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**Research Report**

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BoF Economics Review, No. 7/2019

**Provided in Cooperation with:**

Bank of Finland, Helsinki

*Suggested Citation:* Korhonen, Iikka; Newby, Elisa (2019) : Mastering Central Bank Communication Challenges via Twitter, BoF Economics Review, No. 7/2019, Bank of Finland, Helsinki, <https://nbn-resolving.de/urn:nbn:fi:bof-201912201723>

This Version is available at:

<https://hdl.handle.net/10419/213000>

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## Mastering Central Bank Communication Challenges via Twitter

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### Abstract

This study examines the Twitter policies and use of European central banks. Almost every European central bank maintains an institutional Twitter account, but tweeting activity, tweet content and usage restrictions on Twitter use by individual staff members vary considerably. We further consider the evolution of Twitter use by European central banks in light of the growing importance of financial stability in central bank policy messaging. To study these issues, we create a database of tweets from European central banks and financial supervisors, as well as attempt to gauge how closely professional economists follow central banks on Twitter. Central banks' Twitter activity has no relation to citizens' online participation. We also find that central banks' communication on financial stability with Twitter has increased over time, especially in comparison with monetary policy.

**Keywords:** central bank communication, monetary policy, financial stability, Twitter

**JEL codes:** E0, E5, E52, E58, G28

*Acknowledgements and disclaimer: We thank Jonna Elonen-Kulmala and Aapo Pietiläinen for their help in data collection, retrieval and analysis. Greg Moore provided invaluable assistance with language editing. We are also grateful to the seminar participants at the Bank of Finland, the National Bank of Ukraine, the Bank for International Settlements and the Central Bank of the Republic of Turkey and the members of the ESCB's Communications Committee ECCO for their valuable comments and suggestions. The responsibility for any remaining errors or omissions is naturally ours.*

*BoF Economics Review consists of analytical studies on monetary policy, financial markets and macroeconomic developments. Articles are published in Finnish, Swedish or English. The opinions expressed in this article are those of the author(s) and do not necessarily reflect the views of the Bank of Finland.*

*Editors: Juha Kilponen, Esa Jokivuolle, Karlo Kauko, Paavo Miettinen, Juuso Vanhala*

# 1. Introduction

European central banks have brought the values of transparency and accountability to the fore over the past decade through various means of communication. In the case of price-stability-oriented monetary policy regimes, timely and consistent communication has become essential in anchoring inflation expectations and building credibility. The gains in this arena have been huge.<sup>1</sup>

Monetary policy messaging, however, is still primarily targeted at market participants, whose behaviour matters most to central banks in determining interest rates and inflation expectations. The same goes for forward guidance, which has become a monetary policy tool in its own right since the global financial crisis. Moreover, increased central bank communication has not come without criticism. The perceived status of central banks has been eroding since the financial crisis, when financial institutions were saved from collapse at great cost. The 1980s and 1990s witnessed a decisive shift towards greater central bank independence from political interference,<sup>2</sup> but since the crisis a decade ago the pendulum has swung in the opposite direction. Political actors and parties openly question the operational independence of central banks. Unconventional monetary policies such as quantitative easing introduced in response to the global financial crisis were initially meant to be temporary, but they remain at least partially in place. The stable status quo in monetary policy of the pre-crisis era is unlikely to return.

Criticism of central bank independence typically stems from dissatisfaction with financial stability policies,<sup>3</sup> perhaps because the footprint of central banks on financial markets is much larger than earlier. By getting more closely involved with financial markets and financial stability questions, central banks have made incursions into territories that once exclusively occupied by the private sector or territories where they once operated only as ‘an operative arm of the government.’<sup>4</sup> Given that actions such as bank bail-outs can entail large costs to society, central bank action (or inaction) has a direct bearing on a government’s ability to determine the composition of public expenditure.

With central banks occupying a wider field, they arguably face communication challenges similar to those of politicians. Like successful politicians, successful central bank messaging requires deep engagement with broad audiences in the financial market, other stakeholder groups and the general public. Central bank communications have therefore evolved beyond traditional means such as issuing statements, speeches or analytical texts, to include social media technologies.

The Twitter and Facebook platforms, in particular, have changed the way people consume news. Social media diffuses news quickly, underlining the importance of connections and networks. Digital News Report (2019), a publication of the Reuters Institute for the Study of Journalism, claims social media is the most popular news source in Europe for young people.<sup>5</sup> The increased emphasis on financial literacy and inclusion further adds to the communication challenge facing central banks. If a central bank carries some responsibility for, say, informing people about the dangers of over-indebtedness, it needs suitable tools for reaching the relevant audience.

This paper focuses on central bank communication via Twitter. Central bank Twitter use has not been well studied. The few studies that do exist focus on the market impacts of monetary policy announcements using Twitter data.<sup>6</sup> Furthermore, as central banks have only begun to develop social media profiles, social media parameters have yet to be included in central bank transparency comparisons (e.g. the seminal index of Dincer and Eichengreen,

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<sup>1</sup> *Blinder et al. (2008).*

<sup>2</sup> *The term ‘central bank independence’ does not mean that the central bank enjoys complete freedom to pursue whatever policies it deems important, but rather that political decision-makers have granted independence to them in fashioning and utilising the monetary policy instruments needed to reach specified goals.*

<sup>3</sup> *Haldane (2018).*

<sup>4</sup> *Haldane (2017).*

<sup>5</sup> *Newman (2019).*

<sup>6</sup> *See, for example, Luik and Wesselbaum (2016) and Lüdering and Tillman (2016).*

2014). To our best knowledge, this is the first evaluation of Twitter usage by European central banks.

Our approach is exploratory, based on an inclusive database of all tweets by 46 European central banks and financial supervisors (including Ukraine and other non-EU countries) from the time they joined Twitter to the end of 2018. Our other major information source is a survey of central banks conducted during the first half of 2019. Participants included the heads of the communications sections at almost every national central bank and financial supervisory authority in the European System of Central Banks (ECSB). Responses to the questionnaire allows offer qualitative information about central bank Twitter policies and activities. We complement these main data sources with publicly available statistical data.

Twitter is a powerful tool for direct messaging to mass audiences. It has been adopted by many politicians and other public figures. Our analysis here seeks to determine if the same features make it an attractive communications tool for central bankers and whether central banks exploit these features. Twitter may be considered a ‘short-run’ form of communication, but it also allows users to send links and retweet content, as well as distribute comprehensive information. From a central bank’s point of view, comprehensive information includes announcements of monetary policy, and, with increasing weight, financial stability actions. Financial stability has emerged as a second policy pillar complementing price stability. It is regularly emphasised by central bank governors in key-note speeches and is seen as an entirely appropriate topic for central bank Twitter communication. Central banks can also use Twitter for routine communication tasks such as announcing new publications, job openings, technical problems, etc. Our extensive database allows comparison of the financial stability and monetary policy tweeting of Europe’s central banks with independent monetary policy and those in the Eurosystem.

We start the discussion with a survey of the relevant literature. Given the large body of excellent reviews on the evolution of central bank monetary policy communication, we keep the initial part of our survey brief. Instead, we focus on reviewing the limited literature of central bank communication with respect to financial stability and outreach to the general public. In section 3, we summarise our data and consider those features of Twitter that make it a particularly attractive communication tool for central banks. Section 4 documents the features of everyday use of Twitter at European central banks and document their social media policies and practices. In section 5, we compare central bank communication on monetary policy and financial stability. In particular, we are interested in exploring whether the relative weight of communications on financial-stability-related issues has increased since central banks established active Twitter accounts. We also explicate the differences in communication of monetary policy and financial-stability-related issues for the Eurosystem and other European central banks with independent monetary policies. The concluding section summarises our findings and suggests areas for further research.

## 2. Literature review

### 2.1 Communicating monetary policy and financial stability

The body of academic literature on central bank communications has grown exponentially since the early 1990s. For an inflation-targeting central bank, communication has become crucial in making policies effective, credible and transparent.<sup>7</sup> Blinder (1996, 2008) notes that communication enhances the effectiveness of monetary policy by influencing expectations and the behaviour of economic agents through increased predictability of central bank policies. The traditional transmission channel of central bank communication works via the expectations channel of the interest-rate yield curve, whereby the messaging changes expectations about short-term rates and then works its way through to long-term rates and other fi-

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<sup>7</sup> Woodford (2005).

nancial market prices. Blinder et al. (2008) and Haldane and McMahon (2018) provide thorough summaries of the literature on the importance of transparent communication in building central bank credibility.

A considerable body of academic literature suggests that central bank communication is an effective, even powerful, monetary policy tool in its own right.<sup>8</sup> Forward guidance, i.e. public statements that lay out the central banks' intentions about a possible future path for policy rates (data-dependent or calendar-dependent), can shift expectations on interest rate changes. In particular, if the central bank's interest rate policy is constrained by the zero lower bound, it can still influence output and prices by communicating effectively and credibly.<sup>9</sup>

The role of monetary policy communication is well established and covered by large bodies of empirical and theoretical literature.<sup>10</sup> All central banks with price stability objectives communicate in a somewhat similar manner about inflation and interest rates, supporting their decisions with press conferences, publication of meeting minutes, inflation outlook reports and macroeconomic forecasts.<sup>11</sup> On the other hand, central bank communication varies considerably in other policy areas. In particular, there are as yet no agreed best communication practices for financial stability policies. This reflects the fact that most central banks were established to safeguard the stability and smooth functioning of the banking sector. Only in wake of the global financial crisis have central banks been tasked with explicit financial stability mandates and pressed to develop macroprudential tools for promoting stability.

Communicating monetary policy with this expanded non-standard toolkit is challenging, especially given the complexity and multidimensionality of financial systems. As summarised by Stankova (2019), responsibility of financial stability policies is often spread across agencies such as the central bank, financial supervisory authority and finance ministry. This may affect what Stankova calls 'the coherence of communication.'<sup>12</sup> For example, a national macroprudential strategy requires communication tools and channels quite distinct from than those needed to promulgate and implement regulatory changes.

The mandates of the majority of the world's central banks now include financial stability.<sup>13</sup> As a result, central bank financial-stability-related communication has increased rapidly. Born et al. (2011) show that this communication is efficient in that it reaches market participants and causes them to modify their behaviour. Using textual analysis to determine whether central bank announcements on financial conditions are positive or negative, the authors show that stock indices react to these announcements. They also demonstrate that, along with news and announcements on financial conditions, comprehensive financial stability reports play an important role in reducing noise, and thus the volatility of financial markets.

Central bank communication on multiple policy areas may muddy the messaging. For example, macroprudential policies could call for tighter financing conditions, while monetary policy grows increasingly accommodative. Given that policy targets can conflict, it is important the central banks understand how financial stability concerns might affect monetary policy, and the other way around.

## 2.2 Central bank communication with the general public

Blinder (2009 and 2017) observes that communication and academic research on central bank communication prior to the global financial crisis focused exclusively on communication's impact on financial markets, especially the expectations of market makers and asset prices. According to Haldane and McMahon (2018), the general public has been largely im-

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<sup>8</sup> See, for instance, Blinder (2009) and Gürkaynak et al. (2005)

<sup>9</sup> Yellen (2006).

<sup>10</sup> See, for example, Blinder (2018) and Haldane (2018).

<sup>11</sup> Dincer and Eichengreen (2014).

<sup>12</sup> Stankova (2019), p. 16.

<sup>13</sup> Haldane (2018).

mune to the central bank communication revolution that followed the adoption of price stability targets. Increasing quantity and general accessibility of central bank publications does not help if the general public remains uninterested or unaware of their existence.

Haldane and McMahon (2018) argue that central banks have not made their main communications accessible to ‘a sufficiently wide audience.’ When measured by the Flesch-Kincaid reading grade score, a typical Bank of England publication requires Level 3 reading skills (in the UK national qualifications framework, US undergraduate level). By contrast, an average political speech can be absorbed with Level 2 skills (US high school), thereby reaching a much larger share of the population. Kumar et al. (2015) and Blinder (2017) note in somewhat laconic manner that members of public lack both expertise and interest, and, at best, only ‘half-listen’ to central banks.<sup>14</sup> Binder (2017) further observes that the prevailing low level of economic literacy prevents central banks from being understood.

What problems arise if central bank messages important to the public fail to reach their intended audience? Jost (2017) argues that, in the UK’s case, poor understanding reduces the public’s satisfaction with Bank of England policies. According to Haldane (2018) and Haldane and McMahon (2018), the general public’s low level of information can result in a ‘twin deficit problem,’ i.e. a deficit of public understanding and a deficit of public trust.<sup>15</sup>

Binder (2017) classifies the rationale for central bank communications with the public into two categories: maintaining accountability and shaping expectations. As the overwhelming majority of inflation-targeting central banks maintain operational independence from the political process, clear communication with the general public is essential to accountability and democratic legitimacy. Binder (2017) observes that household expectations of inflation and other variables are notably different than those of market participants, including professional forecasters. By narrowing this gap, central bank communication with the general public can improve macroeconomic outcomes. Cœuré (2019) emphasises that household inflation expectations matter as ‘they have been found to be a better proxy of firms’ pricing decisions than those of professional forecasters or financial market participants.’<sup>16</sup>

A number of studies highlight the measures central banks should consider when adapting their communication strategies to lay audiences. From the literature on reading comprehension, one could draw the conclusion that shorter messages are more likely to appeal to the general public. Reading lengthy technical material is time-consuming and demands cognitive effort to process. Pithy texts are easier to remember.<sup>17</sup> The market-participant survey of Hayo and Neuenkirch (2016) found that central bank predictability is not increased by reporting detailed information, but by short messages delivered in the context of clearly defined monetary policy objective. In addition to avoiding technical language and shortening messages, many central banks now employ other communication products such as visualisations, videos, social media, open-door days and town hall meetings. The ground-breaking joint study of the Bank of England and the Behavioural Insights Team tested the efficacy of central bank communications direct at the general public. They consider message comprehension and trust towards policy messages for a representative sample of the UK population.<sup>18</sup> The study required participants to read different versions of the Bank of England’s Inflation Report. It found out that visual summaries increased by 25% the sample group’s understanding of the report’s key messages.

The general public obviously cannot learn from central banks if the communication never reaches them. Binder (2017) refers to the political communication literature that emphasises the importance of the news media in information transmission and public informedness. Lack of media coverage can be caused by the fact that central bank news fails to reach traditional media, media does not find the information worth reporting or journalists find the central bank messages hard to understand. These problems may also have been compounded by the decline of traditional news media. On the other hand, transformation of the social media means that central banks are able to send messages directly to the public. Twitter is particularly

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<sup>14</sup> *Blinder (2017), p. 6.*

<sup>15</sup> *Haldane (2017), p 7.*

<sup>16</sup> *Cœuré (2019).*

<sup>17</sup> *Cowan (2010).*

<sup>18</sup> *Bholat et al. (2018).*

popular among journalists, and they can amplify central bank messages through traditional media or retweet to dedicated audiences. In the next section, we consider how mass adoption of social media offers new opportunities for central bank information exposure and information sharing.

### 3. Twitter use and policies at European central banks

#### 3.1 Twitter and tweeters

This section considers the value-added communication available to central banks through Twitter. In particular, we characterise Twitter users and focus on various features of Twitter's platform architecture. Finally, we consider the types of usage it enables. Since the micro-blogging platform was launched in 2006, it has been under constant development. New innovations have been added to attract and engage more users. Our analysis is based on the most recent surveys available. Twitter does not release detailed user information, so we rely on outside sources for our analysis.

During the first quarter of 2019 Twitter had about 330 million users accessing the platform at least once a month.<sup>19</sup> They sent 500 million tweets a day on average. About 5% of Europeans have Twitter accounts, a ratio that has remained almost constant in recent years.<sup>20</sup> However, differences between countries are large, ranging from 5% of adults in Germany to 16% of adults in Spain.<sup>21</sup>

A nationally representative survey of US adult Twitter users conducted by Pew Research Center (2019) found that Twitter users are younger, more likely to identify as Democrats, better educated and have higher incomes than US adults on average. The attitudes and political values of Twitter users in the US also differ somewhat from the general population. The analysis, however, notes that these averages can mask the substantial diversity of Twitter users. Digital News Report (2019) finds that similar characteristics of apply to Europe's Twitter user base. They, too, are younger, more interested in current affairs and less likely to hold populist views than the population generally. As Newman notes, even in the Nordics, there is considerable paywall avoidance.<sup>22</sup>

Several studies report that social media has become a news source by its own right. For US adults in the belonging 18–29 age cohort, social media is by far the biggest commonly used news source: 36% of 18–29 year-olds get their news from social media platforms compared to 22% of 30–49 year olds and 14% of 50–64 year olds.<sup>23</sup> People increasingly get their news from social media. Rather than starting the day with a printed newspaper, radio or TV, they use their tablet or phone to surf postings and links on social media.<sup>24</sup>

The large majority of Twitter users do not use the platform for socialising, but rather for maintaining general news awareness, following developing stories and other information purposes (Boukes, 2019). Indeed, the most popular Twitter accounts in terms of follower numbers are professional news accounts or accounts of political figures. Boukes (2019) further argues that, unlike Facebook, Twitter's platform architecture has features that make it particularly well-suited to news-following in four respects. First, micro-blogs are effective for information-sharing and short messages easy to absorb. Second, Twitter does not require friending, i.e. require reciprocal relationships, which implies that most Twitter action flows in one direction. 'Following' on Twitter simply means subscribing to receive someone's messages. In the UK, 64% of Twitter users follow at least one professional news account.<sup>25</sup> Third, Twit-

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<sup>19</sup> Statista (2019) <https://www.statista.com/statistics/282087/number-of-monthly-active-twitter-users/>.

<sup>20</sup> Statcounter (2019) <http://gs.statcounter.com/social-media-stats/all/europe>.

<sup>21</sup> Newman (2019).

<sup>22</sup> Newman (2019).

<sup>23</sup> Pew Research Center (2018).

<sup>24</sup> Newman (2019).

<sup>25</sup> Newman (2019).

ter's feature about trending topics encourages users to follow news of the day, which, if interesting to the follower, can be retweeted to the user's own follower set. As a result, users often encounter news even without subscribing to a news account or following a particular journalist. Finally, Twitter seems to boost the current affairs knowledge of users. Based on panel survey with multiple waves of questions, Boukes finds that Twitter usage positively influences knowledge acquisition. The more survey respondents used Twitter, the better informed they were about recent socio-economic events. This finding applied to all users, regardless of their level of interest in current affairs.

To summarise, central banks should note the following features of Twitter when seeking to add value to their communication efforts.

- Twitter users constitute a diverse audience that is demographically distinct from the general public. Specifically, they are younger and more interested in the current affairs than the population on average, and may be hard to reach with traditional media.<sup>26</sup>
- Twitter is a network for finding, sharing and discussing news and topical issues.
- Twitter potentially places a bullhorn in every user's hand. Everybody has a voice, so public campaigns are easy to launch, including disinformation and fake news campaigns. Unlike Facebook, however, the Twitter platform's design makes it harder for users to become trapped in echo chambers.<sup>27</sup>
- Twitter positively affects the acquisition of current affairs knowledge.

A curious detail in Boukes's (2019) survey arises in his testing of participants' current knowledge on topics receive considerable coverage on Twitter. One question, for example, asked about the GDP growth forecast of the De Nederlandsche Bank (the central bank of the Netherlands). 57% of respondents got the answer right! In other words, Twitter seems to be helpful in disseminating key messages of central banks usually considered rather arcane.

## 3.2 Data

To facilitate our analysis, we create an inclusive database of all tweets by 40 European central banks and financial supervisors starting from the time they join Twitter until the end of 2018. While we concentrate on European Union member states, we also include Ukraine, Switzerland and other non-EU countries. We include the tweets of some financial supervisory authorities to reflect national differences in institutional design. The tweets were purchased from a commercial vendor. Overall, we have 175,652 tweets from central banks and financial supervisors. Some central banks have several Twitter accounts as they disseminate information in multiple languages or use the accounts for different purposes. The Swiss National Bank (the central bank of Switzerland), for example, tweets in English, German, French and Italian. Each language has its own Twitter account. To the best of our knowledge, the content of the tweets is identical across the various accounts. Therefore, in the following analyses we concentrate on the account with the highest number of followers, which in this case happens to be the English-language account. We extend the same principle to other central banks, analysing the account with the highest number of followers in multiple account situations.

Table 1 presents all those Eurosystem central banks and financial supervisory authorities whose tweets we have downloaded into the database. Three euro-area central banks lack any institutional twitter account: Banque Centrale du Luxembourg (the central bank of Luxembourg), Trapeza tis Ellados (the Bank of Greece) and the Central Bank of Cyprus.

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<sup>26</sup> *Sehl (2018).*

<sup>27</sup> *Boukes (2019) and Newman (2019).*



**Table 1. Eurosystem central banks and financial supervisory authorities with Twitter accounts**

Euro area		
Country	Central bank	Financial supervisory authority
AT	Oesterreichische Nationalbank (@oebn)	
BE	Banque nationale de Belgique, Nationale Bank van België (@NBB_BNB_FR)	Financial Services and Markets Authority Belgium (@FSMA_info)
DE	Deutsche Bundesbank (@bundesbank)	
ECB	European Central Bank (@ecb)	
EE	Eesti Pank (@EestiPank)	Finantsinspektsioon Eesti (@FI_uudised)
ES	Banco de España (@BancoDeEspana)	
FI	Suomen Pankki (@SuomenPankki)	Finanssivalvonta (@FIN_FSA)
FR	Banque de France (@banquedefrance)	
IE	Central Bank of Ireland (@centralbank_ie)	
IT	Banca d'Italia (@bancaditalia)	
LT	Lietuvos Bankas (@Lietuvosbankas)	
LU		The Commission de Surveillance du Secteur Financier Luxembourg (@cssflux)
LV	Latvijas Banka (@LatvijasBanka)	Finansu un kapitāla tirgus komisija Latvija (@FKTK_lv)
MT	Central Bank of Malta (@centralbankmt)	Malta Financial Services Authority (@MFSAComm)
NL	De Nederlandsche Bank (@DNB_NL)	Netherlands Authority for the Financial Markets (@AutoriteitFM)
PT	Banco de Portugal (@bancodeportugal)	
SI	Banka Slovenije (@BankaSlovenije)	
SK	Národná banka Slovenska (@NBS_sk)	

Table 2 presents the EU central banks and financial supervisory authorities not part of the Eurosystem, whose tweets we have included in our database. Bulgarska Narodna Banka (the central bank of Bulgaria) lacks an institutional Twitter account. Magyar Nemzeti Bank (the central bank of Hungary) only established its Twitter account in June 2019.

**Table 2. Other EU central banks and financial supervisory authorities belonging to the ESCB with Twitter accounts**

Other EU		
Country	Central bank	FSA
CZ	Česká národní banka (@CNB_cz)	
DK	Danmarks Nationalbank (@nationalbanken)	
HR	Hrvatska narodna banka (@HNB_HR)	
PL	Narodowy Bank Polski (@nbppl)	
RO	Banca Națională a României (@bnr_ro)	
SE	Sveriges riksbank (@riksbanken)	Finansinspektionen Sverige (@finansinsp)
UK	Bank of England (@bankofengland), Bank of England Research	Financial Conduct Authority UK (@theFCA)

Table 3 lists the remaining institutions, European central banks and financial supervisors in our database. We have also included the Bank for International Settlements, an international financial institution based in Europe and an active Twitter user, in our sample.

**Table 3. Other European central banks and financial supervisory authorities with Twitter accounts**

Other European		
Country	Central bank	FSA
BIS	BIS (@BIS_org)	
CH	Swiss National Bank (@SNB_BNS_en)	Eidgenössische Finanzmarktaufsicht FINMA Switzerland (@FINMA_media)
IS	Seðlabanki Íslands (@sedlabanki_is)	
NO	Norges Bank (@NorgesBank)	Finanstilsynet Norge (@Finanstilsynet)
UA	National Bank Ukraine (@NBUkraine)	

The dataset is novel. Previous studies on central bank Twitter use limit themselves to tweets by select central banks, mainly the US Federal Reserve, and focus on periods surrounding monetary policy announcements.<sup>28</sup>

Our second main source of information is a survey conducted during the first half of 2019. Participants include nearly all national central banks and several financial supervisors in the European System of Central Banks. The survey was sent to members of the ESCB's Communications Committee ECCO and its Digital Communications subcommittee. All in all, 26 central banks were surveyed. The response rate was 85%. The purpose of the questionnaire was to gather qualitative information on central bank communication policies.

In the following analysis, we concentrate on the tweets of central banks, leaving those of financial supervisory authorities for comparative purposes. This constraint gives us an apples-to-apples comparison. Institutional design and responsibilities of financial supervisory authorities, by contrast, differ widely, making comparative analysis less feasible. Moreover, country coverage of financial supervisory agencies on Twitter is much smaller than that of central banks.

<sup>28</sup> *Luik and Wesselbaum (2016) and Lüdering and Tillman (2016).*

### 3.3 Central bank Twitter use

With basic central bank Twitter statistics in hand, we now consider how central banks use the various features of Twitter, focusing on those mentioned in subsection 3.2. Every central bank benefits from the fact that Twitter allows fast dissemination of information directly to mass audiences. Like other social media platforms, it is ‘always on.’ Messages cannot be filtered by others as in traditional media, making Twitter ideal for bypassing traditional media. Journalists often follow central banks on Twitter, of course, so Twitter can also be effective in reaching relevant traditional media audiences.

Central bank Twitter use was cautious in the early days, largely emphasising speed of dissemination. Central banks would post links to their websites, driving traffic to e.g. official press releases or statistical publications. Thus, Twitter was used largely a channel to posted content. Twitter posts often consisted of nothing more than titles of releases, with no content created or edited specifically for Twitter. Tweets of the ECB, the Bundesbank and the Banque de France during the few years after joining Twitter reflect such usage. The Bundesbank even circulated a press release stating that ‘Every tweet on the channel will link users directly to the relevant page on the Bundesbank’s website.’ It emphasised the channelling role of Twitter stating that it aims ‘to provide interested members of the public with another way of keeping up to date with the latest from the Bundesbank.’ Sehl et al. (2018) refer to this model of Twitter usage as an ‘on-site’ strategy, whereby Twitter is mainly a platform for news distribution. The BIS provides a similar example of such usage. The majority of BIS tweets include links to central banker speeches or records from other public engagements. The BIS Twitter account is also quite active in disseminating the institution’s research and analysis, often with relevant graphics and other supporting material.

In their analysis of how politicians use Twitter, Parmalee and Bichard (2011) find an emphasis on encouraging two-way communication and development of homespun personal styles. Since 2015, most central banks have started to engage in more active manner in Twitter, pursuing an ‘off-site’ strategy that aims to reach Twitter users with environment-appropriate content. This strategy often involves fostering a dialogue with the users, answering questions and engaging in discussion. The Bank of England’s Twitter use reflects this off-site approach. The BoE has organised #AskBoE sessions online, during which bank officials answer questions from the public on Twitter. The BoE’s Twitter policy reflects its goal of increasing engagement with the public, both in terms of providing information and listening.

A growing number of central banks have also started to create visual content that can be shared online. At least, the Bank of England, the National Bank of Ireland, the ECB and Suomen Pankki (the Bank of Finland) have created infographs with social media sharing in mind, as well as the traditional charts and figures of normal on-site publications.

Our survey of ECCO members found that disseminating official statements was the most common motivation for central banks for using Twitter. Next came promoting publications and research, media appearances of personnel and job opening announcements. Some central banks, such as Banka Slovenije (National Bank of Slovenia) still use Twitter in the traditional manner, mainly tweeting exchange rates and other formal announcements. Only a few central banks said that they answer questions from the public via Twitter. It is evident that fostering a dialogue and tailoring content for social media consumes time and resources. Central banks without official institutional Twitter accounts often said insufficient resources was the main reason they had not maintain an account.

Central banks differ in their policy allowing the staff and officials to have Twitter accounts and tweet about job-related issues. Only a few central bank governors have active Twitter accounts. These include Olli Rehn, Governor of Suomen Pankki and Madis Müller, Governor of Eesti Pank (the Bank of Estonia).

Most central banks claim to have social media guidelines in place for their staff. Eight Eurosystem central banks said that they allow their staff to tweet about work-related issues. Only the Bank of Finland actively encouraged staff to engage online via Twitter. Banque de France encouraged its researchers to advertise and disseminate their research via Twitter. Both banks reported that they had social media policies in place. The Bank of Finland sees

the injection of personality into the bank's communication as the biggest benefit from allowing staff to have personal Twitter accounts. As a general rule, banks that allow their staff to tweet considered it an efficient way to enhance communication.

The central banks that did not allow their staff to tweet about work-related issues mainly argued that they wanted to reduce the risk of cacophony. Many cited the comment of Blinder (2004) that a central bank that speaks with too many voices 'may have no voice at all.' They see the purpose of the institutional Twitter account as a means for nurturing a unified approach to communications. Restrictions on use prevent unauthorised disclosures and misuse of information. One central bank was concerned about the personal security of its staff members. A number of central banks reported that staff members may apply to open a personal account contingent on approval from management.

## 4. Central banks' influence on Twitter

### 4.1 Central banks' tweeting activities differ

The first central bank in Europe to join Twitter was Norges Bank (the Bank of Norway) on 15 June 2009, followed by Česká národní banka (Czech National Bank) on 8 September 2009. The ECB and BIS joined Twitter in 2010, the Banque de France and Bank of England in 2011, and the Bundesbank in 2012. The last large Eurosystem central bank to launch a Twitter account was Banco de España (the Bank of Spain) in 2018 (Figure 1). Around 110 central banks, i.e. 61% of all monetary institutions globally, currently have Twitter accounts.<sup>29</sup>

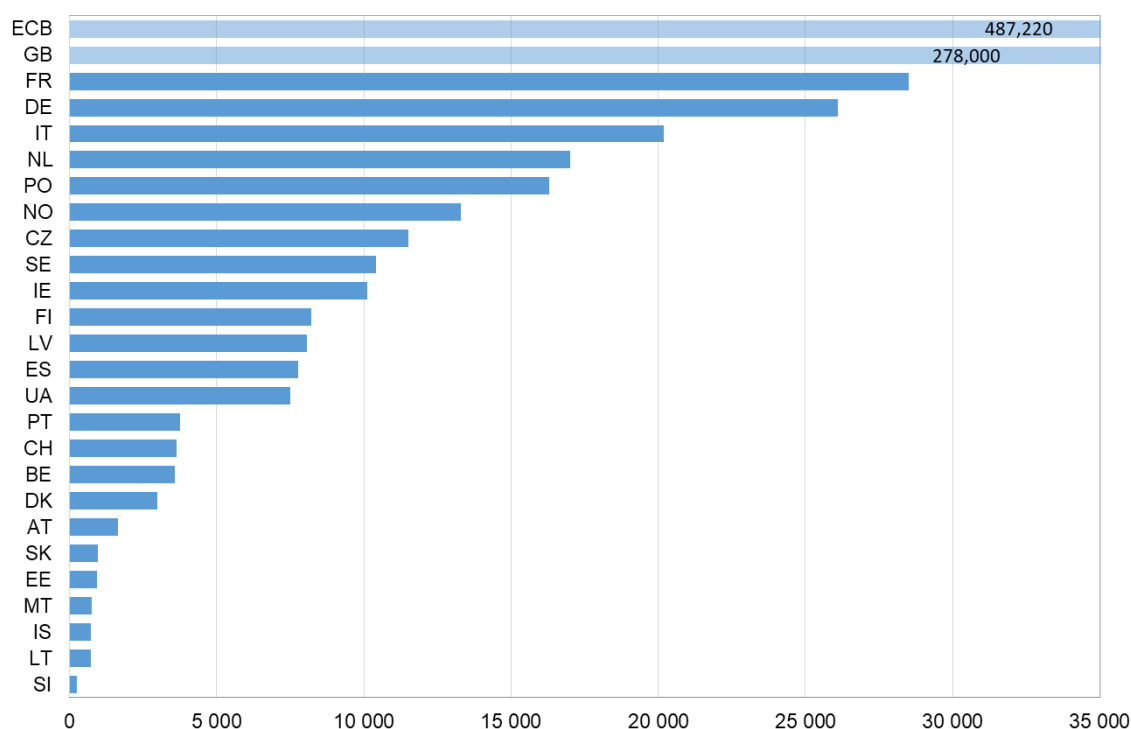


**Figure 1. Timeline of when various European central banks and BIS joined Twitter**

The number of followers of the European central banks varies greatly (Figure 2). The ECB is the most followed central bank in Europe with 473,000 followers<sup>30</sup>. The Bank of England's Twitter account has 270,000 followers. Follower numbers, not surprisingly, depend on the size of the population of the country, the area the central bank serves and the number of speakers of the language the central bank has adopted in its Twitter account. Among national central banks, the Banque de France has the most followers of any national central bank in the Eurosystem (around 28,500), followed by the Bundesbank (26,100). Compared to newspaper circulation, these follower numbers are quite impressive. For example, the Financial Times, the largest economics and current affairs newspaper in Europe, had more than 750,000 digital subscribers in the spring of 2019.

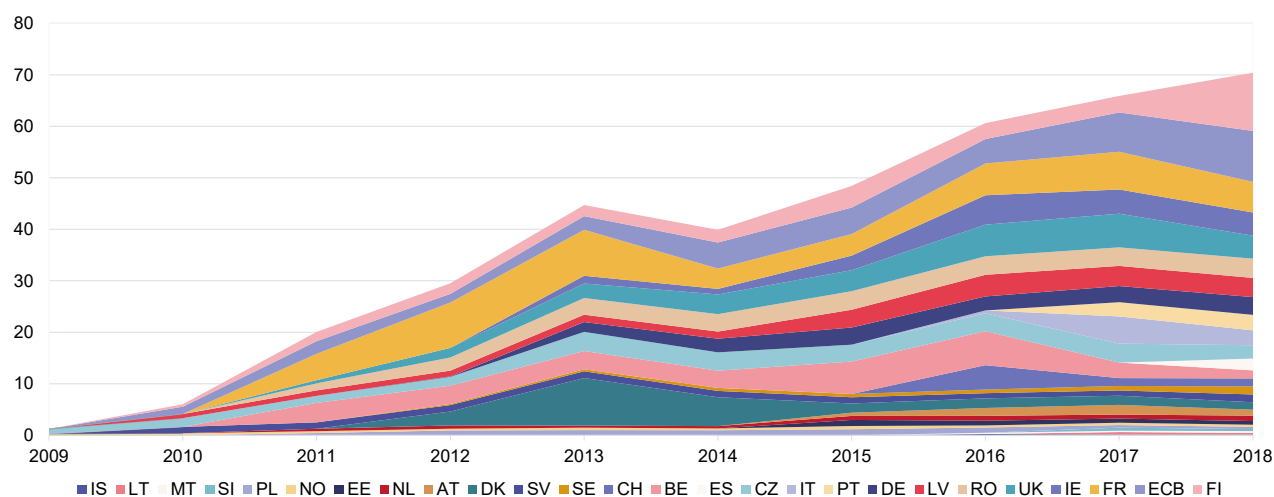
<sup>29</sup> Kyriakopoulou and Ortlieb (2019).

<sup>30</sup> By way of comparison, the central bank with most followers on Twitter is Bank Indonesia with almost 700,000 followers. Federal Reserve Bank of New York has approximately 152,000 followers.



**Figure 2. Number of followers of European central banks as of 23 July 2019**

Figure 3 shows that the number the Eurosystem tweets has increased considerably since new central banks have adopted Twitter. The daily average of tweets by a given central bank increased from around 2 tweets to more than 3 tweets. The most active Twitter users in our survey, Suomen Pankki and the ECB, tweeted an average of 10 tweets a day in 2018.



**Figure 3. Average daily tweets by Eurosystem central banks**

As can be seen from Figure 3, the number of tweets by certain central banks has decreased in recent years. This reduction does not reflect central banks' reduced Twitter activity per se, but rather evolving Twitter usage. For example, the Banque de France ended its daily tweet linking to its website tracking of the main euro area interbank market rates and gold prices in Paris. Similarly, Denmark's Nationalbank (the central bank of Denmark) stopped tweeting daily exchange rates, reference rates and results of daily markets operations. This explains the sharp drop in Nationalbank tweets from 2013 to 2015.

## 4.2 Measuring central bank Twitter influence

Metrics of Twitter influence have largely been developed for marketing and branding purposes. Of those factors contributing to Twitter influence, Leavitt (2009) says that the most relevant for central banks are frequency of updates, the ability of creating action (e.g. likes and retweets) and follower numbers. As noted above, central bank activity on Twitter and follower numbers vary enormously.

In his study of ‘continuous’ Twitter communication of European Parliament members outside election period, Larsson (2014) claims the following factors are likely to increase a member’s Twitter activity and engagement:

- The politician’s demographics,
- The number of people the politician follows and the number of followers,
- Frequency of internet use in the politician’s home country,
- Frequency of social media use,
- The national population’s political internet use, e.g. participation in online consultations and petitions, online interaction with public authorities such as city councils, and
- Political trust.

In what follows, we apply some of Larsson’s techniques for analysing differences in central bank tweeting frequency to show the importance of citizen online participation.

For institutional Twitter accounts such as those of central banks, demographics and the number of Twitter handles followed are irrelevant parameters, so we omit them. Instead, we assess three indicators of citizen online participation (internet penetration in a country, the degree to which citizens engage with social networks and political internet use) as these positively influence central bank activity on Twitter. We focus on the most recent available data and tweeting activity of central banks (averages between 2016 and 2018).

Central bank daily activity on Twitter varies greatly. Within the Eurosystem, Lietuvos Bankas (the Bank of Lithuania) tweets on average every third day, while the Bank of Finland tweets on average 6.9 times a day. Outside the Eurosystem, Seðlabanki Íslands (the Bank of Iceland) tweets about once a week, while the Bank of England tweets about 4 times a day. On average, between 2016 and 2018, central banks in our sample tweeted 2.6 times a day.

Internet adoption and use varies across Europe. According to Eurostat surveys conducted in 2016, 2017 and 2018, a third of Italy’s adult population had not been online in the previous 3 months, while only 1.5% of Iceland’s adult population had not been online in the previous 3 months. On average, 83.8% of Europeans had been online within the past 3 months ‘every day or almost every day’ at the time of their survey responses.

As no reliable cross-European data regarding Twitter usage is available, we employ an alternative variable to capture social media activity. A Eurostat survey using the same timeframe as ours captures the degree to which citizens use social media platforms in each country under the item: ‘Internet use participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter, etc.).’ On average, 58.1% of citizens reported that they participated in social networks.

Finally, given that central banks are national institutions, Internet use for political purposes could influence central bank Twitter activity. The Eurostat survey addresses this issue every third year, so here we take the results from 2017. The precise framing of this survey item is: ‘Taking part in online consultations or voting to define civic or political issues.’ On average, 56% of Europeans surveyed reported participating in eGovernment initiatives, with national ratios varying from 9% in Romania to 89% in Denmark.

We create a simple index of above variables with equal weights. The horizontal axis in Figure 4 measures differences between the countries regarding online participation of citizens measured as percentage point differences from the index average. On the positive side of the x-axis comprises central banks in countries where citizen online participation (Internet, social networks, eGovernment) is more active than average. Central banks on the negative left-hand side are in countries where online participation is less common, measured as the percentage point difference with the average. The vertical axis plots the difference between the number of central bank tweets and the average number of tweets. Thus, central banks

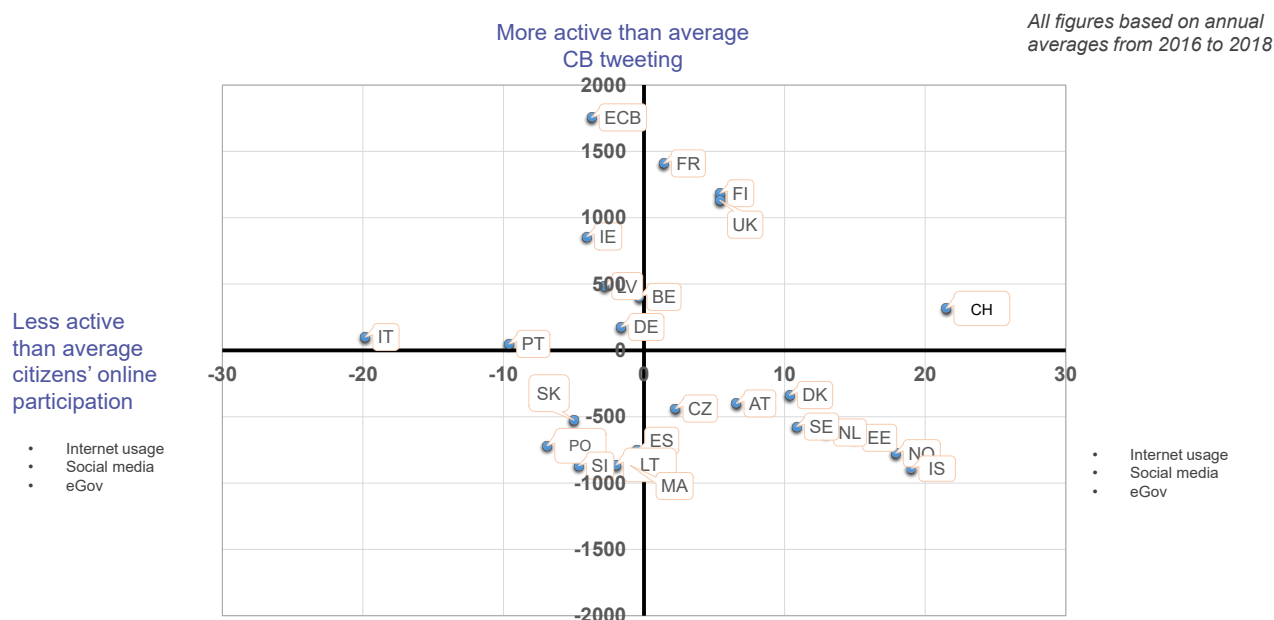
where tweeting activity has been above average appear on the positive side of the vertical axis, while central banks less active than average fall on the negative side of the axis.

Interestingly, none of the above three variables (Internet usage, participation in social networks or eGovernment) have statistically significant positive impacts on central bank Twitter activity.

Plotting the central banks in our chart, we can see that they distribute rather evenly. Central banks located on the top right-hand side of the chart represent countries where the online participation of citizens is above average and their central banks more active than average in tweet frequency (FR, FI, UK, CH).

The lower right-hand side of the chart contains central banks of countries where citizens are active online but have central banks that tweet less actively than average. Rather surprisingly, all Scandinavian central banks (SE, DK, NO and IS) fall into this section, along with the Dutch, Estonian, Austrian and Czech central banks. One could argue that these central banks could pick up some low-hanging fruits just by increasing their Twitter activity. All these banks are poised to easily expand their online presence and outreach.

Central banks that tweet more than the average but are located in countries with lower-than-average online participation are found in the top left-hand side of the chart. This group comprises the ECB, and the central banks of Ireland, Latvia, Belgium, Belgium, Portugal and Italy.



Sources: Eurostat and Twitter

**Figure 4. Plot of central banks using averages of daily tweets and citizen online participation. Figures based on annual averages from 2016 to 2018. Central bank tweet activity (0 = average), Citizen online participation (0=average)**

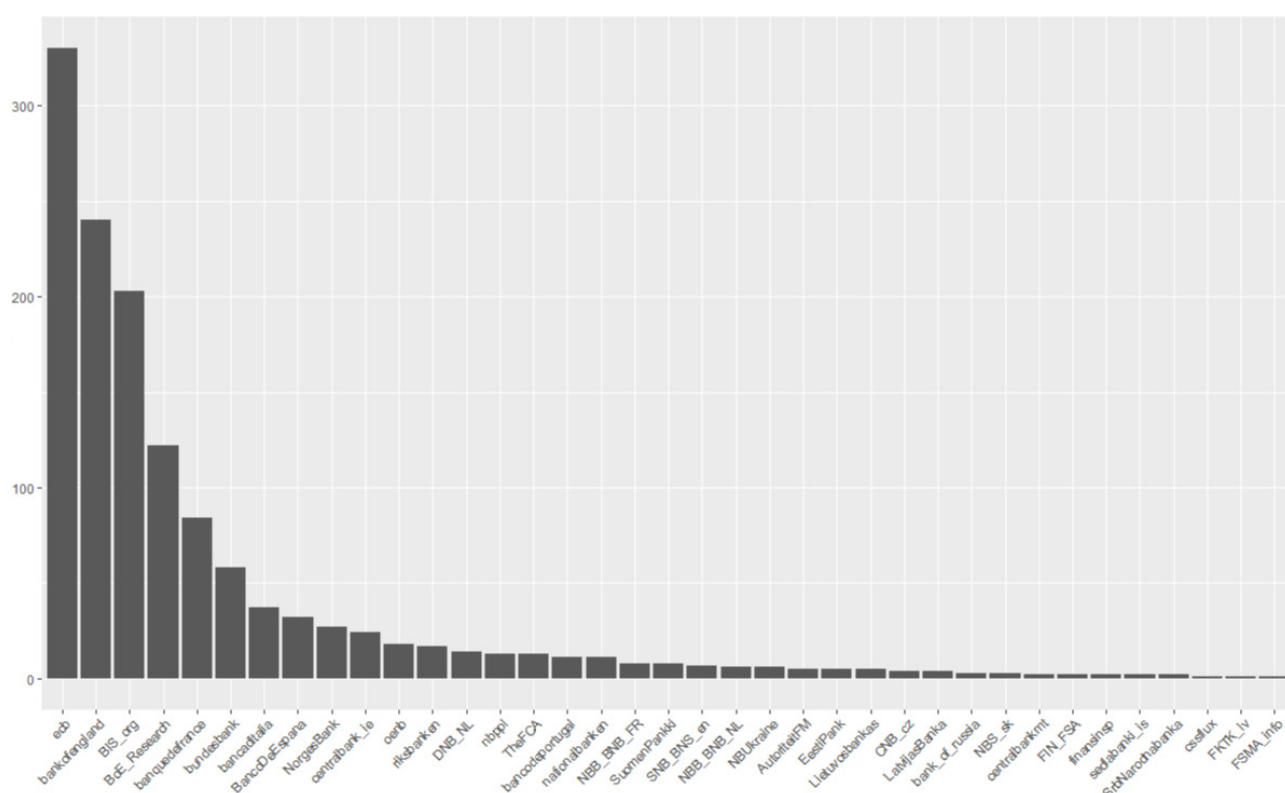
### 4.3 Central bank reach via #econtwitter

To analyse the Twitter reach of European central banks in one of their potentially most important audiences, we assess how economists follow central banks on Twitter. More specifically, we start from Research Papers in Economics (RePEc) website (<http://repec.org/>), which is used to disseminate working papers and other works by professional economists. While this multi-faceted service requires that economists register, we feel secure in saying that a very large share of economists who publish even semi-regularly are registered with the RePEc. Currently, about 55,000 economists in 101 countries are registered with the service.

One feature at the site is that economists can link their Twitter accounts with their RePEc accounts. This allows us to use Twitter accounts of approximately 1,500 research-oriented

economists Twitter accounts (<https://ideas.repec.org/i/etwitter.html>) to determine how the European central banks potentially reach this audience. Obviously, this is only a fraction of economists active on Twitter (sometimes called #econtwitter), but we can infer these particular economists are research-oriented.

Figure 5 shows how many economists follow each central bank's Twitter account. We can see that most central banks have only a handful of followers among economists. It is only the larger institutions, European Central Bank, Bank of England, the Bank for International Settlements, Banque de France and Bundesbank that have more than 100 followers in our sample. As much of the discussion of economics and economic situation on Twitter is conducted among economists, the fact that central banks may not reach this group may be a cause for concern. (Of course, there are many researchers among RePEc economists who do not specialize in macroeconomics, monetary policy or finance.)



**Figure 5. Number of RePEc-registered followers**

## 5. Communicating monetary policy and financial stability via Twitter

Haldane (2018) argues that efficient communication on financial stability needs to reach broader target group than that of monetary policy (i.e. market participants). Following from our discussion about Twitter as a communication tool, Twitter offers a platform that reaches, if not the general public, at least an audience that is younger and more interested in current affairs than population on average. Thus, Twitter should be particularly suitable for communicating issues related to financial stability.

By analysing the monetary policy and financial stability tweets of European central banks, our hope here is to answer two questions. First, if financial stability has become a second de



facto pillar of central banking in the Eurosystem since the global financial crisis,<sup>31</sup> do the tweets of central banks reflect it? Second, while the monetary policy mandate falls solely on central banks, governance and communication of financial stability policy are spread across several agencies. In the Eurosystem, in particular, responsibilities such as macroprudential decisions fall within the scope of national decision-making, despite being closely monitored and coordinated by the ECB. Therefore, we ask whether central banks with independent monetary policy tweet more about monetary policy than financial stability related issues, and conversely, whether Eurosystem central banks tweet more about financial stability than monetary policy.

We analyse tweets with a key-word search by calendar year. Monetary policy and financial stability related search terms have been chosen from the relevant JEL codes and using techniques recommended in Bholat et al. (2015) in 'Text mining for central banks.' We translate the search terms to national languages and use Boolean techniques and wildcards to tackle inflected words. We consider all tweets to be relevant for our study, including those advertising events and distributing publications.

During the sovereign debt crisis years of 2010, 2011 and 2012, only a limited number of Eurosystem central banks had Twitter accounts (Figure 6a). Out of those central banks, the ECB and the central banks of France, Belgium and Finland were more active in tweeting about monetary-policy-related issues than financial stability. De Nederlandsche Bank (the central bank of the Netherlands), on the other hand, has constantly tweeted more about financial stability than monetary policy. Less than 10% of Bank of Lithuania's tweets concerned either of these topics.

During the 2013–2015 recovery, the share of financial stability tweets started to increase and monetary policy tweets decrease (Figures 6a and 6b). The ECB, Suomen Pankki and Banque de France still tweeted more about monetary policy, but the share of financial stability tweets increased. The central banks that during this period joined Twitter, i.e. the Bundesbank and the Central Bank of Ireland, emphasised financial stability tweets.

During the growth period from 2016 to 2018, the share of financial stability tweets grew at a faster pace. The central banks that joined Twitter during this period (Austria, Estonia, Italy, Malta, Slovenia and Portugal) all tweeted more about financial stability than monetary policy. Practically all central banks that have joined Twitter since 2015 have stressed financial-stability-related topics.

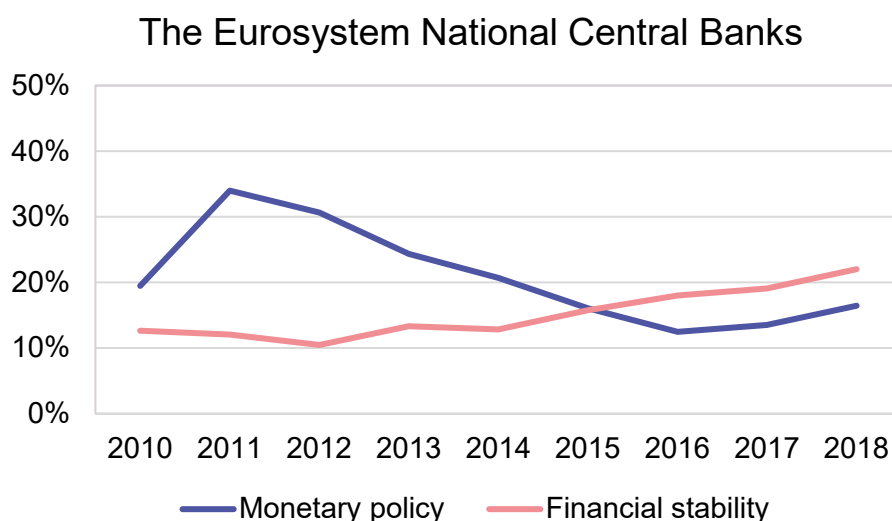
**Table 4. Monetary policy and financial stability tweets by European central banks**

Monetary policy dominates	Financial stability dominates	Change to financial stability from monetary policy	Only a few financial stability or monetary policy-related tweets
ECB, BE, ES*, FR and MT	AT, DE, EE, IE, IT, NL, PT, SI	FI and LV	LT

\* Banco de España has been on Twitter only since October 2018.

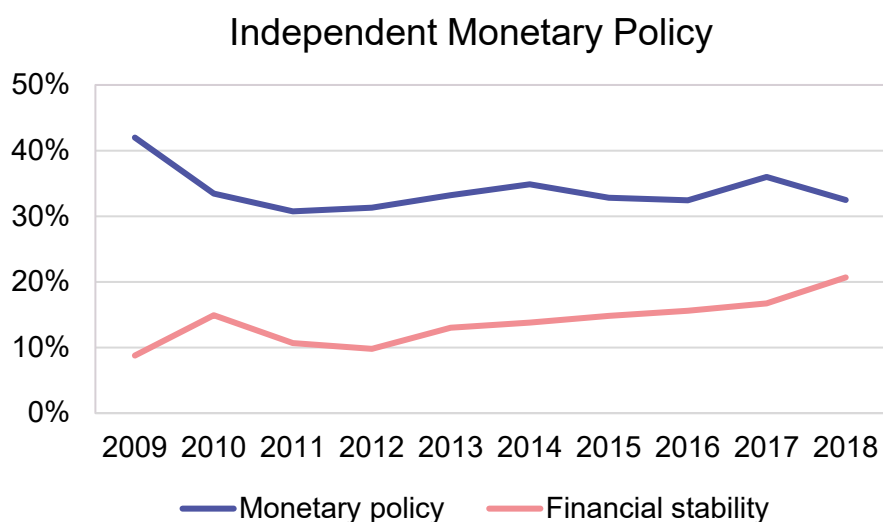
Overall the share of financial stability tweets has increased from around 13% between 2010 and 2012 to 20% between 2016 and 2018. At the same time, the share of monetary policy tweets has fallen from 27% to 15%. For the Eurosystem central banks, one can argue that central bank Twitter activity underscores the increased emphasis on financial stability and decreased emphasis on monetary policy since the central banks have had active Twitter handles.

<sup>31</sup> See, for example, de Guidos (2018): <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181105.en.html> and Rehn (2019): <https://www.suomenpankki.fi/en/media-and-publications/speeches-and-interviews/2019/governor-olli-rehn-impact-of-structural-economic-changes-on-monetary-and-macroprudential-policies-24-may-2019/>



**Figure 6a. Annual ratio of monetary policy and financial stability related tweets to total tweets**

Among other European central banks, Sweden's Riksbank has been the most active in tweeting about monetary policy. On average, half of its tweets between 2012 and 2018 relate to monetary policy. Denmark's Nationalbank and Swiss National Bank follow with 44% and 36% shares. There is less variation regarding tweets on financial stability, with Swiss National Bank the most active.



**Figure 6b. Annual ratio of monetary policy and financial stability-related tweets to total tweets**

Does the above pattern hold for central banks that conduct independent monetary policy? The share of monetary policy tweets in these central banks has fallen from 42% in 2009 to 31% in 2018. Meanwhile, share of tweet on financial stability has increased from 8% to 18%. Thus, central banks with independent monetary policy still place greater emphasis on monetary policy than financial stability.

Finally, we conduct a t-test for the difference between monetary policy and financial stability tweets in the Eurosystem and other European central banks. The results show that the difference is statistically significant: central banks with independent monetary policy place more emphasis on tweeting about monetary policy than financial stability. The difference may reflect the fact that, in addition to decision-making, some responsibilities for macroprudential policy and supervision fall under the purview of national decision-makers in the euro area.

## 6. Conclusions

In this paper, we documented and explored the use of Twitter by European central banks in their communication policy. The clear majority of European central banks and numerous financial supervisory authorities maintain at least some presence on Twitter. Central bank Twitter use reflects advances in technology and the central bank response to how people acquire information and news. Since the global financial crisis, communication has assumed much greater importance in the conduct of monetary policy. This speaks for the importance of using several available channels to reach various audiences and potentially influence monetary policy concerns such as inflation expectations.

To investigate European banks' Twitter use we acquired their all tweets from the time they joined the Twitter to the end of 2018. Our major findings are as follows:

- The number of central banks on Twitter, as one would expect, has increased over time.
- The Twitter activity of central banks (defined as average number of tweets per day) has fluctuated over time. For most central banks, there is no clear trend up or down after they join Twitter.
- Factors influencing variations in Twitter use of other groups such as politicians, have no bearing on central bank Twitter activity. It is most likely that the central bank's Twitter policies, and even the activity of individual staff members, influence observed activity, and not factors such as the country's general level of digitalisation. Individual central banks can choose how active they want to be on Twitter.
- The reach of central banks on Twitter depends on such factors as number of followers. Predictably, large central banks attract more followers, but central bank time and activity on Twitter also seems to bear on the issue. The same reasoning applies to the number of economists following central bank tweets.
- The importance of tweets related to financial stability has increased over time, which again, is as expected. National central banks in the euro area currently tweet more about financial stability than monetary policy, while the opposite holds true for central banks that pursue their own independent monetary policies.

The importance of communication in implementation of monetary policy can be expected to grow in the years ahead. And the same holds for financial stability communication. Central banks' increasing reflects these trends, as we have shown. Central banks today must incorporate social media platforms like Twitter in communicating with the general public, because this can increase the effectiveness of their policies. At the same time, national institutions such as central banks must be able to explain their policies to the general public. Our analysis shows that many European central banks can still achieve more in their outreach with the general by utilizing social media platforms such as Twitter.

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