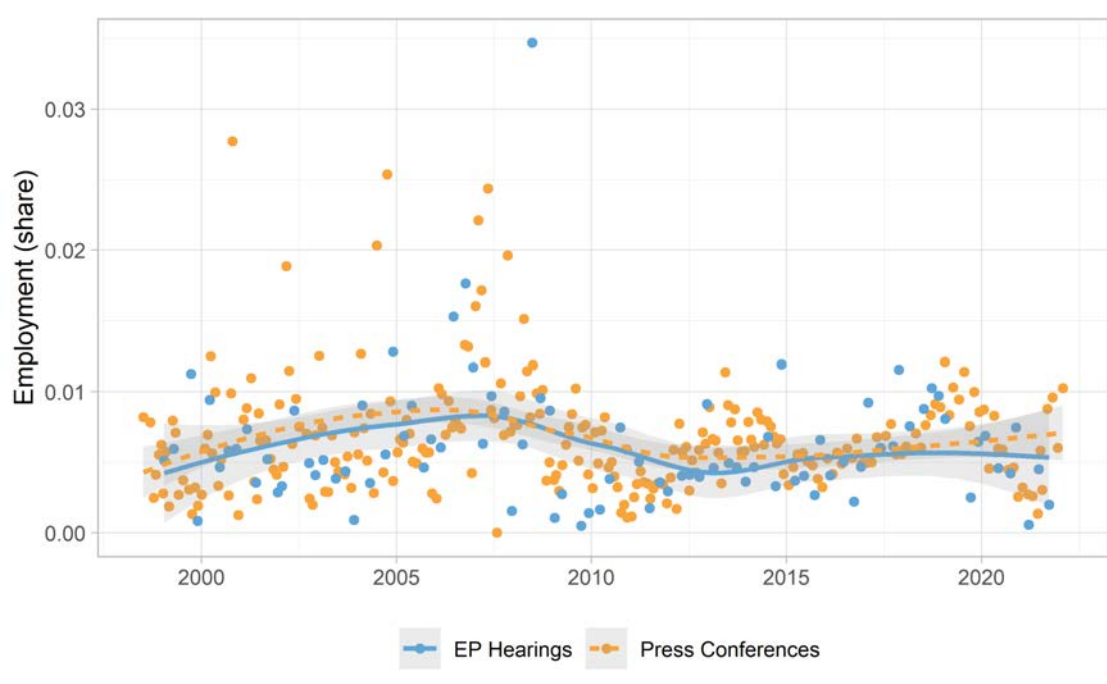


Figure A6: Environment Topic in EP Hearings and Press Conferences, 1998-2021

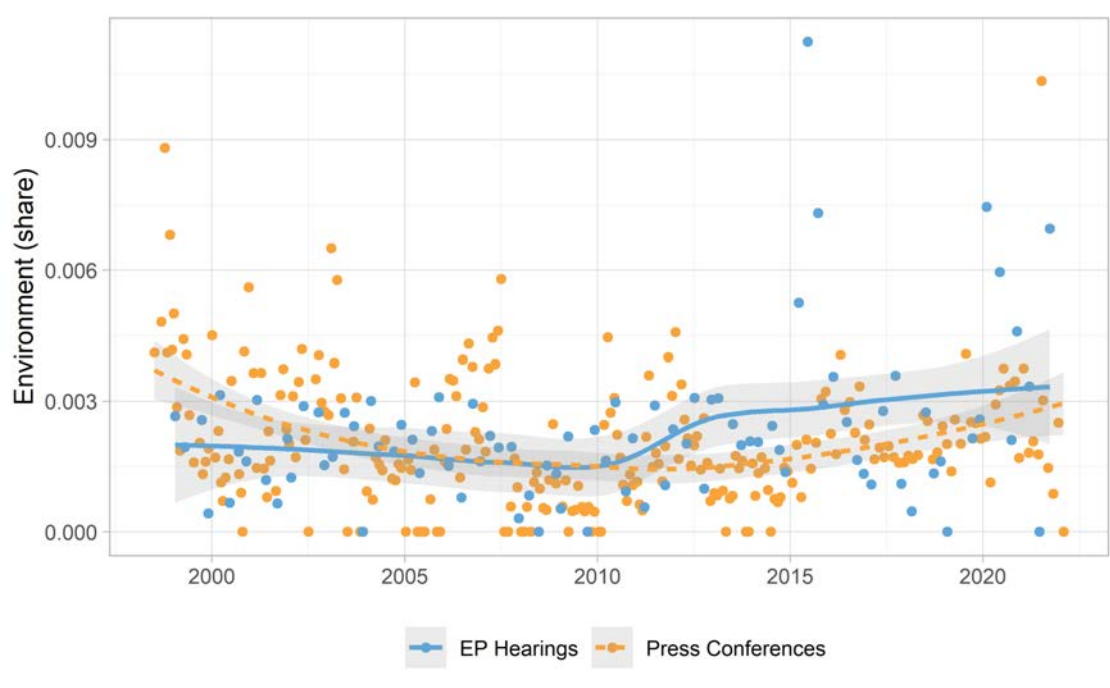
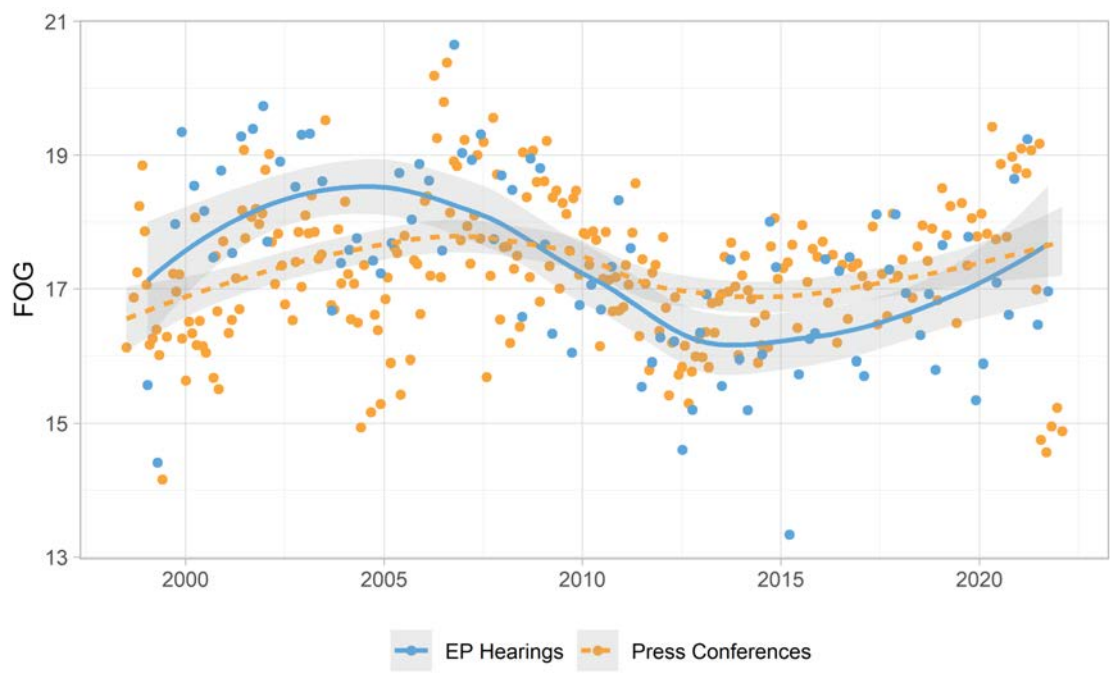


Figure A7: Language Complexity in EP Hearings and Press Conferences based on FOG, 1998-2021



A.3 Other Figures for the Covid-19 Period

Figure A8: Price stability Topic in EP Hearings and Press Conferences, 26 February 2018-28 October 2021

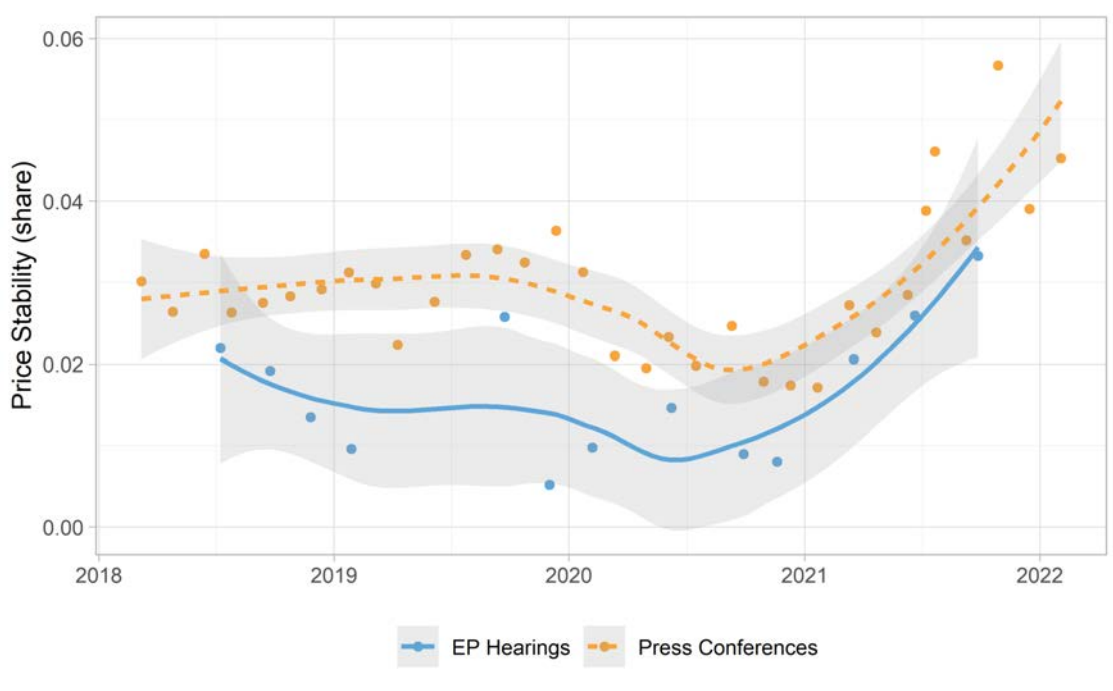


Figure A9: Financial stability Topic in EP Hearings and Press Conferences, 26 February 2018-28 October 2021

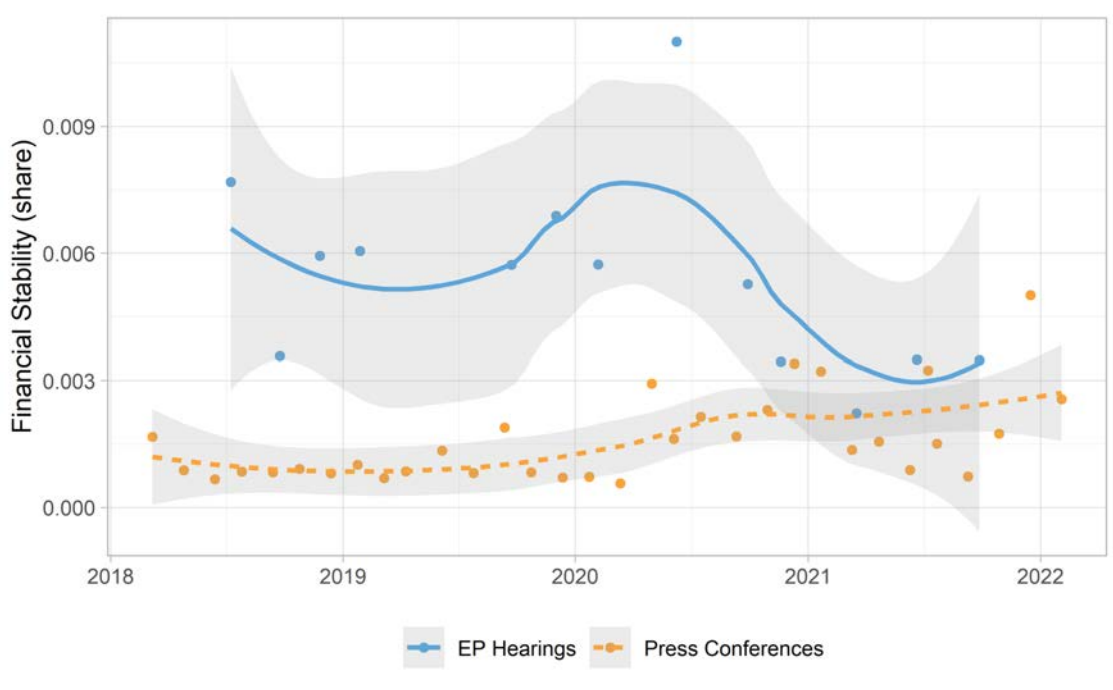
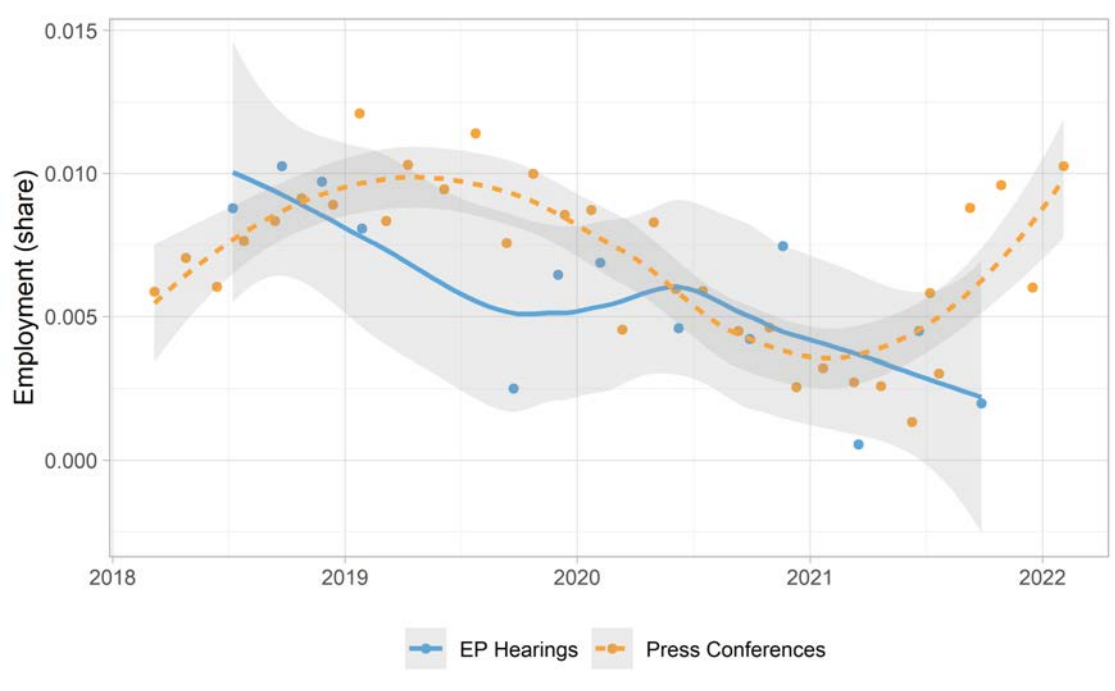


Figure A10: Employment Topic in EP Hearings and Press Conferences, 26 February 2018-28 October 2021



Acknowledgements

The authors are thankful to Karolina Borońska-Hryniewiecka, Diane Fromage, Anna-Lena Högenauer, Marcel Magnus as well as to the participants of the workshop “Parliaments in times of crises: EMU accountability post-Covid” for their invaluable comments, and to the staff of the ECON Secretariat for their precious insights into the functioning and history of the Monetary Dialogues.

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ISBN 978-92-899-5290-3

ISSN 1725-2806

doi:10.2866/851865

QB-AR-22-070-EN-N