Transparency versus opacity: Are bank stress tests worthwhile?

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Abstract

In this paper, we empirically examine whether regulatory stress tests affect bank disclosure profiles and transparency. Analysing a unique dataset of stress test participants from 25 European countries, we apply textual analysis and construct a composite transparency index to measure how stress tested banks amplify their disclosure profiles and how this relates to market-based transparency attributes. We find that stress test participation incentivises banks to enrich their textual narratives by utilising certain stress test terms that we name 'stress test disclosure sentiment'. This effect may apply in particular for banks that are newly than regularly involved in stress test exercises. Further, our results suggest that stress test participants may compensate stress test disclosure sentiment during stress test periods by amending the tone of their textual disclosures to sound more positive. We find that this effect may convert into improved market-based bank transparency attributes, which indicates influence and potential obfuscation among market participants.

Keywords: bank stress tests; transparency; opacity; textual analysis; financial reporting

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1. Introduction

Historically, transparency is an important mechanism that maintains the smooth operation of an economy. By reducing information asymmetry between bank insiders and outsiders, transparency is a crucial element, which promotes bank performance, and reduces cost of capital through distinct channels. First, transparency improves project identification enabling investors to estimate a more realistic picture of the value of a bank to make better-informed investment decisions. Second, transparency encourages corporate governance and monitoring that empower different stakeholders such as shareholders and supervisory bodies to assess top executives' performance (e.g. Bushman and Smith, 2003; Ball, 2001; Levine, 1997). Third, the markets become capable to detect excessive risk-taking and to discipline managers, which mitigates moral hazard (e.g. Freixas and Laux, 2011; Nier and Baumann, 2006). However, some recent studies have the opposing view that opacity related to the funding side of banks' balance sheets might be desirable. These studies argue that bank liquidity through money creation with debts may be efficiently maintained when investors are uninformed (Dang et al., 2017; Holmström, 2015). Nonetheless, bank transparency has been in the centre of a recent controversy debate. For instance, the reviews by Acharya and Ryan (2016), Beatty and Liao (2014) and Bushman (2014) highlight the importance of this trade-off suggesting that transparency may have positive and negative effects on market welfare, while the advantages appear to outweigh the disadvantages.

In theory, transparency is promoted through mandatorily and voluntarily disclosed information of different source and nature such as financial accounting, credit ratings and supervisory disclosures. Market participants convert this information into market transactions and security prices, known as market microstructure (Madhavan, 2000). However, in practice, this transformation process is complicated and by far not perfectly operating (Bloomfield, 2002; Grossman and Stiglitz, 1980). Furthermore, disclosures on their own seem not to be sufficient in advancing transparency (Freixas and Laux, 2012). This concern may be viewed from a quantitative and qualitative perspective. On the one hand, financial accounting figures do not perfectly illustrate a banks' financial situation as the quantitative disclosures might be inaccurate, incorrectly understood and intrinsically complex (Jones et al., 2012, 2013). Due to the character and composition of banks' balance sheets (i.e. loans and trading assets) as well as banks' size and complexity, some studies even argue that specifically banks, compared to firms of other sectors, seem to be inherently opaque to outsiders. Therefore, the traditional view on transparency identifies opacity as a threat to market welfare and an important reasons why banking regulation and supervision is needed and not entirely undertaken by financial markets (e.g. Flannery et al., 2013; Iannotta, 2006; Morgan, 2002). On the other hand, analysing corporate narratives, research finds that information complexity and the tone of textual disclosures potentially influence firm performance (Bonsall and Miller, 2017; Loughran

and McDonald, 2011a, 2011b; Li, 2008). This relationship may incentivise managers to provide more complex and abnormally positive narratives with the objective to obfuscate investors about the true value of a firm (Bushee et al., 2018; Asay et al., 2017; Ertugrul et al., 2017; Allee and Deangelis, 2015).

Consequently—according to latest regulatory evolvements—regulators, policy makers and the public demand more and improved transparency from banks. For example, the 2007/08 global financial crisis, showed how the absence of reliable information produced a lack of confidence about the resilience of Systemically Important Financial Institutions (SIFIs, henceforth) and of the entire economic system (Flannery et al., 2013). Therefore, as part of Basel III, the Basel Committee on Banking Supervision (BCBS) highlights the importance of quantitative and qualitative disclosure quality that should be clear, comprehensive, meaningful, consistent and comparable to improve and supplement the effectiveness of the capital regime (BCBS, 2013, 2017). Moreover, the authorities attempt to improve the quality of information available to market participants through regular bank stress tests. This specific information aims to reveal banks' solvency and soundness against adverse market developments to respectively rebuild and maintain trust of market participants during crises and normal times (Flannery et al., 2017; Bouvard et al., 2015; Borio et al., 2014; Schuermann, 2014).

Various event studies show that U.S. and European markets react to stress test announcements and results as they provide novel information to market participants (Carboni et al., 2017; Gross and Población, 2015; Morgan et al., 2014; Petrella and Resti, 2013). In conceptual studies, Borio et al. (2014) and Schuermann (2014) argue that during crises, when uncertainty is high and credible information is rare, bank stress tests work well as crisis management tool to provide markets with additional information that they need to distinguish between sound and unsound banks. In normal times, however, stress tests should work as an early warning device, which is increasingly difficult to implement in a credible way. Bouvard et al. (2015) and Goldstein and Sapra (2013) support this view and suggest that more bank transparency during crises may lead to more market welfare, while it might cause distinct inefficiencies during relatively calm times. In particular, disclosing bank-specific information during normal times might mislead investors about the financial situation, causing incorrect conclusions, and in worst scenario resulting in bank runs.

However, how do banks react on stress test participation and disclosures? The literature provides rather little insights on the impact of regulatory stress tests on bank publications. On the one hand, as stress tests provide mainly quantitative mandatory disclosures, they may encourage voluntary disclosures of such kind. Analysing European stress tests in 2010 and 2011 and the following capital exercise in 2012, Bischof and Daske (2013) find an increase in voluntarily disclosed information on sovereign risk exposures as response to the mandatory stress test results. On the other hand, the literature suggests that as bank managers know about the implications of 'bad' news on the markets, they might attempt to mitigate potential

negative consequences (Flannery et al., 2017; Goldstein and Sapra, 2013). Therefore, stress tests may influence qualitative—textual—disclosure sentiment depending on banks' stress test participation and the individual stress test performance. For instance, banks that performed well may specifically mention stress test results to account their soundness and resilience approved by regulatory evidence. Banks that failed stress tests might use positive language in the attempt to disperse stress test results and their reported shortcomings.

Motivated by the conflicting view on transparency and opacity and the growing regulatory influence of stress tests on the financial sector, we aim to explore the impact of stress tests on participating banks' quantitative and textual disclosure profiles and the effect on bank transparency. Based on the initial obfuscation theory of textual disclosures, we believe that stress test participation and disclosures can create a stress test disclosure sentiment that may influence disclosure tone and quantitative disclosure behaviour, and in turn, might affect market-based transparency attributes. In this context, we scrutinise the following research questions. Do, and how do stress test participants amplify disclosure profiles during stress test periods? Does, and how does stress test disclosure sentiment influence the tone of banks' textual disclosures? Does, and how does the potential change of textual disclosures during stress test periods convert into market-based transparency attributes?

To address these research questions, we construct a comprehensive and unique dataset of stress tested banks from 25 European countries, which consists of accounting, textual analysis and market microstructure components. Our data is of quarterly frequency and covers the period 2005–2016. In particular, we largely resort to hand-collected annual and interim reports for our quantitative and qualitative accounting analysis, which we combine with transparency measures from market microstructure literature. Accordingly, our empirical approach is divided into three steps. First, we apply textual analysis to estimate whether stress test participants enrich textual disclosures utilising stress test terms, which we call 'stress test disclosure sentiment'. Second, we measure the disclosure tone and quantitative disclosure behaviour during stress test periods. Third, we combine stress test disclosure sentiment and disclosure tone with market-based transparency measures and evaluate how this effect influences bank transparency.

We advance previous research as we find that stress test participants amplify disclosure profiles during stress test periods in several ways. In particular, as we identify increased stress test terms and language within banks' textual disclosures, we conclude that narratives are evidently influenced by stress test disclosure sentiment. The amount of stress test terms, in relation to the report length, has increased considerably from one exercise to another, while newly involved participants utilise more stress test language within their textual disclosures than regular participants. Further, our results indicate that the change of disclosure tone and the quantitative disclosure behaviour can influence the evolvement of the transparency process during stress test periods. This effect may differ for banks that are newly or regularly

involved in stress test exercises, while we can see a slight learning curve from serial stress test participation. Importantly, stress test disclosure sentiment might incentivise stress test participants to change their disclosure tone towards more positive language during stress test periods, which, as traced in market-based transparency measures, seems to obfuscate investors. For instance, we find that an increase in tone is related to lower bid-ask spreads, more analyst following and higher analyst recommendation consensus. However, we are hesitant to link our results towards causal inference, as textual narratives per se might be at least partly responsible for the transparency effect. Nevertheless, we conclude that stress tests influence banks' disclosure strategies, which may convert into improved market-based bank transparency attributes and ultimately influence market participants.

Combining accounting, textual disclosure and market microstructure characteristics and examining empirically how stress test participants influence disclosure profiles and whether this affects bank transparency, our paper contributes to distinct streams of existing literature. First, we expand the growing literature of textual analysis (Henry and Leone, 2016; Loughran and McDonald, 2016; Li, 2010). Our paper is the first that measures stress test disclosure sentiment by establishing a unique word list from stress test disclosures and applying this list on European stress tested banks' annual and interim reports. Further, we connect the concept of stress tests with textual disclosure tone based on word lists by Loughran and McDonald (2011b). Second, by analysing the impact of stress tests on banks' quantitative and textual disclosure profiles, we shed light on a rather opaque area of stress test research. Bischof and Daske (2013) study the impact of mandatory stress test disclosures on European banks' voluntarily disclosure behaviour, while based on a U.S. sample, Flannery et al. (2017) explore empirically Goldstein and Sapra's (2013) theoretical drawbacks of stress test disclosures. Third, we extend the literature on bank transparency and opacity (Flannery et al., 2013; Iannotta, 2006; Morgan, 2002) by exploring the implications of regulatory stress test participation and disclosures on market-based transparency measures. Fourth, we expand the growing literature that applies event study designs to examine the short-term ex-post effects of stress test disclosures on financial markets (Carboni et al., 2017; Sahin and de Haan, 2016; Morgan et al., 2014; Petrella and Resti, 2013). Further, we generally contribute to the conceptual debate on the costs and benefits of transparency through stress test disclosures that provides suggestions for regulators and policy makers on how to establish a solid disclosure strategy (Bouvard et al., 2015; Borio et al., 2014; Schuermann, 2014; Goldstein and Sapra, 2013).

The remainder of the paper is structured as follows. Section 2 presents the theoretical framework and related literature and discusses the main arguments and the limitations of relevant studies. Section 3 develops the empirical hypotheses to be tested in Section 4. The latter section illustrates the data collection and the econometric techniques we apply in our analysis. Section 5 reports and discusses the empirical results, whereas Section 6 is devoted

to robustness checks and Section 7 concludes the paper and presents relevant policy and business implications.

2. Theoretical framework and related literature

Our study bases on the controversial debate on conceptional frictions between transparency and opacity and the role of stress tests within those concepts, in terms of potential consequences for market welfare. In theory, transparency is the flip-side of opacity meaning that more transparency leads to less opacity, and vice versa. However, the relationship between both concepts is complex. For instance, how quantitative and qualitative accounting information influences financial markets and is transferred into transactions and share prices is an ongoing area of research. The literature argues that disclosed information through stress test results may affect market welfare positively or negatively depending on the detail of disclosed information and the state of the economy (Bouvard et al., 2015; Goldstein and Sapra, 2013).

2.1 Bank transparency and opacity

The demand for transparency can be traced back to the principle that information efficiency ensures financial markets and the entire economic system to operate smoothly. For example, the efficient market hypothesis bases on the fundamental assumption of perfect information movement between all market participants (Allen and Santomero, 1998; Fama, 1970). Following Bushman (2014), we define transparency as the amount of public information available to outside stakeholders. Hence, the level of transparency depends on the precision, reliability and frequency of various components of publicly available financial accounting information such as financial reports, credit ratings and supervisory disclosures. All this credible information about a bank's solvency and soundness is a necessary condition to attract outsiders such as depositors and creditors to establish a trustworthy business relationship.

In turn, transparency provides outsiders opportunities to produce private investors' information and to make informed investment decisions that convert information into transactions and share prices on financial markets; the so called market microstructure (Madhavan, 2000). However, banks operate in an environment with informational frictions and uncertainty (i.e. the weak form of efficient market hypothesis) where insiders and outsiders have asymmetric information (Goldstein and Sapra, 2013). Moreover, Bloomfield (2002) introduces the 'incomplete revelation hypothesis' (IRH) which states that market prices do not fully reflect public information due to the costs of analysing and assessing this information. This circumstance exacerbates costs of raising external equity or regulatory capital and gives birth to fundamental concerns such as the agency problem and adverse selection (e.g. Beatty

and Liao, 2014; Bushman and Smith, 2003; Diamond, 1984; Diamond and Dybvig, 1983). Following Acharya and Ryan (2016), we define bank opacity as the level of uncertainty, based on certain market inefficiencies which make effective decision making more difficult or even impossible for outside market players. For instance, uncertainty appears for investors due to incomplete, incorrectly interpreted or too complicated public information (Jones et al., 2013).

Further, some studies argue that banks are even inherently opaque. Morgan (2002) and Iannotta (2006) examine whether bond issue ratings are differently rated by rating agencies. They conclude that banks, compared to other industries, are opaquer as they find that banks' bond ratings differ more often between agencies than those ratings of firms of other industries. The literature identifies banks' specific asset composition from loans and trading assets, which are usually the largest items on the balance sheet, as determinants for bank opacity. On the one hand, the value of bank loans is difficult to assess from outside as banks hold confidential information about the nature of the contract and the creditworthiness of the borrower (Berlin and Loeys, 1988; Campbell and Kracaw, 1980). On the other hand, trading assets are seen to be opaque because they are inherently complex (e.g. CDOs) and therefore difficult to measure. Moreover, trading assets are very liquid and move fast on and off the trading books, sometimes within days or hours (Jones et al., 2013; Morgan, 2002).

2.2 Transparency related to textual disclosures

Transparency is also linked to the quality of qualitative—textual—disclosures. The literature argues that information complexity[1] and tone of textual components of corporate disclosures are related to firms' future performance.[2] In particular, using the fog index, Li (2008) examines Bloomfield's (2002) IRH in the sense that complex textual disclosures in 10-K filings can lead to confusion—obfuscation—about the true performance of a firm. He finds that firms with low earnings are more likely to publish disclosures that are more complicated. Consistent with Li (2008) recent studies conclude that firms with more complex reports tend to manage their earnings (Lo et al., 2017), while easier 10-K filings increase credit rating quality and reduce cost of debt (Bonsall and Miller, 2017). Moreover, Bloomfield (2008) discuss Li's (2008) results providing an alternative explanation that low performing firms might need to disclose more complex information in response to their poor performance. Analysing conference calls Bushee et al. (2018) disentangle disclosed information into complex but informative and deliberately obfuscating information, which respectively decrease or increase information asymmetry. They find that low performing firms convey more of both components. Furthermore, Asay et al.

[1] Information complexity refers to the term 'readability'. Both terms are used interchangeably in the literature (see, e.g. Bushee et al., 2017; Li, 2008). Loughran and McDonald (2016) posit that the term 'readability' is problematic, as it refers only to the analysed document, which is inherently interrelated with the business' complexity that it attempts to describe. As we aim to examine document complexity in a broader sense, we follow Loughran and McDonald (2016) and use the term 'information complexity'.

[2] There is an ongoing debate on the measurement of information complexity and tone of disclosure. Researcher have introduced various information complexity measures, dictionaries, word lists and machine learning approaches that we do not comprehensively discuss in our study (see, Henry and Leone, 2016; Loughran and McDonald, 2016 for a review).

(2017) suggest that the potential of the obfuscation effect of more complex disclosures to cover poor performance is limited to the extent that investors will base their investment decision on other information sources.

On the other hand, many studies analyse the tone and sentiment of corporate disclosures by resorting to dictionaries, word lists or phrases and find a relationship between tone and firms' stock performance.[3] In particular, Loughran and McDonald (2011b) create dictionaries to analyse the tone and sentiment of financial disclosures and find that specific language (e.g. 'negative', 'uncertainty', 'modal' words) can influence stock returns on the filing date, trading volumes and future stock return volatility. Further, Loughran and McDonald (2011a) examine negative tone and phrases connected to fraud which indicates a warning to investors as they find lower stock prices for firms using this language. Related to the obfuscation theory, Allee and Deangelis (2015) link textual disclosures and managers' reporting incentives and observe that managers structure the dispersion of the tone of their narratives according to their advantages to influence investors' perceptions of firm performance. Similarly, Ertugrul et al. (2017) document that annual reports with more ambiguous tone and complexity lead to higher future crash risk. Analysing earnings press releases, studies by Arslan-Ayaydin et al. (2016) and Huang et al. (2014) find that abnormal positive tone can boost stock prices in the short-run, while the effect results in a negative market reaction in subsequent quarters.

2.3 The effect of stress test disclosures on transparency

Many studies examine the impact of stress test disclosures on market welfare and report positive or negative effects on transparency. In a conceptual study, Goldstein and Sapra (2013) summarise distinct empirical studies and illustrate consequences of reported stress test results. On the positive side, stress test disclosures provide specific information about the risk profile of banks enabling outside stakeholders to make informed investment decisions and enforcing market discipline. Further, regulators can enhance market's trust in the system through a disclosure commitment prior to the stress test, as regulators will not deliberately hold back negative private information. On the negative side, stress test disclosures might lead to the effect modelled by Hirshleifer (1971) and reduce risk sharing among economic agents as realised losses cannot be insured. Furthermore, managers might rather choose short-term investments to pass stress tests at the cost of their long-term value. Moreover, contagion could arise, if many market players do not react on bank fundamentals but follow other market participants. In addition, regulators' information might dominate investors' privately produced information hindering regulators to learn from market reactions.

[3] In some research areas, it might be important to distinguish between a dictionary and a word list. In our paper, we do not make such distinction and, hence, use the term interchangeably.

However, this theoretical framework is essentially connected to the state of the economy as well as quantity and quality of stress test disclosures (i.e. aggregated or bank-specific information). In a theoretical paper, Bouvard et al. (2015) suggest that if the average condition of stress tested banks is above a specified threshold, no bank-specific information (i.e. aggregated information) should be disclosed because there is a risk of a run on low-quality banks. Particularly in normal times, pooling some low-quality banks with other banks of higher quality does not negatively affect good banks but decreases significantly the roll over risk on bad banks. In times of distress, regulators need to show bank-specific information because uncertainty might lead to a run on the entire system. Hence, stress test disclosures distinguish good and bad banks and limit potential bank runs to low-quality banks. However, if the regulator has private information about a potential economic downturn, this circumstance might result in a commitment problem of the regulator. The regulator might not want to disclose 'bad' news that could produce a shock and thus hold back information, in more cases than optimal. This opacity could lead to a misguidance of market players who might be more likely to run on the entire system.

Many empirical studies have illustrated that markets respond to stress test discolosures and therefore do not ignore such information. Exercising an event study design on different U.S. and European stress tests, all studies conclude that stress test disclosures provide novel and valuable information for investors and therefore reduce the informational gap between inside and outside market participants (Carboni et al., 2017; Morgan et al., 2014; Petrella and Resti, 2013). Consequently, the signalling effect of stress test disclosures might incentivise bank managers to mitigate potential negative consequences. Analysing bank holding companies that participated in U.S. stress tests from 2009 to 2015, Flannery et al. (2017) expand those studies by specifically investigating three of Goldstein and Sapra's (2013) propositions. First, they explore analysts' earnings forecasts and find no evidence for a reduction in private information production by market participants. Second, examining the asset and loan growth three quarters after the stress test result release they find only weak evidence that managers alter their portfolios as respond to stress test participation. Third, Flannery et al. (2017) analyse interbank borrowing behaviour of participating and non-participating banks and cannot confirm the view that stress test disclosures reduce risk-sharing activities. Although evidence in the U.S. appears to be limited, Bischof and Daske (2013) partly support this conceptual view in Europe. Analysing the CEBS's 2010 and EBA's 2011 stress tests as well as the subsequent capital exercise in 2012, they find that stress tested banks tend to increase their voluntary disclosure of sovereign risk exposure in response to the mandatory stress test disclosures. Consequently, banks seem not to underestimate the signalling effect of stress tests on the markets.

3. Hypotheses

Our hypotheses aim to establish the theory that stress tests incentivises banks to amplify disclosure profiles, which indirectly affects bank transparency attributes.

3.1 Stress tests and banks' disclosure profiles

Based on the related literature, we assume that stress test disclosures operate as transparency mechanism for soundness and solvency of stress test participants. In addition to public information through financial accounting, stress test results should increase transparency and reduce information asymmetry. However, the literature also suggests that bank managers are well aware of the effect of stress test disclosures on market participants. Consequently, stress test participation and disclosures might incentivise bank managers to influence their own information strategies to mitigate the effect of stress tests (Flannery et al., 2017; Bischof and Daske, 2013; Goldstein and Sapra, 2013). We hypothesise this effect on banks' disclosure profiles from the qualitative and the quantitative viewpoint. On the one hand, banks might increasingly use specific stress test language, found in stress test disclosures, as they might report about the stress test implementation process and their own performance. We call this effect 'stress test disclosure sentiment', which captures the affirmation of stress test words used in bank filings. Further, the literature suggests that banks' disclosure profiles may be measured by disclosure tone and complexity (e.g. Asay et al., 2017; Bushee et al., 2017; Allee and Deangelis, 2015). Therefore, we estimate the effect of stress tests on disclosure tone based on various financial word lists by Loughran and McDonald (2011b) consisting of 'negative', 'positive', 'uncertainty' and 'modal' words. On the other hand, the disclosure profiles of banks relates to the actual figures and numbers within financial statements and notes. We follow Nier and Baumann (2006) and create a transparency index to estimate the effect of stress tests on the level of disclosure transparency. Accordingly, we specify the first hypothesis:

H1. *Stress test participants amplify disclosure profiles during stress test periods.*

3.2 Stress tests and bank transparency

In a next step, we use previously established theoretical framework of banks' disclosure profiles and combine different measures within this concept. This approach ultimately hypothesises the impact of stress test disclosure sentiment on disclosure tone, which then leads to an increase or decrease in bank transparency. We focus on two theoretical streams of indicators to measure this process. First, the literature suggests that banks can manage their disclosure tone. In particular, abnormal disclosure tone of narratives may obfuscate investors (Ertugrul et al., 2017; Arslan-Ayaydin et al., 2016; Huang et al., 2014). We measure

this effect by using our in H1 stated disclosure tone estimates. Second, transparency enables outside investors to assess more precisely the true value of a bank, leading to better-informed investment decisions. Therefore, theory states that more transparent banks should trade with a lower bid-ask spread (e.g. Flannery et al., 2013; Kyle, 1985). Further, many studies show that analysts tend to follow assets that provide more public information and are more transparent. Consequently, as more public information is available, transparency enlarges the quality of private information that analysts produce and should lead to a lower likelihood of analyst disagreements (e.g. Flannery et al., 2017; Marquardt and Wiedman, 1998). However, concerning the impact of stress test disclosures, Goldstein and Sapra (2013) propose that market participants might primarily follow supervisory disclosures than producing and trading on their own private information. They establish this thought based on the fact that policy makers and bank regulators use share prices as informational source (e.g. Krainer and Lopez, 2004), which might be directly influenced by governmental activities (e.g. Bond and Goldstein, 2015). Therefore, in combination with the obfuscation theory, we formulate the next two hypotheses as followed:

H2. *Increased stress test disclosure sentiment during stress test periods is related to changes towards more positive disclosure tone.*

H3. *More positive disclosure tone during stress test periods is related to less informative market-based transparency attributes.*

4. Empirical analysis

4.1 Sample selection

We select our sample based on the following steps. First, as we are interested in European stress tested banks, we resort to the regulatory stress test disclosures published by CEBS/EBA and ECB to identify public and private banks that participated in European stress tests between 2009 and 2016. Table 1, Panel A illustrates the stress test participation per country and assessment and reports 187 European stress tested banks.[4]

[Please insert Table 1 about here]

Second, we obtain each banks' activity status from BvD Orbis Bank Focus and verify the availability of various data sources for our sample. We remove banks with general data unavailability and poor data quality due to M&As and bankruptcies. Further, as our textual analysis software—DICTION 7.0—requires reports in English and in a machine-readable quality (i.e. pdf), we remove banks that published only non-English disclosures or reports in an

[4] CEBS did not publish the sample of the 2009 stress test. However, we assume that the largest European banks were assessed, which were also tested in the subsequent 2010 assessment.

incompatible format. This sample construction process— shown in Table 1, Panel B—leads us to an initial stress test participation sample of 142 banks from 25 European countries.[5] However, as our regression analysis of stress test periods is most accurate applied with quarterly frequency, sample size reduces because about one third of our sample does not publish quarterly reports. Further, the combination of some variables and lags may lead to another reduction in observations and sample size.

4.2 Data construction

Our transparency dataset comprises of various accounting, textual and market microstructure variables from distinct data sources. We provide detailed descriptions of the variables and the relevant data sources in Appendix A. To construct our extensive dataset, we follow recent literature based on subsequent procedures. First, we gather accounting-based variables from BvD Bankscope and FitchConnect.[6] We use this data to compose the transparency index according to Nier and Baumann (2006)—which we describe in Appendix B—and to establish our comprehensive accounting dataset of bank risk measures and characteristics (see, e.g. Jones et al., 2012, 2013). Similar to other studies on European banks by Hamadi et al. (2016) and Gebhardt and Novotny-Farkas (2011), we face some degree of inconsistency and incompleteness of raw accounting data from public databases, in particular, for challenging accounting variables such as capital adequacy figures and loan loss provisions. Therefore, we enrich raw accounting data by hand-collecting missing figures.

Second, we hand-collect all available annual and interim reports published on banks' websites or stored on Bloomberg's corporate filings database. We run textual analysis procedures—explained in Appendix C—and obtain stress test disclosure sentiment and disclosure tone measures built on our own customized stress test, regulation and risk management word lists and the financial disclosure word lists by Loughran and McDonald (2011b). To establish those measures with a maximum degree of objectivity, we utilise frequently used words within stress test disclosures and apply widely accepted word lists for disclosure tone. As suggested by Henry and Leone (2016), we combine latter 'negative' and 'positive' word lists to construct our disclosure tone estimates based on equally weighted word frequencies.[7] Although we apply DICTION as our textual analysis tool, we reject using the software-included dictionaries or other word lists such as Havard General Inquirer or Henry (2006, 2008). Early textual analysis literature has employed those dictionaries extensively, but

[5] As we examine a very specific sample, we do not generally exclude banks due to bankruptcies, consolidations or M&As and keep banks with sufficient data quality. However, concerning market-based variables, we remove delisted banks to ensure consistent data quality. We address this issue in the robustness section within our sensitivity tests by excluding inactive banks.
[6] In January 2017, BvD Bankscope were replaced by Orbis Bank Focus, which has significantly reduced data quality. Hence, we resort to other sources such as FitchConnect, Bloomberg, Thomson Reuters Worldscope and SNL. We validate the completeness of the extracted data and find that FitchConnect is the database with the richest provision of accounting variables to our sample.
[7] Alternatively, Loughran and McDonald (2016) apply inverse document frequency weighting to reduce word misclassification. However, we follow Henry and Leone (2016) who favour equal weighting as it increases transparency and replicability.

recent research indicates that these word lists are inappropriate for analysing financial narratives (see Loughran and McDonald, 2015, 2016 for a review). Third, for listed banks in our portfolio, we collect market microstructure variables from Thomson Reuters Datastream that measure bank transparency as well as widely used microstructure characteristics. Following Bischof and Daske (2013) and Flannery et al. (2013), we produce our market-based measures by obtaining transactions data on a daily basis and average those daily values to compute quarterly microstructure measures.

Third, we utilise annual and interim reports in our analysis, which creates a distinct trade-off. On the negative side, literature argues that interim reports are, in some cases, condensed, unaudited and less regulated, leading to less informative disclosures (Loughran and McDonald, 2014). On the positive side, some studies resort to interim reports arguing that specifically less regulation enables research to measure changes of positive disclosure tone as managers might use regulatory freedom to improve the firms' picture (Huang et al., 2014). As we are interested in change of disclosure tone, we follow latter stream in combination with stress test literature, which primarily resorts to quarterly data (Flannery et al., 2017; Bischof and Daske, 2013). In particular, interim reports enable us to measure stress test periods more accurate. Further, although there are less requirements on interim reports, as our sample consists of the largest European SIFIs, those banks normally draw up their reports in close cooperation with auditors and regulators.

In addition, we thoroughly analyse our accounting, textual and transactions data to accommodate outliers that might screw the results. For instance, we discard observations of particularly low/high share prices, total words analysed or low amount of trades. Further, we normalise and winsorise the data at 1st and 99th percentile; accounting and textual measures on a quarterly and market data on a daily basis. We follow recent standards of earlier stated accounting, textual analysis and market microstructure literature that applies those techniques to validate observations and to mitigate estimation problems that may occur from parsing textual documents or market inefficiencies.

4.3 Descriptive statistics and correlation tests

As shown in stress test disclosures, we identify almost all stress tested banks by name[8], and collect the core financial data from earlier described data sources. In general, we focus on variables that are relevant for regulators and investors in terms of economic consequences. Hence, our dataset comprises distinct stress test-relevant risk-taking, performance and transparency measures (see, e.g. Flannery et al., 2013, 2017; Bischof and Daske, 2013). In particular, our accounting variables and ratios cover asset quality, capital adequacy, traditional and non-traditional asset mix as well as profitability to measure each bank's solvency and

[8] Apart from Deutsche Bank Malta, we identified all banks on BvD Bankscope or FitchConnect, as shown in stress test disclosures.

soundness. Further, we collect market-based transparency attributes and microstructure characteristics to estimate potential influence and obfuscation on market participants. On the other hand, our dataset consists of textual disclosure characteristics that capture the qualitative side of transparency based on stress test disclosure sentiment and disclosure tone. In addition, we incorporate macroeconomic fundamentals to control for country and economic differences.

[Please insert Table 2 about here]

Table 2 reports descriptive statistics of the main regression variables, whereas Panels A, B and C show respectively the accounting, textual analysis and market microstructure characteristics of our stress test participation sample. In addition, Panel D illustrates country-specific macroeconomic fundamentals. Even though stress tested banks are relatively large, the data shows some dispersion of bank size (*SIZE*). In Europe, banks may operate within unequal economies, where relatively small banks count as SIFIs. Hence, the authorities assess a range of small- and medium-sized banks. Further, we can see that stress test terms and language appear to be a central part of textual narratives (*GHP_ST_ALL*). On average, we find that 5.3% of the total words in textual disclosures is a term from our customized stress test disclosure dictionary, which is more than double than the word count of 2.1% of the aggregated 'negative', 'uncertainty' and 'modal' word list (*LD_AGGNUM*). In addition, *TONE* yields a score of –0.275 indicating an average negative disclosure tone. According to the literature, negative disclosure tone is generally a sign of stronger regulation and accounting rules as banks are less optimistic due to litigation concerns (Huang et al., 2014; Li, 2010).[9]

[Please insert Figures 1 to 5 about here]

Figures 1 to 5 illustrate graphically for our stress test sample mean development of important bank-specific accounting, textual and market microstructure characteristics. Figure 1 shows asset mix (*LOAN, TRADE*), asset quality (*LLR, NPL*), funding (*DSTF, EQY*), and capital adequacy (*CET1R, T1R, TRR*). Figures 2 and 3 display the development of the stress test disclosure sentiment (*GHP_ST**) and textual disclosure tone (*TONE, ΔTONE, LD_AGGNUM, LD_NEG, LD_UNC*), while Figures 4 and 5 highlight the evolvement of transparency, analyst information production (*BIDASK, RECNO, RECCON, RECSBUY to RECSSELL*) and microstructure characteristics (*TOVER, IPRICE, RVOL, MVALLN*). We indicate the recent financial crisis with red marks between (Q3-)2007 and (Q4-)2009 following the crisis definition by Berger and Bouwman (2013). As expected, the graphs show that stress test disclosure sentiment has grown within bank disclosures, as regulatory stress tests have been undertaken after the financial crisis. This development in alliance with a relatively negative disclosure tone

[9] Huang et al. (2014) posit that disclosure tone could be driven by Loughran and McDonald's (2011b) 'negative' word list as it consists of seven times more words than the 'positive' word list. We consider this finding by applying alternative tone measures in our robustness checks.

for the same period supports our expectation of increased importance of stress tests, which might influence banks' textual disclosures and is the basis of our following empirical analysis.

[Please insert Table 3 about here]

Table 3 provides Pearson correlation coefficients and p-values for the variables included in equations 1 and 2 (Panel A) and equation 3 (Panel B), explained in the next section. In general, our diagnostic techniques reject problematic correlations, except a strong positive correlation that we find between NPL_{t-2} and LLR_{t-2}. The accounting discretion literature defines both variables as reflecting loan quality (Beatty and Liao, 2014; Gebhardt and Novotny-Farkas, 2011). Due to this conceptional relationship and to avoid potential multicollinearity, we follow Flannery et al. (2013) and include LLR_{t-2} while discarding NPL_{t-2} in our analysis.

4.4 Empirical model

This study aims to estimate whether stress test participants amplify disclosure profiles, which ultimately leads to improved bank transparency attributes. We test our hypotheses from Section 3 utilising panel data analysis with bank and quarterly time fixed effects, as result of the Hausman test, to control for potential time-invariant unobserved heterogeneity avoiding omitted variable bias. Further, related to sample selection procedures, in alliance with the stress test literature, we reject self-selection issues for two reasons. First, our sample is much more than a sub-sample, as it covers about 76% of the entire stress test population. Second, the authorities select stress test participants using banks' size within their home country which managers are unable to control in the short run (see, e.g. Carboni et al., 2017). Moreover, we lag all subsequent accounting and market microstructure characteristics by two quarters to address endogeneity between contemporary asset choice and stress test exercises according to recent literature standards. For parsimony, we reject one- to four-quarter lags, as the Akaike information criterion (AIC) yields no substantial improvement in model strength. We believe that those methods and techniques shield our analyses from most severe estimation issues.

We begin with the analysis of banks' disclosure profiles, which contains the identification of stress test disclosure sentiment, along with the impact of stress test participation on textual disclosure tone and quantitative disclosure behaviour (H1). Inspired by the approach of recent stress test models by Flannery et al. (2017) and Bischof and Daske (2013) that measure the exact timing of stress test participation, we estimate the first model:

$$\begin{aligned} DISC_{itj} = {} & \gamma_0 + \gamma_1 P\_ST\_201011_t + \gamma_2 P\_ST\_201415_t + \gamma_3 P\_ST\_2016_t + \gamma_4 FT\_PART\_201011_i + \\ & \gamma_5 P\_ST\_201011_t * FT\_PART\_201011_i + \gamma_6 P\_ST\_201415_t * FT\_PART\_201011_i + \\ & \gamma_7 P\_ST\_2016_t * FT\_PART\_201011_i + \sum \gamma_8 (Bank\ characteristics)_{it-2j} + \\ & \sum \gamma_9 (Country\ characteristics)_{tj} + \alpha_i + \delta_t + \varepsilon_{itj} \end{aligned} \quad (1)$$

where, for bank *i*, quarterly *t* and country *j*, the dependent variable $DISC_{itj}$ represents distinct disclosure profiles of stress tested banks and stands for one of the subsequent measures. First, $DISC_{itj}$ is the following textual components for stress test disclosure sentiment; where $GHP\_ST\_ALL_{itj}$ is the accumulated word count of the entire customized stress test, regulation and risk management word list based on stress test disclosures, $GHP\_ST\_ID_{itj}$ is the word count of 'stress test identity' word list, $GHP\_ST\_PERF_{itj}$ is the word count of 'stress test performance' word list, $GHP\_ST\_PRO_{itj}$ is the word count of 'stress test procedure' word list, $GHP\_ST\_REGIN_{itj}$ is the word count of 'regulatory institutions' word list, $GHP\_ST\_ REGREQ_{itj}$ is the word count of 'regulatory requirements' word list, and $GHP\_ST\_RM_{itj}$ is the word count of 'risk management' word list. These novel variables measure the recognition of stress test terms and language within banks' filings and ultimately the stress test disclosure sentiment. Second, the dependent variable $DISC_{itj}$ stands for disclosure tone captured by the following measures; $TONE_{itj}$ captures the disclosure tone based on the word count of 'negative' and 'positive' word lists and the formula by Henry and Leone (2016), LD_AGGNUM_{itj} is the word count of an aggregated word list that consists of 'negative', 'uncertainty' and 'modal' words, and LD_NEG_{itj} is the word count of the 'negative' word list. All mentioned word lists in this passage are based on Loughran and McDonald (2011b). Third, the dependent variable $DISC_{itj}$ represents quantitative disclosure behaviour, which we capture with our transparency index ($TRANX_{itj}$) built on the method by Nier and Baumann (2006).

The independent time-dummy variables stand for several stress test periods of 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$) and 2016 ($P\_ST\_2016_t$). The participation dummy variable $FT\_PART\_201011_i$ captures banks that participated for the first time in 2010 and 2011. Importantly, the interaction terms of these time- and participation dummies estimate stress test disclosure sentiment and disclosure tone. They compare first-time stress tested banks of 2010 and 2011 with 2014 first-time participants. A positive (negative) sign of the coefficients indicates that earlier first-time participants use more (less) stress test language, positive/negative tone or quantitative disclosures than later ones. Moreover, we include various bank and country characteristics to control for differences of stress tested banks and countries' macroeconomic conditions based on extensive accounting and transparency literature (see, e.g. Beatty and Liao, 2014; Flannery et al., 2013; Jones et al., 2012, 2013). Finally, we incorporate bank-specific fixed effects (α_i), quarterly fixed effects (δ_t) and the residual (ε_{itj}).

Next, to measure the effect of stress tests on textual disclosures, we combine stress test disclosure sentiment with stress test participants' disclosure tone (H2). Hence, we estimate the following model:

$$DISCTONE_{itj} = \gamma_0 + \gamma_1 STHC\_I_t + \gamma_2 GHP\_ST\_ALL_{itj} + \gamma_3 STHC\_I_t * GHP\_ST\_ALL_{itj} + \sum \gamma_4 (Bank\ characteristics)_{it-2j} + \sum \gamma_5 (Country\ characteristics)_{tj} + \alpha_i + \delta_t + \varepsilon_{itj} \quad (2)$$

where, for bank *i*, quarterly *t* and country *j*, the dependent variable $DISCTONE_{itj}$ represents the estimates for current and future (change of) disclosure tone ($\Delta TONE_{ij}$, LD_AGGNUM_{ij}; *t, t+2*), employing 'negative' and 'positive' word lists (Loughran and McDonald, 2011b) and the calculation in Henry and Leone (2016). The independent time-dummy variable estimates individual stress test participation of each bank in our sample ($STHC\_I_t$) and $GHP\_ST\_ALL_{itj}$ stands for the accumulated word count of our customized stress test, regulation and risk management word list based on stress test disclosures. The interaction term of latter measures captures stress test disclosure sentiment during individual stress test periods and estimates the impact on disclosure tone. When banks acknowledge stress tests in their annual and interim reports they might attempt to hide 'bad' news from stress test results by changing their disclosure tone by including more positive (less negative) words. Further, we control for various differences in bank and country characteristics and include bank-specific fixed effects (α_i), quarterly fixed effects (δ_t) and the residual (ε_{itj}).

Finally, we combine disclosure tone with the level of transparency based on market microstructure to analyse if the disclosure tone that is influenced by stress test participation converts into market prices and analyst recommendation behaviour (H3). Therefore, we estimate the following model:

$$MARKT_{itj} = \gamma_0 + \gamma_1 STHC\_I_t + \gamma_2 TONE_{itj} + \gamma_3 STHC\_I_t * TONE_{itj} + \sum \gamma_4 (Market\ microstructure)_{it-2j} + \alpha_i + \delta_t + \varepsilon_{itj} \quad (3)$$

where, for bank *i*, quarterly *t* and country *j*, the dependent variable $MARKT_{itj}$ is one of the following measures: bank transparency captured by bid-ask spread of bank's share price ($BIDASK_{itj}$), number of analyst investment recommendations ($RECNO_{itj}$) and analyst recommendation consensus ($RECCON_{itj}$). The time-dummy variable estimates the individual stress test participation of each bank in our sample ($STHC\_I_t$) and $TONE_{itj}$ stands for disclosure tone as defined for the previous equation (1). The interaction term of latter variables, measures disclosure tone during individual stress test periods and estimates the changes in market microstructure during these periods. When banks use more positive (less negative) tone in their disclosures, bid-ask spread should be lower (higher) and number of analyst recommendations and their consensus should increase (decrease). Further, we control for various differences and variations within market microstructure and include bank-specific fixed effects (α_i), quarterly fixed effects (δ_t) and the residual (ε_{itj}). We select all marked-based

measures from this passage following the stress test and transparency literature (Flannery et al., 2013, 2017; Bischof and Daske, 2013).

5. Results

This section provides and discusses empirical evidence on the effect of stress tests on banks' disclosure profiles and market-based transparency attributes in the various settings established in Sections 3 and 4.

5.1 The effect of stress tests on banks' disclosure profiles

First, we provide the results of equation (1), which estimates stress tested banks' behaviour related to disclosure profiles, namely stress test disclosure sentiment, disclosure tone and quantitative disclosures (H1). Table 4 illustrates the stress test disclosure sentiment of stress test participants using the textual attributes established from the word count of our customized stress test, regulation and risk management word lists, built on frequently used words within stress test disclosures ($GHP\_ST\_ALL_{itj}$, $GHP\_ST\_ID_{itj}$, $GHP\_ST\_PERF_{itj}$, $GHP\_ST\_PRO_{itj}$, $GHP\_ST\_REGIN_{itj}$, $GHP\_ST\_REGREQ_{itj}$, and $GHP\_ST\_RM_{itj}$). As expected in H1, the coefficients of our time-dummies capturing stress test periods ($P\_ST\_201011_t$, $P\_ST\_201415_t$, and $P\_ST\_2016_t$) are mostly positive and significant, implying that all stress tested banks have been using more words linked to stress tests during 'hot' stress test periods, compared to times without regulatory assessments. In relation to stress test participants' total report length (*TWA*), the portion of the word count and recognition of stress test related terms increases from +2.06% in 2010/11, +3.01% in 2014/15 to +3.08% in 2016. Importantly, for the main dependent variable in Model (1) that stands for the accumulated stress test disclosure sentiment ($GHP\_ST\_ALL_{itj}$), the coefficient of the interaction terms $P\_ST\_201415_t$*$FT\_PART\_201011_i$ and $P\_ST\_2016_t$*$FT\_PART\_201011_i$ are negative and significant at 1% and 5% confidence level. This result indicates that first-time participants of 2010 and 2011 utilised less stress test terms than those banks that participated for the first time in 2014. In other words, banks previously considered and regularly tested in stress tests seem to take fewer note of regulatory assessments on a later stage and make fewer adjustments to their disclosures compared to newly involved 2014 first-time participants. Overall, the results suggest that stress tested banks amplify language and sentiment of textual narratives during stress test periods.

[Please insert Table 4 about here]

Second, in Table 5, we examine the tone of textual disclosures of stress tested banks using the disclosure tone measure based on Loughran and McDonald's (2011b) financial word lists and Henry and Leone's (2016) disclosure tone definition. As expected in H1, in Model (1), the

coefficients of the time-dummies ($P\_ST\_201011_t$, $P\_ST\_201415_t$, and $P\_ST\_2016_t$) are negative and significant at 1% confidence level, implying that all stress tested banks generally apply more negative tone during stress test periods than non-tested periods. In economic terms, on a scale of –1 (purely negative), 0 (purely natural) to +1 (purely positive), disclosure tone changes by –0.30 points in 2010/11, by –0.32 in 2014/15 and by –0.28 in 2016. Consistently, in Models (3) and (4), the relative number of 'negative', 'uncertainty' and 'modal' words used in textual narratives (LD_AGGNUM_{itj}, LD_NEG_{itj}) increases during those assessment periods. This result supports earlier findings arguing that more negative language is a sign of stronger regulation and accounting rules because bank managers might fear litigation concerns and are less positive (Huang et al., 2014; Li, 2010). Moreover, in Models (2), (3) and (4), the coefficient of the interaction term $P\_ST\_201415_t$*$FT\_PART\_201011_i$ is negative and significant at 1% and 5% confidence level. This result indicates that first-time participants in 2010 and 2011 use less negative tone and relatively fewer 'negative', 'modal' or 'uncertainty' words as response to the 2014 and 2015 assessments, compared to first-time participant in 2014. In summary, stress test participants amplify their textual narratives towards more negative language as reaction on stress test exercises.

[Please insert Table 5 about here]

Third, in Table 6, we scrutinise quantitative disclosure behaviour by applying the transparency index based on the method of Nier and Baumann (2006). As hypothesised by H1, in all models, the coefficients of the time-dummies are positive and significant at 1% and 5% confidence level. Hence, all stress test participants increase the number of figures within their disclosures due to the impact of stress test results. In economic terms, the transparency index ($TRANX_{itj}$) increases by +5.33% in 2010/11, by +7.85% in 2014/15 to +8.94% in 2016. An alternative explanation of the result is that regulatory requirements based on Basel III have been subsequently implemented, requiring much more mandatorily disclosures. It is likely that the observed development is a result of both regulatory actions, while stress tests seem to exacerbate the evolvement of the transparency process during stress test periods. Furthermore, the coefficients of the interaction terms in all models indicate an interesting change of disclosure behaviour. While the coefficients of the interaction terms $P\_ST\_201011_t$*$FT\_PART\_201011_i$ and $P\_ST\_201415_t$*$FT\_PART\_201011_i$ are insignificant, implying no significant difference between 2010/11 and 2014 first-time participants, the coefficients of the interaction term $P\_ST\_2016_t$*$FT\_PART\_201011_i$ in Model (1) and (4) are positive and significant at 1% confidence level. This result illustrates that first-time participants of 2010 and 2011 reported more quantitative disclosures during 2016 stress test periods, compared to those banks that participated for the first time in 2014. Hence, we see a slight learning effect implying that banks might have been educated through raised risk management requirements forwarded by the regulators. Overall, the results suggest that stress test

participants amplify their disclosure profiles during stress test periods from a qualitative and quantitative perspective.

[Please insert Table 6 about here]

5.2 The effect of stress tests on bank transparency attributes

Fourth, we examine the impact of stress test disclosure sentiment on contemporary and future disclosure tone (H2) as well as the effect of stress tests on market-based bank transparency attributes (H3). In Table 7, we run equation (2) and scrutinise stress test disclosure sentiment based on the accumulated word count of our customized stress test, regulation and risk management word lists ($GHP\_ST\_ALL_{itj}$), and estimate the development of this word count during individual stress test periods ($STHC\_I_t$). In all models, we find that the coefficients of the interaction term $STHC\_I_t*GHP\_ST\_ALL_{itj}$ is positive and significant at 5% and 10% confidence level, implying that the effect of stress test sentiment, recognised in banks' disclosures, is related to current and future disclosure tone. In numerical terms, a 5% increase in stress test terms, during 'hot' stress test periods, is related to a current and future change of disclosure tone of +0.075 and +0.055 points, respectively, equal to 58.98% and 43.51% of the average standard deviation (SD) of $\Delta TONE_{itj}$. Further, considering the same increase in stress test language, the contemporary and future portion of negative words, in relation to total report length, decreases by –0.0012 and –0.0020 percentage points, respectively, which yields 19.50% and 32.50% of the average SD of LD_AGGNUM_{itj}. Therefore, when stress tested banks acknowledge stress tests in their annual and interim reports, they tend to partly reduce the amount of negative words in the attempt to work against the stress test disclosure sentiment and potentially hide 'bad' news from stress tests. However, the results also suggest that the magnitude of variation towards less negative language is limited due to regulatory and accounting rules (Huang et al., 2014; Li, 2010). Nevertheless, this change in disclosure tone may obfuscate investors as textual narratives provide tone that appears more positive.

[Please insert Table 7 about here]

Finally, in Table 8, we estimate equation (3) and examine the individual effect of stress test participation in combination with the disclosure tone on market-based transparency attributes of stress test participants. In Model (1), we find that the interaction term $STHC\_I_t*TONE_{itj}$ is negative and significant at 5% confidence level. This result indicates that a more positive tone may decrease the bid-ask spread of stress tested banks during assessment periods. In economic terms, an increase of one SD of disclosure tone during stress test periods, is linked to a decrease of the bid-ask spread of –0.001 (4.11% of SD). Furthermore, in Models (2) and (3) the coefficients of the interaction term is positive and significant at 5% confidence level. Therefore, the number of analyst recommendations and the analyst consensus increases

when the tone of the disclosure is more positive. In numeric terms, an increase of one SD of disclosure tone is connected to a growth in analyst following of +0.327 (3.20% of SD) and analyst consensus of +0.048 (8.86% of SD). Consequently, stress test participants have an incentive to use positive language in their annual and interim reports, especially during stress test periods, as market participants seem to appreciate this behaviour to an extend through more favourable market activities.

[Please insert Table 8 about here]

In summary, the results suggest that stress test disclosure sentiment might directly affect the change of disclosure tone during stress test periods. Moreover, market participants appear to be effectively obfuscated, as market-based transparency attributes demonstrate less information asymmetry when disclosures display rather positive tone during stress test periods. However, due to accounting rules and regulatory requirements (Huang et al., 2014; Li, 2010), the magnitude of altering disclosure tone is limited and hence the effect on investor and analyst obfuscation. Similar to Lang and Stice-Lawrence (2015), we are hesitant to make causal assumptions because it is difficult to rule out that the results are, at least partly, caused by the disclosure per se. Nevertheless, we conclude that, as expected, more positive disclosure tone is related to less informative market-based transparency attributes.

6. Robustness

The main conclusion of our study is that stress tests influence participating banks' disclosure profiles and ultimately affect their market-based transparency components. The validity of this finding depends on correct implementation of textual and regression analyses. In this section, we run various robustness checks, which we illustrate in the Internet Appendix.

6.1 Alternative textual measures

We aim to ensure that our textual measures for stress test disclosure sentiment and disclosure tone are sound and solid estimates. Therefore, we follow the most recent standards of textual analysis. First, concerning textual parsing methods, we carefully construct our stress test word lists resorting to frequently used words in stress test discourses as well as select and analyse the textual disclosures including various checks, which we explain in Appendix C. Second, we measure disclosure tone by applying Loughran and McDonald's (2011b) financial disclosure dictionaries, which are widely accepted within the textual analysis literature. However, as indicated earlier, the disclosure tone measure ($TONE_{itj}$) might be influenced by the fact that the 'negative' word list consists of much more words than the 'positive' word list. Unlike other studies, we do not use alternative 'general' dictionaries such as Havard General

Inquirer or DICTION, as recent research suggests that those dictionaries appear to be inaccurate for analysing financial disclosures (Loughran and McDonald, 2015, 2016). Instead, we resort to distinct variations of our disclosure tone measures. For instance, we follow Lang and Stice-Lawrence (2015) and implement factor analysis of our stress test and disclosure tone variables. This analysis provides the opportunity to identify variances and similarities of applied word lists.

Table IA.1 illustrates factor patterns before and after varimax rotation. While $ST\_FACT\_1_{itj}$ is driven by word lists of 'stress test identity' ($GHP\_ST\_ID_{itj}$), 'stress test performance' ($GHP\_ST\_PERF_{itj}$) and 'stress test procedure' ($GHP\_ST\_PRO_{itj}$), $ST\_FACT\_2_{itj}$ captures the word count of 'regulatory institutions' ($GHP\_ST\_REGIN_{itj}$), 'regulatory requirements' (GHP_REGREQ_{itj}) and 'risk management' ($GHP\_ST\_RM_{itj}$) word lists. Further, $LD\_FACT\_1_{itj}$ measures 'negative' (LD_NEG_{itj}), 'uncertainty' (LD_UNC_{itj}), 'litigious' (LD_LIT_{itj}) and 'superfluous' (LD_SUP_{itj}) word lists, whereas $LD\_FACT\_2_{itj}$ is mainly directed by the 'positive' word list. In Table IA.2, we report results of those factor analysis variables and an alternative disclosure tone measure ($TONE\_ALT_{itj}$), which are consistent with our baseline analysis. Further, in Table IA.3, we run an alternative model for stress test participation applying the individual time-dummy ($STHC\_I_t$). The results suggest that, during stress test periods, textual narratives include more stress test terms and tone that is more negative, while quantitative disclosure behaviour does not differ significantly. In Table IA.4, we link our stress test disclosure sentiment factors with disclosure tone estimates, whereas Table IA.5 illustrates the relationship between factors and market-based transparency measures. Interestingly, we find that factors driven by stress test identity, performance and procedure words ($ST\_FACT\_1_{itj}$) and 'negative', 'uncertainty', 'superfluous' and 'litigious' ($LD\_FACT\_1_{itj}$) are dominant factors during stress test periods. Overall, we retrieve similar results, compared to our baseline analysis, that do not alter our conclusions.

6.2 Sensitivity tests

Next, we ensure that the composition of our fixed effects models is robust by making several sensitivity tests. First, in Table IA.6, we estimate equation (2) to analyse whether stress tested banks that participated more than three times change their disclosure tone towards less negative language. Consistent with our baseline analysis, we find a slightly weaker link between change of disclosure tone and stress test disclosure sentiment, indicating that regular stress test participation influences disclosure tone positively suggesting a learning curve. Second, in Table IA.7, we rank stress tested banks according to their capital adequacy performance documented by stress test disclosures and run equation (3) on the lower-ranked sample half. The results show a slightly stronger relationship between market-based transparency and disclosure tone implying that banks with weaker stress test results might

influence their disclosure tone more aggressively than stronger banks. Third, in Table IA.8, we exclude different set of sample banks to test if those banks are inherently different and alter our conclusions due to their inclusion. Similar to Lang and Stice-Lawrence (2015), we analyse translated disclosure narratives, which might be affected by the translation process. As almost all banks in our sample are located in countries where English is not the official language, we cannot fully rule out this issue. However, we do not believe that this limitation is a major problem as many of our sample banks are listed and internationalised, while financial reporting in English has been established alongside over decades. Nevertheless, we exclude banks from the UK to rule out any skewness from native English language and retrieve similar results. Further, we remove banks from countries outside the European Monetary Union (EMU) because European regulators, in particular the ECB, are mainly focused on the stability of prices and entire Eurozone. In addition, we delete inactive banks (i.e. bankruptcies, M&As) from our sample to ensure that our sample is not influenced by any special survival issues. Finally, in Table IA.9, we run our baseline analysis using market-based instead of accounting-based control variables. Concerning stress test disclosure sentiment and disclosure tone, the results differ somewhat because this analysis excludes unlisted banks, but do not alter our main conclusions. Overall, the results from our sensitivity tests are similar to our baseline analysis and support our conclusions.

7. Concluding remarks

Stress tests have been largely studied in terms of market reactions and conceptual frameworks, while the impact of those tests on stress test participants have been widely left aside. On the other hand, bank transparency lays in the centre of a recent debate that aims to improve market's wellbeing. Therefore, our work advances the literature by combining those two important literature streams and analyses the influence of regulatory stress tests on banks' disclosure profiles and, hence, on bank transparency. In particular, using a unique sample and dataset from 25 European countries, we apply textual analysis to measure the effect of stress test disclosure sentiment and disclosure tone of stress tested banks on market-based bank transparency attributes. Importantly, we find that stress test participants' textual disclosures are amplified by stress test disclosure language, which we call 'stress test disclosure sentiment'. Further, our results suggest that disclosure tone and quantitative disclosure behaviour changes and seems to affect the evolvement of the transparency process during stress test periods. Ultimately, market participants appear to be obfuscated, as market-based transparency measures show less information asymmetry when banks amend disclosure tone to sound more positive, compensating regulatory stress test disclosure sentiment during times of assessment. Although we are cautious to draw causal inference, we conclude that there is

a relationship between stress test language, textual disclosure tone and market-based transparency attributes.

Our study is the first that links stress tests and bank transparency by introducing the innovative textual analysis approach. Hence, our novel results raise several political and business implications. We do not doubt that, besides intrinsic limitations, stress tests are useful during crises to identify sound and unsound banks (Borio et al., 2014; Schuermann, 2014). Moreover, regulatory assessments are unique opportunities for regulators and supervisors to improve the supervision of SIFIs from their in-depth insights (Carboni et al., 2017; Sahin and de Haan, 2016). However, our findings suggest that stress test participants may change their disclosure profiles to mitigate the effect of stress test disclosures on investors. Further, market-based transparency measures report less information asymmetry, which appears to affirm the operation of such disclosure strategies. In combination with earlier stress test studies, our results indicate that stress tests seem to exacerbate pressure particularly on relatively weak institutions as they expose bank-specific information in calm economic times, which can lead to financial instability (Bouvard et al., 2015). Therefore, by shedding light on banks' disclosure profiles and bank transparency, this study empirically supports previous research on stress tests that suggests, in normal economic times, to disclose mainly aggregated information, as this approach would reduce pressure on stress test participants and their signalling motives (Goldstein and Sapra, 2013).

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Appendix A. Variable definitions

Abbreviations	Variables	Description	References/sources
TRANX	Quantitative disclosure behaviour	Composite transparency index based on Nier and Baumann (2006). Please refer to Appendix B for more detail.	FitchConnect
SIZE	Bank size	Natural logarithm of total assets, reported at the end of the period	Bankscope, Financial reports, FitchConnect
LOAN	Traditional asset mix	Outstanding loans, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
LLR	Asset quality	Loan loss reserves for non-performing or impaired loans, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
LLP	Asset quality	Loan loss provisions for non-performing or impaired loans, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
NPL	Asset quality	Non-performing or impaired loans, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
TRADE	Non-traditional asset mix	Trading securities, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
CET1R	Capital adequacy	Core/common Tier 1 capital (CET1C) ratio; CET1C divided by risk-weighted assets, reported at the end of the period	Bankscope, Financial reports, FitchConnect
T1R	Capital adequacy	Regulatory Tier 1 capital (T1C) ratio; T1C divided by risk-weighted assets, reported at the end of the period	Bankscope, Financial reports, FitchConnect
TRR	Capital adequacy	Total regulatory capital (TRC) ratio; TRC divided by risk-weighted assets, reported at the end of the period	Bankscope, Financial reports, FitchConnect
DSFR	Short-term funding	Deposits and short term funding, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
EQY	Book value of capitalisation	Total equity divided by total assets, reported at the end of the period	Bankscope, Financial reports, FitchConnect
EBPT	Profitability	Earnings before provision and taxes, reported at the end of the period, scaled by lagged total assets	Bankscope, Financial reports, FitchConnect
TWA	Length of the report	Total words analysed	Financial reports
GHP_ST_ALL	Stress test disclosure sentiment	Accumulated word count of customized stress test, regulation and risk management word lists scaled by total words analysed (sum of GHP_ST_ID, GHP_ST_PERF, GHP_ST_ PRO, GHP_ST_REGIN, GHP_ST_REGREQ, and GHP_ST_RM) (see Appendix C)	EBA/ECB stress test disclosures, Financial reports
TONE/ ΔTONE/ TONE_ALT	Disclosure tone	Created using the word count of 'negative' and 'positive' word lists by Loughran and McDonald (2011b) and the formulas as in Henry and Leone (2016) (see Appendix C)	Financial reports
LD_AGGNUM	Disclosure tone	Word count of an aggregated word list consisting of 'negative', 'uncertainty' and 'modal' words (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
LD_NEG	Disclosure tone	Word count of 'negative' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
LD_UNC	Disclosure tone	Word count of 'uncertainty' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports

Appendix A continued

LD_MOD	Disclosure tone	Word count of 'modal' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
LD_POS	Disclosure tone	Word count of 'positive' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
LD_LIT	Disclosure tone	Word count of 'litigious' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
LD_SUP	Disclosure tone	Word count of 'superfluous' word list (Loughran and McDonald, 2011b) scaled by TWA (see Appendix C)	Financial reports
BIDASK	Market-based transparency	Quarterly average of daily bid-ask-spread (Ask–Bid/(Ask+Bid/2))	Thomson Reuters (Datastream/IBES)
RECNO	Analyst information	Quarterly average of number of analyst recommendations	Thomson Reuters (Datastream/IBES)
RECCON	Analyst information	Quarterly average of analyst recommendation consensus	Thomson Reuters (Datastream/IBES)
RECSBUY	Analyst information	Quarterly average of percentage of analyst strong buy recommendations	Thomson Reuters (Datastream/IBES)
RECBUY	Analyst information	Quarterly average of percentage of analyst buy recommendations	Thomson Reuters (Datastream/IBES)
RECHOLD	Analyst information	Quarterly average of percentage of analyst hold recommendations	Thomson Reuters (Datastream/IBES)
RECSELL	Analyst information	Quarterly average of percentage of analyst sell recommendations	Thomson Reuters (Datastream/IBES)
RECSSELL	Analyst information	Quarterly average of percentage of analyst strong sell recommendations	Thomson Reuters (Datastream/IBES)
IPRICE	Microstructure characteristics	Inverse share price, created as quarterly average of 1 divided by daily share price	Thomson Reuters (Datastream/IBES)
RVOL	Microstructure characteristics	Return volatility, created as quarterly average of daily standard deviation of continuously compounded share price returns)	Thomson Reuters (Datastream/IBES)
TOVER	Microstructure characteristics	Share turnover, created as quarterly average of number of shares divided by free float)	Thomson Reuters (Datastream/IBES)
MVALLN	Microstructure characteristics	Quarterly average of market value	Thomson Reuters (Datastream/IBES)
FT_PART_ 201011	Stress test participation	Binary variable that yields 1 for all banks that were tested for the first time in the 2010/11 CEBS/EBA assessments, else zero	EBA/ECB stress test disclosures
P_ST_201011	Stress test periods	Binary variable that equals 1 from Q2-2010 to Q1-2012, else zero	EBA/ECB stress test disclosures
P_ST_201415	Stress test periods	Binary variable that equals 1 from Q2-2014 to Q1-2016, else zero	EBA/ECB stress test disclosures
P_ST_2016	Stress test periods	Binary variable that equals 1 from Q2-2016 to Q1-2017, else zero	EBA/ECB stress test disclosures
STHC_I	Individual 'hot' and 'cold' stress test periods	Binary variable that equals 1 for the period that each sample bank were affected by a stress test. Yields 1 for the exercise in 2010 for Q2-2010–Q1-2011, in 2011 for Q2-2011–Q1-2012, in 2014 for Q2-2014–Q1-2015, in 2015 for Q2-2015–Q1-2016, and in 2016 for Q2-2016–Q1-2017, else zero	EBA/ECB stress test disclosures
ΔGDP	Macroeconomic fundamentals	Change of countries' Gross Domestic Product by expenditure, reported at the end of the period	OECD, Bloomberg
ΔUNEMP	Macroeconomic fundamentals	Change of countries' unemployment rate, reported at the end of the period	OECD, Bloomberg

Appendix B. Transparency index based on FitchConnect information

The transparency index is a comprehensive measure of accounting transparency inspired by Nier and Baumann's (2006) composite disclosure index. The purpose is to assess the detail of the accounts provided in bank's published disclosures. We resort to FitchConnect database and collect quarterly data of the balance sheet and income statement categories connected to bank risk-taking. We divide the categories into nineteen sub-indices and compose an aggregated transparency index by counting the disclosed figures within the sub-indices available on FitchConnect. Accordingly, we define the transparency index as follows:

$$TRANX = \frac{1}{19}\sum_{i=1}^{19} S_i$$

where, the nineteen sub-indices S_i relate to distinct bank risk categories (credit risk, market risk, liquidity risk, capital risk). To ensure full transparency of the data collection process, we follow the description and sorting of the items according to the appearance in FitchConnect.

Table B.1

Category	Sub-index	Item
Loans	S_1: Loans	Net Loans, Gross Loans, Reserves for Impaired Loans/NPLs
	S_2: Loans by type	Mortgages, Other Consumer/Retail Loans, Corporate & Commercial Loans, Other Loans and Loan-related balances
	S_3: Loans by counterparty	Loans & Advances to Banks, Quasi Government Loans, Total Corporate Loans, Total Consumer Loans
	S_4: Loans by maturity	Loans & Advances < 3M, Loans & Advances 3-12M, Loans & Advances 1-5Y, Loans & Advances > 5Y
	S_5: Problem and impaired loans	NPLs - Doubtful Loans, NPLs - +90 Days Past Due, NPLs - Restructured Loans, Total Impaired Loans
Other earning assets	S_6: Securities by type	Reverse Repo & Cash Collateral, Trading Securities At FV Through Income, Derivatives (Assets), Available for Sales Securities, Held to Maturity Securities, Equity Investments in Associates, Other Securities, Total Securities
	S_7: Securities by purpose	Trading Securities, Investment Securities
Liabilities	S_8: Deposits by type	Customer Deposits (Current), Customer Deposits (Savings), Customer Deposits (Term), Total Customer Deposits, Deposits from Banks
	S_9: Deposits by maturity	Deposits - Sub 3 months, Deposits - 3 months-1 year, Deposits - 1-5 years, Deposits - 5 years +
	S_{10}: Short-term funding	Repos & Cash Collateral, Other Deposits & Short Term Borrowings, Total Deposits, Money Market & Short Term Funding
	S_{11}: Long-term funding	Long Term Senior Debts - Banks, Subordinated Debts - Banks, Total Long Term Funding
	S_{12}: Other liabilities by type	Derivatives (Liabilities), Trading Liabilities
Equity	S_{13}: Equity	Total Common Equity - Banks, Preferred Shares & Hybrid Capital Accounted for as Equity, Total Equity - Banks

Table B.1 (continued)

Category	Sub-index	Item
Off-balance sheet	S_{14}: Off-balance sheet items by type	Guarantees, Acceptances & Documentary Credits Reported Off-B/S, Committed Credit Lines, Other Off-Balance Sheet items, Off-balance sheet items
Income statement	S_{15}: Income by type	Net Interest Income, Net Fees & Commissions, Net Gains (Losses) on Trading & Derivatives, Net Gains (Losses) on Assets at FV through I/S, Net Gains (Losses) on Other Securities, Total Non-Interest Operating Income
	S_{16}: Loan loss provisions	Pre-Impairment Operating Profit, Loan Impairment Charge, Operating Profit
Regulatory memo lines	S_{17}: Regulatory capital	Common Equity Tier 1 Capital, Regulatory Tier 1 Capital, Total Regulatory Capital
	S_{18}: Risk weighted assets	Total Risk Weighted Assets (RWA), Risk Weighted Assets - Credit Risk, Risk Weighted Assets - Market Risk, Risk Weighted Assets - Operational Market Risk, Risk Weighted Assets - Other
	S_{19}: Regulatory capital ratios	Common Equity Tier 1 Capital Ratio, Regulatory Tier 1 Capital Ratio, Total Regulatory Capital Ratio

Appendix C. Textual analysis procedure

First, we apply Bloomberg's CFS <GO> function and search for the name of the bank and select the criteria 'annual report', 'interim report' and 'quarterly report'. We separately download all filings for each bank in pdf-format, which we save in a download folder named by the banks name. As the downloaded files have no particular name to identify the bank or the specific report, we rename all files according to our textual observation sample identifier that we give each bank and observation (Nr_ID_Shortname_Period). In case Bloomberg does not store all filings, we also visit the bank's website to download, if available, the applicable missing filings. As the Bloomberg downloading and renaming process is very resource intensive, we sometimes reverse the process, directly resort to the bank's website, and search on Bloomberg for extensions.

Second, we do various verification checks to ensure that we downloaded the correct reports for each bank and period. We hand-check twice all annual and interim reports to ensure the bank's name and period are correctly specified. One bank, Banco Comercial Português, published from 2005 to 2011 two annual report versions (Volumes I and II), which we merge by using an online pdf-converter (https://online2pdf.com). When we upload the filings into DICTION, in rare cases, the file is of bad quality, not machine readable and automatically omitted by DICTION. After we run DICTION analyses for the first time, we thoroughly check for and remove or, if available, replace such obvious faulty filings, including duplicates. Further, we sort separately the outcome observations by the number of total words analysed (*TWA*) and by the change of *TWA* of the filing compared to the equivalent period (ΔTWA_{t-4}). We check filings with less than 3,000 words (Bonsall and Miller, 2017; Li, 2008) and filings with a word

count increase of greater than one. Eventually, we delete 86 filings with less than 3,000 words and replace 83 reports with an inconsistent word count increase.

Third, we measure disclosure tone by resorting to widely accepted word lists by Loughran and McDonald (2011b)[10] and by using the following formula as in Henry and Leone (2016)[11]:

$$TONE_{itj} = \frac{LD\_POS_{itj} - LD\_NEG_{itj}}{LD\_POS_{itj} + LD\_NEG_{itj}} \quad \text{(A1)}$$

where, for bank *i*, quarterly *t* and country *j*, disclosure tone ($TONE_{itj}$) yields the equally weighted word count of the 'positive' word list (LD_POS_{itj}) subtracted by the word count of the 'negative' word list (LD_NEG_{itj}), and divided by the sum of both word lists. According to Henry and Leone (2016), the variable $TONE_{itj}$ yields a score of 1 for an entirely positive narrative, a score of –1 for an purely negative disclosure and 0 for a perfectly neutral narrative. Further, we calculate the specification, which is the change of tone ($\Delta TONE_{itj}$), defined as $TONE_{itj} - TONE_{it-1j}$.

Fourth, to measure the stress test disclosure sentiment, we establish a composite word list of six categories based on frequently used words in stress test disclosures, annual reports and stress test literature. We use those regulatory disclosures as it ensures maximum degree of objectivity. The total word list contains 325 keywords related to stress test, regulation and risk management ($GHP\_ST\_ALL_{itj}$). In particular, we upload all regulatory stress test reports, FAQ publications and methodology notes of the assessments in 2010 (CEBS), 2011 (EBA), 2014 (EBA, ECB), 2015 (ECB) and 2016 (EBA) in DICTION and extract the full list of insistence words. Insistence words are by DICTION-manual-definition, words that appear three times or more within a passage of 500 words. We analyse and evaluate those words according to relevance to stress tests, regulation and risk management issues. We classify and allocate each insistence word into the following categories: (1) 'stress test identity' ($GHP\_ST\_ID_{itj}$), (2) 'stress test performance' ($GHP\_ST\_PERF_{itj}$), (3) 'stress test procedure' ($GHP\_ST\_PRO_{itj}$), (4) 'regulatory institutions' ($GHP\_ST\_REGIN_{itj}$), (5) 'regulatory requirements' (GHP_REGREQ_{itj}) and (6) 'risk management' ($GHP\_ST\_RM_{itj}$). However, not all insistence words are eligible. For instance, some of the most frequently used words are 'bank/s', 'assets' and 'results', which are generally used words and not particularly addressing one of the above criteria. Therefore, we do not include those 'invalid' words in our word list. Further, we resort to the stress test and accounting literature (e.g. Borio et al., 2014; Schuermann, 2014; Bischof and Daske, 2013; Bushman and Williams, 2012) and screen stress test sections of selected annual reports to gather specific language and terms related to stress tests. This procedure enables us to comprehensively assess the recognition of stress test, regulation and risk management language and to measure the stress test sentiment of banks' disclosures.

[10] We follow the guidelines on Professor Bill McDonald's website: https://www3.nd.edu/~mcdonald/Word_Lists.html.
[11] An alternative formula for disclosure tone is *TONE_ALT = (LD_NEG – LD_POS) / TWA* as in Huang et al. (2014). We apply this measure in our robustness checks and receive similar results.

Table 1 European stress tests and sample construction

Panel A: European stress test participation per country and assessment

	Stress tested	Stress test participation CEBS / EBA[1]					Stress test participation ECB	
Country	banks	2009[2]	2010	2011	2014	2016	2014	2015
Austria	10		2	3	6	2	6	2
Belgium	7		2	2	5	2	6	1
Cyprus	5		2	2	3	0	4	0
Denmark	4		3	4	4	3	0	0
Estonia	3		0	0	0	0	3	0
Finland	4		1	1	1	1	3	1
France	15		4	4	11	6	13	1
Germany	27		14	12	24	9	25	0
Greece	6		6	6	4	0	4	4
Hungary	2		2	1	1	1	0	0
Ireland	5		2	3	3	2	5	0
Italy	15		5	5	15	5	15	0
Latvia	3		0	0	1	0	3	0
Lithuania	3		0	0	0	0	3	0
Luxembourg	8		2	1	2	0	6	1
Malta	4		1	1	1	0	3	1
Netherlands	7		4	4	6	4	7	0
Norway	1		0	1	1	1	0	0
Poland	6		1	1	6	1	0	0
Portugal	5		4	4	3	0	3	1
Slovakia	3		0	0	0	0	3	0
Slovenia	4		1	2	3	0	3	1
Spain	32		27	25	15	6	15	0
Sweden	4		4	4	4	4	0	0
United Kingdom	4		4	4	4	4	0	0
Total stress test participation	187	22	91	90	123	51	130	13

Table 1 continued

Panel B: European stress test sample construction

	Total banks	2009	2010	2011	2014[3]	2015	2016
Total stress test participation	187	22	91	90	253	13	51
Excluded (data unavailability due to M&As)	16	0	15	11	6	0	1
Excluded (unavailability of financial reports)	15	0	6	5	12	2	1
Excluded (unavailability of accounting data)	10	0	4	4	15	0	3
Excluded (data unavailability due to bankruptcies)	4	0	4	4	0	0	0
Total excluded banks and observations	45	0	29	24	33	2	5
Stress test participation sample	142	22	62	66	220	11	46

This table presents the European stress test participation and sample construction. Panel A reports per country and assessment the number of banks that participated in CEBS / EBA and ECB stress tests from 2009 to 2016 ([1]The stress tests in 2009 and 2010 were conducted by CEBS. [2]The names of the participating banks of CEBS's stress test in 2009 were not published.). Panel B illustrates the number of banks and stress test observations that needed to be withdrawn from the total stress test participation due to data unavailability ([3]The stress test participation for EBA's and ECB's assessment is reported collectively.).

Table 2 Descriptive statistics

Panel A: Bank accounting characteristics

Variables	Obs.	Mean	SD	Min.	Max.	Median
TRANX	4475	0.583	0.129	0.176	0.865	0.595
SIZE	4748	11.071	1.796	6.724	14.525	11.013
LOAN	3110	0.602	0.154	0.172	0.908	0.617
LLR	2709	0.031	0.035	0.001	0.173	0.019
LLP	3117	0.004	0.006	-0.003	0.035	0.002
NPL	2358	0.055	0.064	0.002	0.345	0.033
TRADE	2625	0.108	0.108	0.001	0.496	0.074
CET1R	2078	0.132	0.053	0.056	0.391	0.122
T1R	3993	0.126	0.055	0.055	0.402	0.115
TRR	4226	0.150	0.055	0.081	0.416	0.138
DSTF	3125	0.627	0.196	0.024	0.967	0.642
EQY	3150	0.071	0.037	0.001	0.204	0.064
EBPT	3119	0.007	0.006	-0.003	0.031	0.006

Panel B: Textual analysis characteristics

Variables	Obs.	Mean	SD	Min.	Max.	Median
TWA	3994	54,622	58,109	3,650	276,232	32,203
GHP_ST_ALL	3994	0.053	0.013	0.026	0.086	0.053
GHP_ST_ID	3994	0.001	0.001	0.000	0.004	0.001
GHP_ST_PERF	3994	0.005	0.001	0.001	0.009	0.005
GHP_ST_PRO	3994	0.004	0.002	0.001	0.009	0.004
GHP_ST_REGIN	3994	0.003	0.001	0.001	0.007	0.003
GHP_ST_REGREQ	3994	0.010	0.004	0.003	0.022	0.010
GHP_ST_RM	3994	0.030	0.008	0.012	0.052	0.030
TONE	3991	-0.275	0.220	-0.670	0.398	-0.314
ΔTONE	3520	-0.013	0.127	-0.457	0.367	-0.008
TONE_ALT	3994	-0.005	0.004	-0.018	0.007	-0.005
LD_AGGNUM	3994	0.021	0.006	0.007	0.038	0.021
LD_NEG	3994	0.012	0.004	0.004	0.024	0.012
LD_UNC	3994	0.009	0.004	0.002	0.020	0.009
LD_MOD	3994	0.004	0.002	0.000	0.009	0.004
LD_POS	3994	0.007	0.003	0.002	0.015	0.006
LD_LIT	3994	0.004	0.002	0.000	0.010	0.004
LD_SUP	3994	0.004	0.002	0.000	0.011	0.004

Panel C: Market microstructure characteristics

Variables	Obs.	Mean	SD	Min.	Max.	Median
BIDASK	2490	0.008	0.015	0.000	0.102	0.003
RECNO	2309	19.704	10.231	1.000	40.000	21.469
RECCON	2309	2.670	0.547	1.000	4.130	2.631
RECSBUY	2314	16.660	15.306	0.000	100.000	14.888
RECBUY	2309	40.835	24.198	0.000	100.000	41.640
RECHOLD	2309	38.916	18.800	0.000	100.000	37.120
RECSELL	2309	20.188	19.411	0.000	93.330	15.396
RECSSELL	2314	4.262	6.423	0.000	33.330	1.366
IPRICE	2660	0.166	0.333	0.000	2.250	0.037
RVOL	2660	0.026	0.017	0.006	0.107	0.020
TOVER	2607	0.010	0.027	0.000	0.220	0.004
MVALLN	2660	9.053	1.901	4.689	14.208	9.096

Table 2 continued

Panel D: Country-specific characteristics

Country	ΔGDP (Mean)	ΔGDP (Median)	ΔGDP (SD)	ΔUNEMP (Mean)	ΔUNEMP (Median)	ΔUNEMP (SD)
Austria	0.007	0.000	0.048	0.003	-0.003	0.059
Belgium	0.007	0.001	0.049	-0.000	0.006	0.055
Cyprus	0.005	0.007	0.018	0.029	0.039	0.164
Denmark	0.007	-0.004	0.051	0.012	-0.010	0.072
Estonia	0.007	-0.003	0.053	0.015	-0.018	0.137
Finland	0.005	-0.003	0.050	0.006	-0.002	0.037
France	0.006	-0.003	0.050	0.004	0.000	0.034
Germany	0.007	-0.002	0.049	-0.017	-0.023	0.040
Greece	-0.002	-0.004	0.050	0.022	0.006	0.052
Hungary	0.007	-0.000	0.052	-0.010	-0.004	0.049
Ireland	0.014	0.009	0.076	0.009	-0.004	0.077
Italy	0.004	-0.004	0.049	0.015	0.013	0.048
Latvia	0.005	0.004	0.052	0.006	-0.011	0.120
Lithuania	0.008	0.002	0.051	0.008	-0.019	0.139
Luxembourg	0.009	0.004	0.053	0.009	0.000	0.036
Malta	0.020	0.034	0.051	-0.011	-0.015	0.055
Netherlands	0.007	0.001	0.049	0.006	-0.012	0.064
Norway	0.007	-0.004	0.053	0.016	0.010	0.095
Poland	0.012	0.008	0.050	-0.010	-0.027	0.103
Portugal	0.005	-0.001	0.050	0.001	-0.002	0.042
Slovakia	0.011	0.009	0.051	-0.006	-0.018	0.067
Slovenia	0.006	0.000	0.048	0.012	-0.003	0.082
Spain	0.005	0.003	0.050	0.018	0.007	0.055
Sweden	0.008	-0.002	0.052	0.003	-0.004	0.050
United Kingdom	0.007	-0.001	0.051	-0.003	-0.011	0.040
Total	0.007	0.000	0.050	0.004	-0.007	0.068

This table reports summary statistics of the variables we use in our analysis. Panel A presents observation, mean, standard deviation, minimum maximum and median, winsorised at the 1 and 99 percentiles, of the following bank-specific accounting characteristics: Quantitative disclosure behaviour measured by transparency index (*TRANX*), bank size captured by natural logarithm of total assets (*SIZE*); traditional asset mix showed by outstanding loans (*LOAN*); loan quality measured by loan loss reserves (*LLR*), loan loss provisions (*LLP*) and non-performing loans (*NPL*), non-traditional asset mix measured by trading securities (*TRADE*), capital adequacy measured by ratios of regulatory core/common Tier 1 capital (*CET1R*), Tier 1 capital (*T1R*) and total regulatory capital (*TRR*), short-term funding showed by deposits and short-term funding (*DSTF*), capitalisation captured by equity divided by total assets (*EQY*), and profitability measured by earnings before provision and taxes (*EBPT*). Panel B presents observation, mean, standard deviation, minimum, maximum and median, winsorised at the 1 and 99 percentiles, of the following bank-specific textual analysis characteristics: Total words analysed (*TWA*), natural logarithm of total words analysed (*TWALN*), stress test disclosure sentiment measured by an accumulated word count of customized stress test, regulation and risk management word lists (*GHP_ST_ALL*), word count of 'stress test identity' word list (*GHP_ST_ID*), word count of 'stress test performance' word list (*GHP_ST_PERF*), word count of 'stress test procedure' word list (*GHP_ST_PRO*), word count of 'regulatory institutions' word list (*GHP_ST_ REGIN*), word count of 'regulatory requirements' word list (*GHP_ST_REGREQ*), and word count of 'risk management' word list (*GHP_ST_RM*); disclosure tone captured by *TONE*, *ΔTONE* and *TONE_ALT* created based on the word count of 'negative' and 'positive' word lists (Loughran and McDonald, 2011b) and the formula as in Henry and Leone (2016), word count of aggregated word list that consists of 'negative', 'uncertainty' and 'modal' words (*LD_AGGNUM*), word count of 'negative' word list (*LD_NEG*), word count of 'uncertainty' word list (*LD_UNC*), word count of 'modal' word list (*LD_MOD*), word count of 'positive' word list (*LD_POS*), word count of 'litigious' word list (*LD_LIT*), and word count of 'superfluous' word list (*LD_SUP*). Panel C presents observation, mean, standard deviation, minimum, maximum and median, daily winsorised at the 1 and 99 percentiles and quarterly averaged, of the following bank-specific market microstructure characteristics: Bid-ask-spread (*BIDASK*), number of analyst recommendations (*RECNO*), analyst recommendation consensus (*RECCON*), percentage of analyst strong buy recommendations (*RECSBUY*), percentage of analyst buy recommendations (*RECBUY*), percentage of analyst hold recommendations (*RECHOLD*), percentage of analyst sell recommendations (*RECSELL*), percentage of analyst strong sell recommendations (*RECSSELL*), inverse share price (*IPRICE*), standard deviation of continuously compounded share price returns (*RVOL*), share turnover (*TOVER*), market value (*MVALLN*). Panel D illustrates mean, median and standard deviation of the following country-specific characteristics: Macro-economic fundamentals captured by change of Gross Domestic Product (*ΔGDP*) and unemployment rate (*ΔUNEMP*). Data range 2005–2016. The description of the variables and the relevant data sources are provided in Appendix A.

Table 3 Correlation statistics

Panel A: Pearson correlation and p-values (in parentheses) for equations 1 and 2

Variables	GHP_ST_ALL	$SIZE_{t-2}$	$LOAN_{t-2}$	LLR_{t-2}	LLP_{t-2}	NPL_{t-2}	$TRADE_{t-2}$	$T1R_{t-2}$	$DSTF_{t-2}$	$EBPT_{t-2}$	ΔGDP	ΔUNEMP
GHP_ST_ALL	1.0000											
$SIZE_{t-2}$	0.1763	1.0000										
	(0.0000)											
$LOAN_{t-2}$	-0.1848	-0.4229	1.0000									
	(0.0000)	(0.0000)										
LLR_{t-2}	-0.0374	-0.3444	0.0967	1.0000								
	(0.0703)	(0.0000)	(0.0000)									
LLP_{t-2}	-0.0366	-0.1691	0.1297	0.6032	1.0000							
	(0.0615)	(0.0000)	(0.0000)	(0.0000)								
NPL_{t-2}	0.0378	-0.3630	0.1217	0.9292	0.5623	1.0000						
	(0.0872)	(0.0000)	(0.0000)	(0.0000)	(0.0000)							
$TRADE_{t-2}$	0.2570	0.6239	-0.6117	-0.4081	-0.2790	-0.3976	1.0000					
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)						
$T1R_{t-2}$	0.3114	-0.1638	-0.0649	0.0857	-0.1149	0.0732	-0.0193	1.0000				
	(0.0000)	(0.0000)	(0.0009)	(0.0000)	(0.0000)	(0.0007)	(0.3630)					
$DSTF_{t-2}$	-0.1604	-0.3904	0.3074	0.3876	0.2634	0.3641	-0.4369	0.0296	1.0000			
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.1287)				
$EBPT_{t-2}$	-0.1344	-0.5773	0.2746	0.3611	0.0704	0.3098	-0.3219	0.5123	0.3707	1.0000		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)			
ΔGDP	-0.1859	-0.2862	0.2448	0.1956	0.3778	0.1545	-0.2297	0.1086	0.3249	0.4656	1.0000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		
ΔUNEMP	0.0612	-0.0052	-0.0258	0.0321	0.0342	0.0352	-0.0021	0.0757	0.0137	0.0565	-0.0213	1.0000
	(0.0001)	(0.7251)	(0.1599)	(0.1024)	(0.0626)	(0.0942)	(0.9167)	(0.0000)	(0.4557)	(0.0020)	(0.2465)	

Table 3 continued

Panel B: Pearson correlation and p-values (in parentheses) for equation 3

Variables	TONE	$IPRICE_{t-2}$	$RVOL_{t-2}$	$TOVER_{t-2}$	$MVALLN_{t-2}$
TONE	1.0000				
$IPRICE_{t-2}$	-0.0879	1.0000			
	(0.0000)				
$RVOL_{t-2}$	-0.1998	0.0708	1.0000		
	(0.0000)	(0.0004)			
$TOVER_{t-2}$	-0.0975	0.4040	0.0953	1.0000	
	(0.0000)	(0.0000)	(0.0000)		
$MVALLN_{t-2}$	0.1814	-0.3149	-0.2572	-0.0643	1.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0013)	

This table reports Pearson correlation matrices of the variables we use in our regression models. Bank-specific variables are winsorised at the 1 and 99 percentiles. Panel A presents the following variables of equations 1 and 2: Stress test disclosure sentiment measured by an accumulated word count of customized stress test, regulation and risk management word lists (*GHP_ST_ALL*), bank size captured by natural logarithm of total assets (*SIZE*); traditional asset mix showed by outstanding loans (*LOAN*); loan quality measured by loan loss reserves (*LLR*), loan loss provisions (*LLP*) and non-performing loans (NPL), non-traditional asset mix measured by trading securities (*TRADE*), capital adequacy measured by ratio of regulatory Tier 1 capital (*T1R*), short-term funding showed by deposits and short-term funding (*DSTF*), profitability measured by earnings before provision and taxes (*EBPT*), and macro-economic fundamentals captured by change of Gross Domestic Product (*ΔGDP*) and unemployment rate (*ΔUNEMP*). Panel B illustrates the following variables of equation 3: Disclosure tone captured by *TONE*, created based on the word count of 'negative' and 'positive' word lists (Loughran and McDonald, 2011b) and the formula as in Henry and Leone (2016), inverse share price (*IPRICE*), standard deviation of continuously compounded share price returns ($RVOL_{t-4}$), share turnover ($TOVER_{t-4}$), and market value ($MVALLN_{t-4}$). All bank and market microstructure characteristics are lagged by two quarters. Data range 2005–2016. The description of the variables and the relevant data sources are provided in Appendix A.

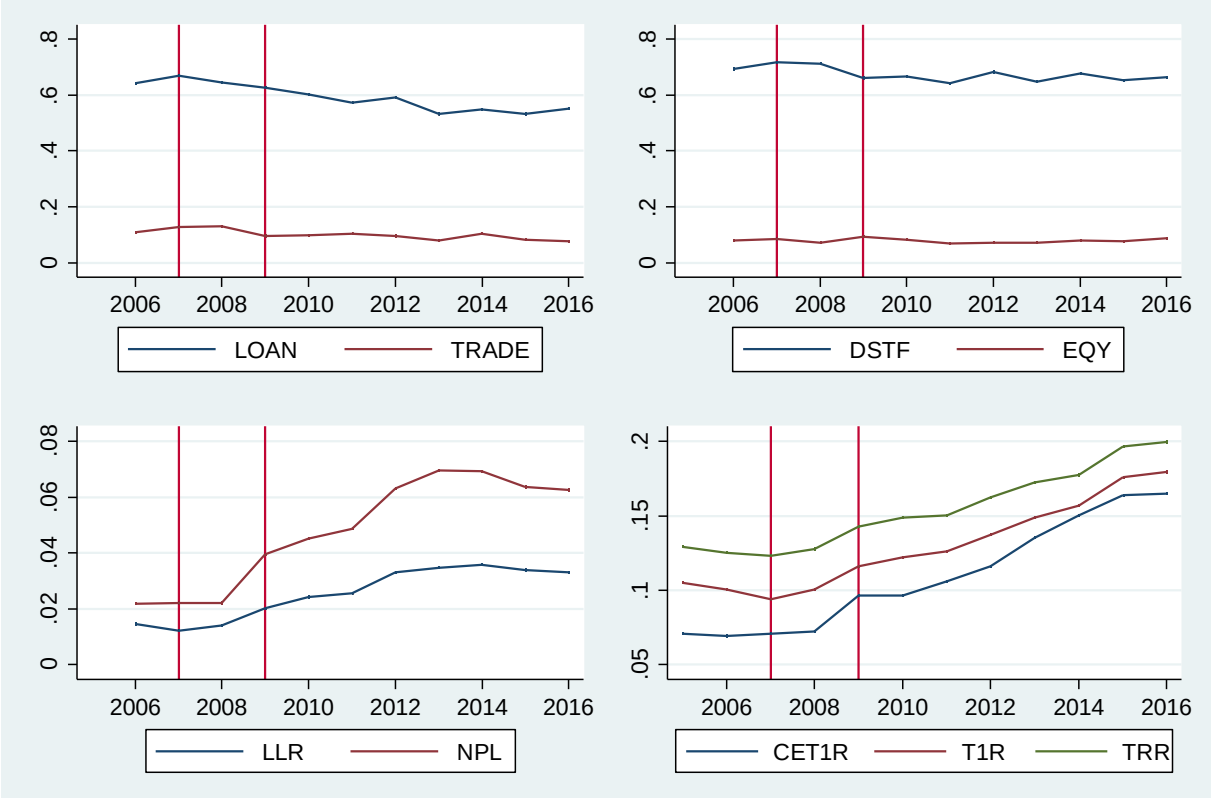

Fig. 1 Graphical illustration of bank accounting characteristics. The charts plot mean evolvement of the following variables: Traditional and non- traditional asset mix showed by outstanding loans (*LOAN*) and trading securities (*TRADE*), long- and short-term funding showed by deposits and short-term funding (*DSTF*) and equity divided by total assets (*EQY*), loan quality measured by loan loss reserves (*LLR*), and non-performing loans (*NPL*), and capital adequacy measured by ratios of regulatory core/common Tier 1 capital (*CET1R*), Tier 1 capital (*T1R*) and total regulatory capital (*TRR*). The red lines in 2007 and 2009 indicate the recent financial crisis. The description of the variables and the relevant data sources are provided in Appendix A.

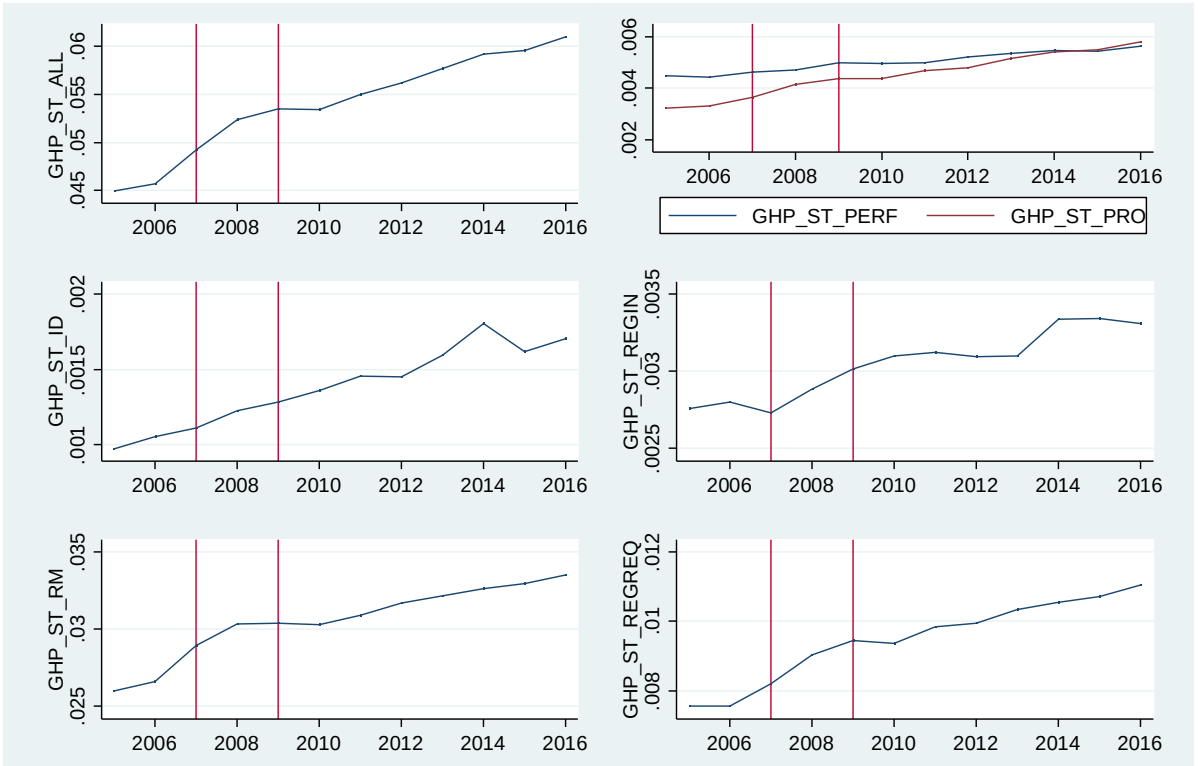

Fig. 2 Graphical illustration of stress test disclosure sentiment. The charts plot mean evolvement of the accumulated word count of customized stress test, regulation and risk management word lists (*GHP_ST_ALL*), word count of 'stress test identity' word list (*GHP_ST_ID*), word count of 'stress test performance' word list (*GHP_ST_PERF*), word count of 'stress test procedure' word list (*GHP_ST_PRO*), word count of 'regulatory institutions' word list (*GHP_ST_ REGIN*), word count of 'regulatory requirements' word list (*GHP_ST_REGREQ*), and word count of 'risk management' word list (*GHP_ST_RM*). The red lines in 2007 and 2009 indicate the recent financial crisis. The description of the variables and the relevant data sources are provided in Appendix A.

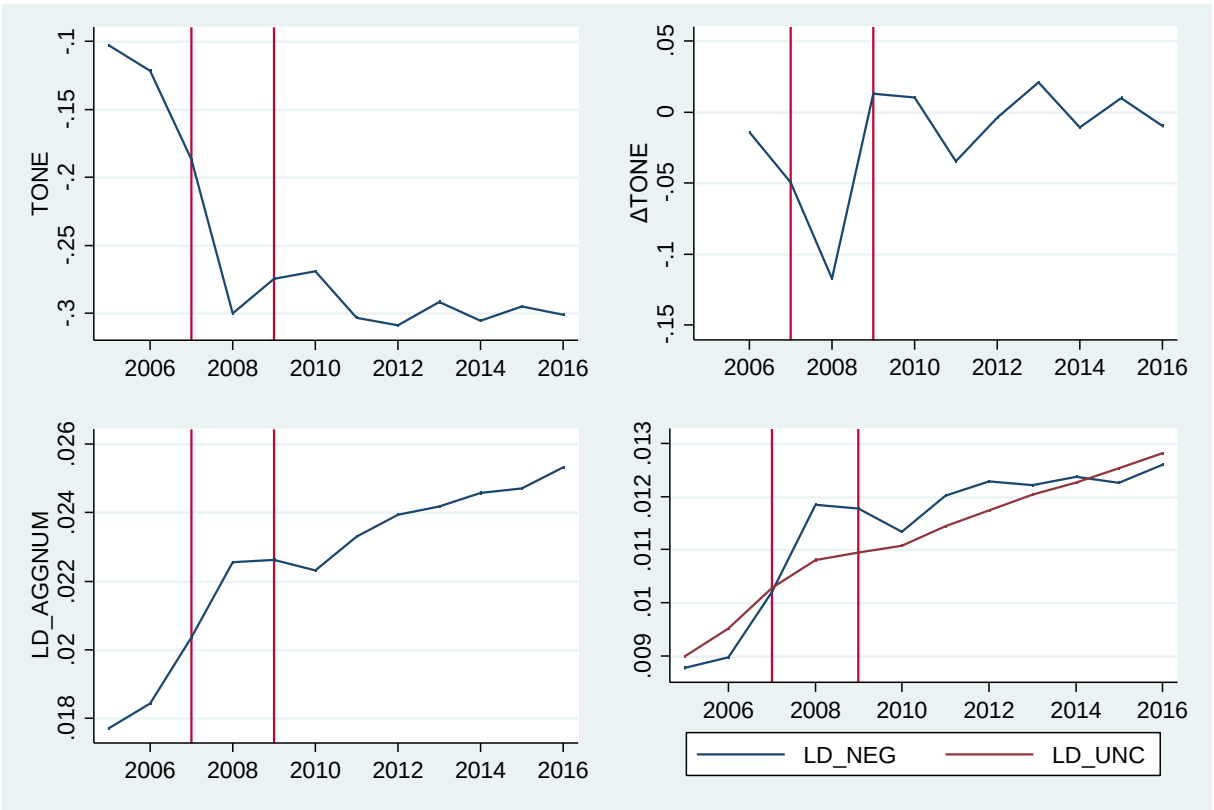

Fig. 3 Graphical illustration of disclosure tone. The charts plot mean evolvement of the following variables: Disclosure tone captured by *TONE* and *ΔTONE,* created based on the word count of 'negative' and 'positive' word lists (Loughran and McDonald, 2011b) and the formula as in Henry and Leone (2016), word count of aggregated word list that consists of 'negative', 'uncertainty' and 'modal' words (*LD_AGGNUM*), word count of 'negative' word list (*LD_NEG*), and word count of 'uncertainty' word list (*LD_UNC*). The red lines in 2007 and 2009 indicate the recent financial crisis. The description of the variables and the relevant data sources are provided in Appendix A.

Fig. 4 Graphical illustration of transparency and analyst information production. The charts plot mean evolvement of bid-ask-spread (*BIDASK*), number of analyst recommendations (*RECNO*), analyst recommendation consensus (*RECCON*), percentage of analyst strong buy, buy, hold, sell and strong sell recommendations (*RECSBUY, RECBUY, RECHOLD, RECSELL, RECSSELL*). The red lines in Q3-2007 and Q4-2009 indicate the recent financial crisis. The description of the variables and the relevant data sources are provided in Appendix A.

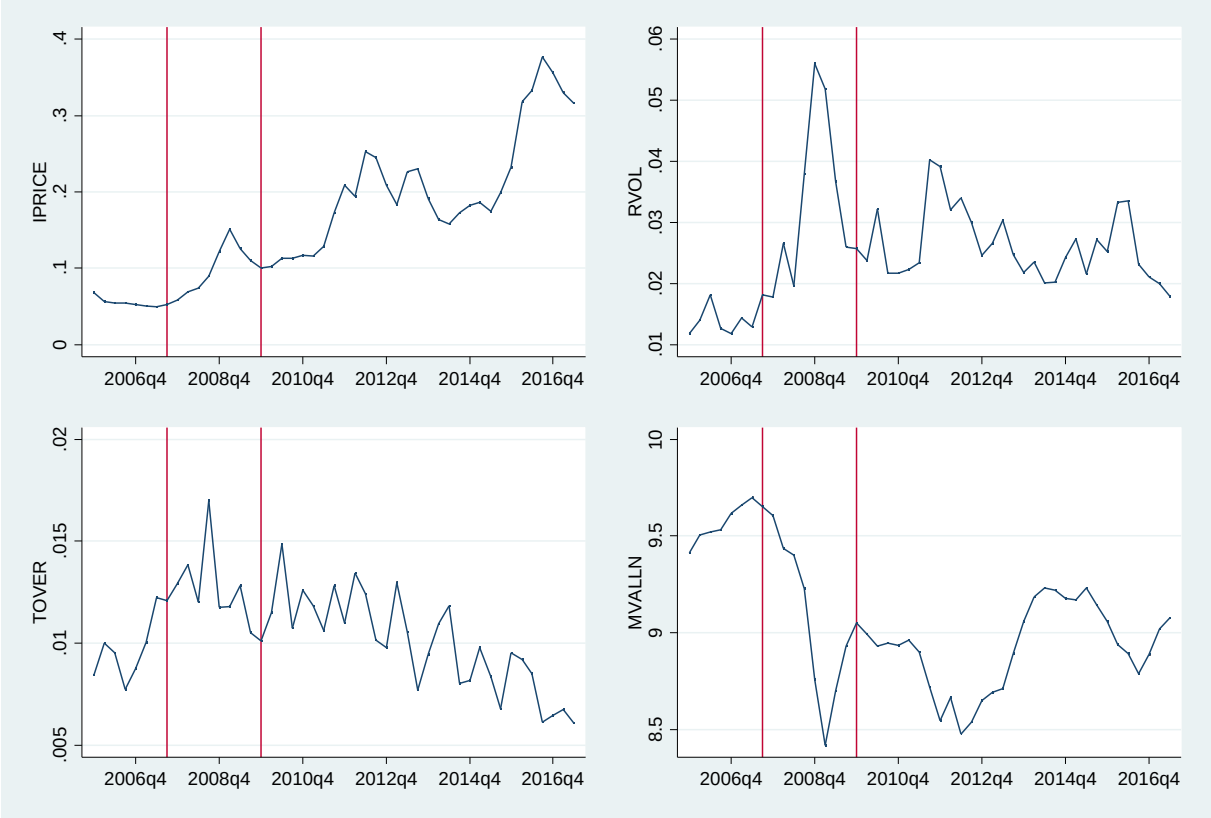

Fig. 5 Graphical illustration of market microstructure characteristics. The charts plot mean evolvement of the following variables: Inverse share price (*IPRICE*), standard deviation of continuously compounded share price returns (*RVOL*), share turnover (*TOVER*), market value (*MVALLN*).

Table 4 Stress test disclosure sentiment

Variables	(1) $GHP\_ST\_ALL_{itj}$	(2) $GHP\_ST\_ID_{itj}$	(3) $GHP\_ST\_PERF_{itj}$	(4) $GHP\_ST\_PRO_{itj}$	(5) $GHP\_ST\_REGIN_{itj}$	(6) $GHP\_ST\_REGREQ_{itj}$	(7) $GHP\_ST\_RM_{itj}$
$P\_ST\_201011_t$	0.0206***	0.0002	0.0010**	0.0023***	0.0008***	0.0052***	0.0111***
	(0.0033)	(0.0002)	(0.0005)	(0.0006)	(0.0003)	(0.0012)	(0.0021)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	0.0021	0.0003***	0.0002	0.0002	0.0004***	-0.0005	0.0015
	(0.0015)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0004)	(0.0010)
$P\_ST\_201415_t$	0.0301***	0.0006***	0.0018***	0.0036***	0.0011***	0.0067***	0.0161***
	(0.0031)	(0.0002)	(0.0005)	(0.0006)	(0.0003)	(0.0012)	(0.0019)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.0030***	-0.0002*	-0.0005***	-0.0003**	-0.0000	-0.0002	-0.0019***
	(0.0011)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0007)
$P\_ST\_2016_t$	0.0308***	0.0006***	0.0017***	0.0035***	0.0012***	0.0075***	0.0162***
	(0.0034)	(0.0002)	(0.0005)	(0.0006)	(0.0003)	(0.0012)	(0.0021)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.0036**	-0.0002**	-0.0002	-0.0003*	-0.0001	-0.0009*	-0.0018*
	(0.0015)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0005)	(0.0009)
$SIZE_{it-2j}$	-0.0051**	-0.0002**	-0.0006***	-0.0004	-0.0003	-0.0010*	-0.0028*
	(0.0021)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0006)	(0.0015)
$LOAN_{it-2j}$	0.0018	-0.0000	-0.0010*	0.0007	-0.0001	0.0027	-0.0002
	(0.0057)	(0.0002)	(0.0006)	(0.0008)	(0.0007)	(0.0017)	(0.0040)
LLR_{it-2j}	0.0363*	0.0033***	0.0080**	0.0051*	0.0070***	-0.0134***	0.0269*
	(0.0204)	(0.0009)	(0.0035)	(0.0028)	(0.0016)	(0.0046)	(0.0139)
LLP_{it-2j}	0.0275	0.0036	0.0057	0.0033	0.0043	0.0028	0.0080
	(0.0409)	(0.0027)	(0.0053)	(0.0068)	(0.0052)	(0.0142)	(0.0293)
$TRADE_{it-2j}$	-0.0081	-0.0007*	-0.0006	-0.0016*	-0.0019***	-0.0017	-0.0010
	(0.0066)	(0.0004)	(0.0010)	(0.0009)	(0.0006)	(0.0022)	(0.0043)
$T1R_{it-2j}$	0.0062	0.0005	0.0007	0.0015	0.0013	0.0058**	-0.0023
	(0.0097)	(0.0006)	(0.0011)	(0.0018)	(0.0009)	(0.0025)	(0.0063)
$DSTF_{it-2j}$	-0.0034	-0.0001	0.0001	-0.0003	0.0008**	-0.0008	-0.0036
	(0.0038)	(0.0002)	(0.0004)	(0.0005)	(0.0004)	(0.0008)	(0.0027)
$EBPT_{it-2j}$	-0.1270	-0.0098*	-0.0173*	-0.0247	-0.0135*	-0.0193	-0.0529
	(0.0869)	(0.0050)	(0.0089)	(0.0151)	(0.0076)	(0.0202)	(0.0536)
ΔGDP_{tj}	0.0428***	-0.0005	0.0002	0.0014	0.0024	0.0056	0.0347***
	(0.0110)	(0.0014)	(0.0014)	(0.0017)	(0.0015)	(0.0035)	(0.0082)
$\Delta UNEMP_{tj}$	0.0101**	-0.0003	0.0007	0.0008	0.0007	-0.0001	0.0080**
	(0.0050)	(0.0002)	(0.0008)	(0.0008)	(0.0005)	(0.0016)	(0.0032)
Constant	0.0916***	0.0027**	0.0110***	0.0051	0.0046**	0.0168**	0.0538***
	(0.0247)	(0.0011)	(0.0020)	(0.0037)	(0.0023)	(0.0069)	(0.0179)
Observations	1,906	1,906	1,906	1,906	1,906	1,906	1,906
Number of banks	83	83	83	83	83	83	83
Adjusted R-squared	0.3297	0.3783	0.2087	0.3876	0.1816	0.2445	0.2024
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 continued

This table reports the effect of first-time and regular stress test participation on banks' disclosure sentiment (equation (1)). We measure stress test disclosure sentiment using the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_{itj}$, $GHP\_ST\_ID_{itj}$, $GHP\_ST\_PERF_{itj}$, $GHP\_ST\_PRO_{itj}$, $GHP\_ST\_REGIN_{itj}$, $GHP\_ST\_REGREQ_{itj}$, and $GHP\_ST\_RM_{itj}$). We include the following dummy variables in our analysis to measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities ($TRADE_{it-2j}$), capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding ($DSTF_{it-2j}$), profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table 5 Textual disclosure tone

Variables	(1) $TONE_{itj}$	(2) $\Delta TONE_{itj}$	(3) LD_AGGNUM_{itj}	(4) LD_NEG_{itj}
$P\_ST\_201011_t$	-0.2955***	-0.0606	0.0098***	0.0046***
	(0.0686)	(0.0432)	(0.0023)	(0.0012)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	-0.0108	-0.0285	0.0011	0.0005
	(0.0204)	(0.0243)	(0.0008)	(0.0004)
$P\_ST\_201415_t$	-0.3214***	-0.0350	0.0141***	0.0072***
	(0.0722)	(0.0364)	(0.0020)	(0.0013)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.0283	-0.0387**	-0.0020***	-0.0008**
	(0.0224)	(0.0192)	(0.0006)	(0.0004)
$P\_ST\_2016_t$	-0.2802***	-0.0029	0.0128***	0.0060***
	(0.0739)	(0.0338)	(0.0021)	(0.0013)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.0335	0.0069	-0.0014**	-0.0005
	(0.0208)	(0.0217)	(0.0007)	(0.0005)
$SIZE_{it-2j}$	0.0953***	-0.0164	-0.0022**	-0.0018***
	(0.0358)	(0.0165)	(0.0010)	(0.0006)
$LOAN_{it-2j}$	0.1940**	0.0803	-0.0011	-0.0021
	(0.0881)	(0.0645)	(0.0023)	(0.0016)
LLR_{it-2j}	-0.6985**	0.1460	0.0327***	0.0259***
	(0.3056)	(0.1690)	(0.0088)	(0.0059)
LLP_{it-2j}	-1.0616	0.0380	0.0590***	0.0352***
	(1.0080)	(0.7020)	(0.0193)	(0.0126)
$TRADE_{it-2j}$	-0.1040	0.0829	-0.0048	-0.0014
	(0.1651)	(0.0785)	(0.0040)	(0.0025)
$T1R_{it-2j}$	0.5697***	0.2110*	0.0018	-0.0086***
	(0.2159)	(0.1235)	(0.0053)	(0.0030)
$DSTF_{it-2j}$	0.0426	-0.0159	-0.0046**	-0.0017
	(0.0681)	(0.0457)	(0.0019)	(0.0012)
$EBPT_{it-2j}$	1.9689	1.1307	-0.0610	-0.0719**
	(1.3392)	(0.7755)	(0.0466)	(0.0279)
ΔGDP_{tj}	-0.1482	0.0828	0.0137***	0.0046
	(0.2292)	(0.2915)	(0.0051)	(0.0040)
$\Delta UNEMP_{tj}$	-0.3266***	-0.2878***	0.0061**	0.0053***
	(0.1142)	(0.0771)	(0.0025)	(0.0017)
Constant	-1.2949***	0.1420	0.0379***	0.0308***
	(0.4089)	(0.1874)	(0.0116)	(0.0073)
Observations	1,905	1,835	1,906	1,906
Number of banks	83	83	83	83
Adjusted R-squared	0.1460	0.1053	0.3585	0.2470
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table reports the effect of first-time and regular stress test participation on banks' disclosure tone (equation (1)). We measure disclosure tone using the word count of Loughran and McDonald's (2011b) word lists and Henry and Leone's (2016) formulas ($TONE_{itj}$, $\Delta TONE_{itj}$, LD_AGGNUM_{itj}, and LD_NEG_{itj}). We include the following dummy variables in our analysis to measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities ($TRADE_{it-2j}$), capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding ($DSTF_{it-2j}$), profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table 6 Quantitative disclosure behaviour

Variables	(1) $TRANX_{itj}$	(2) $TRANX_{itj}$	(3) $TRANX_{itj}$	(4) $TRANX_{itj}$
$P\_ST\_201011_t$	0.0533**	0.0635**		
	(0.0243)	(0.0262)		
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	-0.0017	-0.0116		
	(0.0086)	(0.0108)		
$P\_ST\_201415_t$	0.0785***		0.0881***	
	(0.0264)		(0.0269)	
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	0.0137		0.0055	
	(0.0086)		(0.0072)	
$P\_ST\_2016_t$	0.0894***			0.0947***
	(0.0266)			(0.0272)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	0.0380***			0.0329***
	(0.0120)			(0.0102)
$SIZE_{it-2j}$	0.0373**	0.0348**	0.0346**	0.0360**
	(0.0158)	(0.0154)	(0.0154)	(0.0154)
$LOAN_{it-2j}$	-0.0417	-0.0407	-0.0396	-0.0399
	(0.0359)	(0.0363)	(0.0366)	(0.0364)
LLR_{it-2j}	-0.0288	-0.0286	-0.0282	-0.0267
	(0.1954)	(0.1922)	(0.1922)	(0.1929)
LLP_{it-2j}	-0.2577	-0.3134	-0.3047	-0.2714
	(0.4208)	(0.4214)	(0.4221)	(0.4210)
$TRADE_{it-2j}$	-0.0166	-0.0168	-0.0186	-0.0187
	(0.0638)	(0.0647)	(0.0649)	(0.0644)
$T1R_{it-2j}$	0.2358***	0.2239***	0.2219***	0.2340***
	(0.0798)	(0.0834)	(0.0831)	(0.0810)
$DSTF_{it-2j}$	-0.0292	-0.0276	-0.0278	-0.0273
	(0.0287)	(0.0289)	(0.0289)	(0.0288)
$EBPT_{it-2j}$	0.3342	0.4605	0.4418	0.3301
	(0.5686)	(0.5553)	(0.5564)	(0.5603)
ΔGDP_{tj}	-0.1137	-0.1095	-0.1069	-0.1047
	(0.1092)	(0.1053)	(0.1076)	(0.1075)
$\Delta UNEMP_{tj}$	-0.0028	-0.0025	-0.0044	-0.0007
	(0.0387)	(0.0389)	(0.0391)	(0.0385)
Constant	0.0923	0.1175	0.1201	0.1046
	(0.1866)	(0.1826)	(0.1828)	(0.1828)
Observations	1,980	1,980	1,980	1,980
Number of banks	88	88	88	88
Adjusted R-squared	0.5789	0.5764	0.5762	0.5786
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table reports the effect of first-time and regular stress test participation on banks' quantitative disclosure behaviour (equation (1)). We measure quantitative disclosure behaviour using a transparency index ($TRANX_{itj}$) following Nier and Baumann (2006). We include the following dummy variables in our analysis to measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves *(LLR_{it-2j}) and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities *($TRADE_{it-2j}$)*, capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding *($DSTF_{it-2j}$)*, profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table 7 Effect of stress test disclosure sentiment on (future change of) disclosure tone

Variables	(1) $\Delta TONE_{itj}$	(2) $\Delta TONE_{it+2j}$	(3) LD_AGGNUM_{itj}	(4) LD_AGGNUM_{it+2j}
$STHC\_I_t$	-0.1049**	-0.0426	0.0014**	0.0024**
	(0.0486)	(0.0374)	(0.0006)	(0.0010)
$GHP\_ST\_ALL_i$	-0.7255	0.0083	0.4097***	0.1165***
	(0.5904)	(0.4115)	(0.0183)	(0.0273)
$STHC\_I_t$*$GHP\_ST\_ALL_i$	1.4981**	1.1051*	-0.0234**	-0.0390**
	(0.7317)	(0.6428)	(0.0101)	(0.0155)
$SIZE_{it-2j}$	-0.0135	-0.0698***	-0.0001	0.0001
	(0.0157)	(0.0203)	(0.0006)	(0.0009)
$LOAN_{it-2j}$	0.0741	0.0540	-0.0019	-0.0035
	(0.0635)	(0.0654)	(0.0012)	(0.0022)
LLR_{it-2j}	0.1324	0.2999	0.0176***	0.0302***
	(0.1690)	(0.2113)	(0.0040)	(0.0103)
LLP_{it-2j}	0.1161	0.8255*	0.0490***	0.0320
	(0.7082)	(0.4773)	(0.0144)	(0.0345)
$TRADE_{it-2j}$	0.0702	0.3577***	-0.0013	-0.0058
	(0.0782)	(0.1165)	(0.0028)	(0.0036)
$T1R_{it-2j}$	0.1983	-0.0549	-0.0003	0.0022
	(0.1251)	(0.0911)	(0.0024)	(0.0066)
$DSTF_{it-2j}$	-0.0291	-0.1613***	-0.0033***	-0.0008
	(0.0466)	(0.0583)	(0.0011)	(0.0015)
$EBPT_{it-2j}$	1.1320	0.1570	-0.0094	0.0798*
	(0.7718)	(1.0302)	(0.0241)	(0.0438)
ΔGDP_{tj}	0.0613	0.0715	-0.0043	-0.0220***
	(0.2827)	(0.2756)	(0.0034)	(0.0081)
$\Delta UNEMP_{tj}$	-0.2971***	-0.3518***	0.0018	0.0087***
	(0.0744)	(0.0899)	(0.0015)	(0.0021)
Constant	0.1576	0.7453***	0.0007	0.0057
	(0.1775)	(0.2306)	(0.0066)	(0.0103)
Observations	1,835	1,732	1,906	1,761
Number of banks	83	80	83	80
Adjusted R-squared	0.1078	0.1321	0.7563	0.3566
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table reports the individual effect of stress test participation and the stress test disclosure sentiment on banks' disclosure tone (equation (2)). We measure (future change of) disclosure tone using the word count of Loughran and McDonald's (2011b) word lists and Henry and Leone's (2016) formulas ($\Delta TONE_{ij}$ and $LD\_AGGNUM_{ij;\ t,\ t+2)}$. We estimate the impact of stress test disclosure sentiment using the accumulated word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_i$), in combination with a time-dummy that estimates the individual stress test participation effect ($STHC\_I_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities $(TRADE_{it-2j})$, capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding $(DSTF_{it-2j})$, profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table 8 Effect of stress tests on market-based transparency

Variables	(1) $BIDASK_{itj}$	(2) $RECNO_{itj}$	(3) $RECCON_{itj}$
$STHC\_I_t$	-0.0007	0.4895	0.1420*
	(0.0014)	(0.5582)	(0.0721)
$TONE_{itj}$	0.0003	0.2298	-0.1500*
	(0.0013)	(0.9060)	(0.0839)
$STHC\_I_t$*$TONE_{itj}$	-0.0028**	1.4875**	0.2203**
	(0.0013)	(0.7396)	(0.0848)
$IPRICE_{it-2j}$	0.0003	2.0255***	-0.3597**
	(0.0021)	(0.6473)	(0.1493)
$RVOL_{it-2j}$	0.1332**	-60.0580**	2.5600
	(0.0660)	(24.5745)	(2.0691)
$TOVER_{it-2j}$	-0.0113	12.3333	1.0117
	(0.0300)	(10.7733)	(1.3859)
$MVALLN_{it-2j}$	0.0000	2.4477***	-0.0935
	(0.0019)	(0.7899)	(0.0968)
Constant	0.0031	-4.0408	3.3217***
	(0.0185)	(8.1040)	(0.9698)
Observations	2,013	1,930	1,930
Number of banks	57	54	54
Adjusted R-squared	0.1085	0.2704	0.2122
Bank fixed effects	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes

This table reports the individual effect of stress test participation and disclosure tone on transparency and private information production (equation (3)). We measure market-based bank transparency using bid-ask-spread ($BIDASK_{itj}$), number of analyst recommendations ($RECNO_{itj}$), analyst recommendation consensus ($RECCON_{itj}$). We estimate the impact of disclosure tone using $TONE_{itj}$, created based on the word count of 'negative' and 'positive' word lists (Loughran and McDonald, 2011b) and the formula as in Henry and Leone (2016) in combination with a time-dummy that estimates the individual stress test participation effect ($STHC\_I_t$). We control for the following market microstructure characteristics, lagged by two quarters: Inverse share price ($IPRICE_{it-2j}$), standard deviation of continuously compounded share price returns ($RVOL_{it-2j}$), share turnover ($TOVER_{it-2j}$), and market value ($MVALLN_{it-2j}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Internet Appendix for

Transparency versus opacity: Are bank stress tests worthwhile?

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This internet appendix provides the following empirical tests:

- IA.1 presents factor analysis of textual measures
- IA.2 presents stress test disclosure sentiment and textual disclosure tone based on factor analysis
- IA.3 presents an alternative model for stress test participation
- IA.4 presents the effect of stress test disclosure sentiment on (future) disclosure tone using alternative textual estimates and factor analysis
- IA.5 presents the effect of stress tests on market-based transparency using alternative textual estimates
- IA.6 presents the effect of stress test disclosure sentiment on (future change of) disclosure tone of stress tested banks that participated three or more times
- IA.7 presents the effect of stress tests on market-based transparency of low-ranked stress tested banks
- IA.8 presents sensitivity tests of textual components using sample adjustments
- IA.9 presents sensitivity tests of textual components using market-based measures

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Table IA.1 Factor analysis of textual measures

Panel A: Stress test disclosure sentiment factors				
	Factor pattern		Factor pattern: varimax rotation	
	ST_FACT_1	ST_FACT_2	ST_FACT_1	ST_FACT_2
$GHP\_ST\_ID_{itj}$	0.7108	-0.1646	0.7114	0.1617
$GHP\_ST\_PERF_{itj}$	0.6531	-0.4310	0.7757	-0.1031
$GHP\_ST\_PRO_{itj}$	0.7844	-0.2703	0.8238	0.0988
$GHP\_ST\_REGIN_{itj}$	0.3007	0.8030	-0.0795	0.8537
$GHP\_ST\_REGREQ_{itj}$	0.6855	0.2962	0.4878	0.5654
$GHP\_ST\_RM_{itj}$	0.7306	0.2272	0.5584	0.5230
Panel B: Disclosure tone factors				
	Factor pattern		Factor pattern: varimax rotation	
	LD_FACT_1	LD_FACT_2	LD_FACT_1	LD_FACT_2
LD_NEG_{itj}	0.6890	-0.1137	0.6981	0.0162
LD_UNC_{itj}	0.8012	0.0893	0.7706	0.2365
LD_MOD_{itj}	0.7027	0.4228	0.6119	0.5459
LD_POS_{itj}	0.1223	0.9084	-0.0485	0.9153
LD_LIT_{itj}	0.6498	-0.3203	0.6980	-0.1940
LD_SUP_{itj}	0.6998	-0.2761	0.7389	-0.1414

This table reports the factor analysis of our textual measures. Panel A presents factors and factor pattern of our stress test disclosure sentiment estimates, using the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ID_{itj}$, $GHP\_ST\_PERF_{itj}$, $GHP\_ST\_PRO_{itj}$, $GHP\_ST\_REGIN_{itj}$, $GHP\_ST\_REGREQ_{itj}$, and $GHP\_ST\_RM_{itj}$). Panel B illustrates factors and factor pattern of our disclosure tone measures using the word count of Loughran and McDonald's (2011) word lists (LD_NEG_{itj}, LD_UNC_{itj}, LD_MOD_{itj}, LD_POS_{itj}, LD_LIT_{itj} and LD_SUP_{itj}). The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.2 Stress test disclosure sentiment and textual disclosure tone based on factor analysis

Variables	(1) $ST\_FACT\_1_{itj}$	(2) $ST\_FACT\_2_{itj}$	(3) $LD\_FACT\_1_{itj}$	(4) $LD\_FACT\_2_{itj}$	(5) $TONE\_ALT_{itj}$
$P\_ST\_201011_t$	1.0974***	1.0710***	1.2499***	0.0013	-0.0057***
	(0.2736)	(0.2299)	(0.3391)	(0.3589)	(0.0015)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	0.1505	0.1829**	0.1337	0.0319	-0.0004
	(0.1131)	(0.0912)	(0.1271)	(0.1030)	(0.0004)
$P\_ST\_201415_t$	1.8170***	1.3993***	1.8732***	0.1401	-0.0078***
	(0.2549)	(0.2681)	(0.3113)	(0.3401)	(0.0016)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.3012***	-0.0007	-0.1653*	-0.3305***	0.0002
	(0.0775)	(0.0969)	(0.0849)	(0.0889)	(0.0004)
$P\_ST\_2016_t$	1.7919***	1.5544***	1.8687***	0.1355	-0.0067***
	(0.2757)	(0.2620)	(0.3048)	(0.3617)	(0.0017)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.2440**	-0.1542	-0.1224	-0.2237**	-0.0000
	(0.0930)	(0.1282)	(0.0977)	(0.0905)	(0.0005)
$SIZE_{it-2j}$	-0.3704***	-0.2301	-0.2667*	0.2245	0.0023***
	(0.1290)	(0.1802)	(0.1421)	(0.1592)	(0.0007)
$LOAN_{it-2j}$	-0.0289	0.3299	0.0710	0.2184	0.0026
	(0.3225)	(0.5720)	(0.3051)	(0.4795)	(0.0016)
LLR_{it-2j}	3.4096**	1.9498*	4.7506***	-0.8008	-0.0233***
	(1.5981)	(1.1385)	(1.6439)	(1.2258)	(0.0060)
LLP_{it-2j}	3.1316	1.8010	7.9372**	1.6184	-0.0331*
	(3.0517)	(3.3737)	(3.3517)	(4.7481)	(0.0184)
$TRADE_{it-2j}$	-0.5045	-1.0856**	-0.5825	-0.9138*	-0.0005
	(0.5149)	(0.5360)	(0.5719)	(0.5250)	(0.0032)
$T1R_{it-2j}$	0.6030	1.0462*	0.4158	1.7822*	0.0124***
	(0.7731)	(0.6151)	(0.8938)	(0.9062)	(0.0041)
$DSTF_{it-2j}$	-0.2907	0.2223	-0.5993*	0.0597	0.0019
	(0.2172)	(0.2880)	(0.3028)	(0.3159)	(0.0014)
$EBPT_{it-2j}$	-13.0492*	-7.1477	-10.9714	1.1423	0.0696**
	(6.8284)	(5.1360)	(6.7210)	(4.7684)	(0.0287)
ΔGDP_{tj}	0.5275	3.1747***	1.4813	-0.3083	-0.0050
	(0.8142)	(1.0736)	(1.1092)	(0.8562)	(0.0043)
$\Delta UNEMP_{tj}$	0.2647	0.5450	1.3389***	-1.2398**	-0.0077***
	(0.3973)	(0.3726)	(0.4047)	(0.5878)	(0.0021)
Constant	2.8993**	1.4290	1.6742	-2.9642	-0.0299***
	(1.4547)	(1.9631)	(1.6883)	(1.8945)	(0.0083)
Observations	1,906	1,906	1,906	1,906	1,906
Number of banks	83	83	83	83	83
Adjusted R-squared	0.3719	0.2209	0.4861	0.0622	0.2049
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes

This table reports the effect of first-time and regular stress test participation on banks' disclosure sentiment and tone based on the factor analysis. We measure stress test disclosure sentiment and disclosure tone using factors created in Table IA.1, while the sentiment factors $ST\_FACT\_1_{itj}$ and $ST\_FACT\_2_{itj}$ are based on the word count of our customized word lists and tone factors $LD\_FACT\_2_{itj}$ and $LD\_FACT\_2_{itj}$ are built on the word count of Loughran and McDonald's (2011) word lists. *TONE_ALT* is an alternative disclosure tone measure calculated as the difference of *LD_NEG* and *LD_POS* divided by *TWA* (Huang et al., 2014). We include the following dummy variables in our analysis to measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities ($TRADE_{it-2j}$), capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding ($DSTF_{it-2j}$), profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.3 Alternative model for stress test participation

Panel A: Stress test disclosure sentiment

Variables	(1) $GHP\_ST\_ALL_{itj}$	(2) $GHP\_ST\_ID_{itj}$	(3) $GHP\_ST\_PERF_{itj}$	(4) $GHP\_ST\_PRO_{itj}$	(5) $GHP\_ST\_REGIN_{itj}$	(6) $GHP\_ST\_REGREQ_{itj}$	(7) $GHP\_ST\_RM_{itj}$
$STHC_t$	0.0016**	0.0002***	0.0002**	0.0004***	0.0002**	-0.0002	0.0008*
	(0.0007)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0004)
$SIZE_{it-2j}$	-0.0048**	-0.0002**	-0.0006***	-0.0004	-0.0003	-0.0010	-0.0026*
	(0.0021)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0006)	(0.0015)
$LOAN_{it-2j}$	0.0015	-0.0001	-0.0010*	0.0006	-0.0002	0.0028	-0.0004
	(0.0056)	(0.0003)	(0.0006)	(0.0008)	(0.0007)	(0.0017)	(0.0040)
LLR_{it-2j}	0.0362*	0.0035***	0.0080**	0.0054*	0.0072***	-0.0135***	0.0265*
	(0.0210)	(0.0009)	(0.0035)	(0.0029)	(0.0017)	(0.0046)	(0.0144)
LLP_{it-2j}	0.0245	0.0025	0.0053	0.0017	0.0032	0.0047	0.0072
	(0.0421)	(0.0027)	(0.0054)	(0.0069)	(0.0050)	(0.0146)	(0.0298)
$TRADE_{it-2j}$	-0.0073	-0.0006	-0.0005	-0.0015*	-0.0018***	-0.0017	-0.0005
	(0.0065)	(0.0004)	(0.0010)	(0.0009)	(0.0006)	(0.0022)	(0.0043)
$T1R_{it-2j}$	0.0080	0.0006	0.0009	0.0017	0.0015*	0.0058**	-0.0012
	(0.0091)	(0.0006)	(0.0011)	(0.0016)	(0.0009)	(0.0024)	(0.0062)
$DSTF_{it-2j}$	-0.0037	-0.0001	0.0000	-0.0003	0.0008**	-0.0008	-0.0038
	(0.0037)	(0.0002)	(0.0004)	(0.0005)	(0.0004)	(0.0008)	(0.0026)
$EBPT_{it-2j}$	-0.1334	-0.0101*	-0.0176*	-0.0255*	-0.0135*	-0.0218	-0.0552
	(0.0889)	(0.0052)	(0.0091)	(0.0153)	(0.0073)	(0.0207)	(0.0548)
ΔGDP_{tj}	0.0413***	-0.0005	-0.0000	0.0016	0.0024	0.0055	0.0331***
	(0.0094)	(0.0016)	(0.0014)	(0.0016)	(0.0014)	(0.0034)	(0.0072)
$\Delta UNEMP_{tj}$	0.0095*	-0.0003	0.0006	0.0008	0.0007	-0.0002	0.0075**
	(0.0049)	(0.0002)	(0.0008)	(0.0008)	(0.0005)	(0.0016)	(0.0032)
Constant	0.0893***	0.0027**	0.0108***	0.0052	0.0047**	0.0162**	0.0521***
	(0.0247)	(0.0011)	(0.0021)	(0.0037)	(0.0023)	(0.0069)	(0.0177)
Observations	1,906	1,906	1,906	1,906	1,906	1,906	1,906
Number of banks	83	83	83	83	83	83	83
Adjusted R-squared	0.3240	0.3781	0.2032	0.3891	0.1817	0.2432	0.1954
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.3 continued

Panel B: Textual disclosure tone and quantitative disclosure behaviour

Variables	(1) $TONE_{itj}$	(2) $\Delta TONE_{itj}$	(3) LD_AGGNUM_{itj}	(4) LD_NEG_{itj}	(5) $TRANX_{itj}$
$STHC_i$	-0.0288**	-0.0211	0.0007*	0.0005**	0.0071
	(0.0130)	(0.0141)	(0.0004)	(0.0002)	(0.0056)
$SIZE_{it-2j}$	0.1016***	-0.0139	-0.0021**	-0.0017***	0.0332**
	(0.0353)	(0.0158)	(0.0010)	(0.0006)	(0.0150)
$LOAN_{it-2j}$	0.1915**	0.0781	-0.0013	-0.0022	-0.0386
	(0.0867)	(0.0634)	(0.0024)	(0.0016)	(0.0366)
LLR_{it-2j}	-0.7451**	0.1090	0.0323***	0.0259***	-0.0197
	(0.3071)	(0.1704)	(0.0092)	(0.0060)	(0.1924)
LLP_{it-2j}	-0.8429	0.1665	0.0581***	0.0336***	-0.3428
	(1.0116)	(0.7066)	(0.0194)	(0.0126)	(0.4306)
$TRADE_{it-2j}$	-0.0989	0.0818	-0.0044	-0.0012	-0.0199
	(0.1637)	(0.0771)	(0.0040)	(0.0025)	(0.0650)
$T1R_{it-2j}$	0.5779**	0.2084*	0.0027	-0.0083***	0.2239***
	(0.2194)	(0.1217)	(0.0051)	(0.0029)	(0.0835)
$DSTF_{it-2j}$	0.0375	-0.0224	-0.0049**	-0.0018	-0.0266
	(0.0671)	(0.0458)	(0.0019)	(0.0012)	(0.0289)
$EBPT_{it-2j}$	1.9302	1.1575	-0.0626	-0.0725**	0.4206
	(1.3275)	(0.7799)	(0.0480)	(0.0283)	(0.5600)
ΔGDP_{tj}	-0.2183	0.0490	0.0124**	0.0043	-0.0930
	(0.2236)	(0.2950)	(0.0047)	(0.0037)	(0.1067)
$\Delta UNEMP_{tj}$	-0.3408***	-0.3044***	0.0057**	0.0051***	-0.0022
	(0.1152)	(0.0771)	(0.0025)	(0.0017)	(0.0392)
Constant	-1.3613***	0.1191	0.0366***	0.0306***	0.1342
	(0.4017)	(0.1811)	(0.0117)	(0.0073)	(0.1789)
Observations	1,905	1,835	1,906	1,906	1,980
Number of banks	83	83	83	83	88
Adjusted R-squared	0.1479	0.1042	0.3507	0.2445	0.5764
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes

This table reports an alternative model of the individual effect of stress test participation on banks' disclosure profiles. Panel A presents stress test disclosure sentiment. Panel B illustrates disclosure tone and quantitative disclosure behaviour. We measure stress test disclosure sentiment using the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_{itj}$, $GHP\_ST\_ID_{itj}$, $GHP\_ST\_PERF_{itj}$, $GHP\_ST\_PRO_{itj}$, $GHP\_ST\_REGIN_{itj}$, $GHP\_ST\_REGREQ_{itj}$, and $GHP\_ST\_RM_{itj}$). We estimate disclosure tone using the word count of Loughran and McDonald's (2011) word lists and Henry and Leone's (2016) formulas ($TONE_{itj}$, $\Delta TONE_{itj}$, LD_AGGNUM_{itj}, and LD_NEG_{itj}), and quantitative disclosure behaviour using a transparency index ($TRANX_{itj}$) following Nier and Baumann (2006). We illustrate the individual stress test participation effect with a time-dummy ($STHC\_I_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities ($TRADE_{it-2j}$), capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding ($DSTF_{it-2j}$), profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.4 Effect of stress test disclosure sentiment on (future) disclosure tone using alternative textual estimates and factor analysis

Variables	(1) LD_NEG_{itj}	(2) LD_NEG_{it+2j}	(3) $LD\_FACT\_1_{itj}$	(4) $LD\_FACT\_1_{it+2j}$
$STHC\_I_t$	0.0001	0.0003	0.0234	0.0443
	(0.0002)	(0.0002)	(0.0402)	(0.0573)
$ST\_FACT\_1_i$	0.0019***	0.0007***	0.5392***	0.1528***
	(0.0002)	(0.0002)	(0.0363)	(0.0451)
$STHC\_I_t$*$ST\_FACT\_1_i$	-0.0003***	-0.0003**	-0.0960***	-0.1008***
	(0.0001)	(0.0001)	(0.0242)	(0.0279)
$ST\_FACT\_2_i$	0.0006***	0.0004**	0.2995***	0.1056***
	(0.0002)	(0.0001)	(0.0381)	(0.0363)
$STHC\_I_t$*$ST\_FACT\_2_i$	0.0000	0.0000	-0.0013	-0.0288
	(0.0001)	(0.0001)	(0.0239)	(0.0253)
$SIZE_{it-2j}$	-0.0010**	-0.0004	-0.0227	-0.0088
	(0.0005)	(0.0006)	(0.0953)	(0.1401)
$LOAN_{it-2j}$	-0.0023*	-0.0031**	-0.0131	-0.2880
	(0.0013)	(0.0014)	(0.2534)	(0.3248)
LLR_{it-2j}	0.0185***	0.0189***	2.4745**	3.5601**
	(0.0042)	(0.0069)	(1.0285)	(1.7442)
LLP_{it-2j}	0.0280**	0.0491**	5.7378*	4.6821
	(0.0128)	(0.0204)	(2.8927)	(5.5810)
$TRADE_{it-2j}$	0.0002	-0.0032*	-0.0158	-0.4496
	(0.0022)	(0.0019)	(0.4551)	(0.5653)
$T1R_{it-2j}$	-0.0103***	-0.0074	-0.2158	0.2091
	(0.0025)	(0.0046)	(0.5770)	(0.7981)
$DSTF_{it-2j}$	-0.0012	0.0003	-0.4755**	-0.2681
	(0.0009)	(0.0009)	(0.2257)	(0.2788)
$EBPT_{it-2j}$	-0.0436*	0.0248	-2.1258	5.6233
	(0.0243)	(0.0247)	(3.9609)	(5.7768)
ΔGDP_{tj}	0.0011	-0.0172***	0.1780	-2.7675**
	(0.0035)	(0.0042)	(0.9146)	(1.1894)
$\Delta UNEMP_{tj}$	0.0045***	0.0065***	1.0642***	1.7336***
	(0.0015)	(0.0016)	(0.3176)	(0.3249)
Constant	0.0251***	0.0145**	-0.0579	-0.9950
	(0.0055)	(0.0066)	(1.0966)	(1.7060)
Observations	1,906	1,761	1,906	1,761
Number of banks	83	80	83	80
Adjusted R-squared	0.4333	0.2453	0.7008	0.4889
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table reports banks' individual effect of stress test participation and stress test disclosure sentiment on banks' disclosure tone using alternative estimates. We measure (future) disclosure tone using the word count of 'negative' word list (*LD_NEG_{ij}; t, t+2*) and the disclosure tone factor driven mostly by 'negative', 'uncertainty', 'litigious' and 'superfluous' tone (*$LD\_FACT\_1_{ij}$; t, t+2*) based on Loughran and McDonald's (2011) word lists. We estimate the impact of stress test disclosure sentiment using factor analysis measures from Table IA.1 (*$ST\_FACT\_1_{itj}$* and *$ST\_FACT\_2_{itj}$*), which are built on the accumulated word count of our customized stress test, regulation and risk management word lists based on stress test disclosures in combination with a time-dummy that estimates the individual stress test participation effect (*$STHC\_I_t$*). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets (*$SIZE_{it-2j}$*); traditional asset mix showed by outstanding loans (*$LOAN_{it-2j}$*); loan quality measured by loan loss reserves *(LLR_{it-2j}) and* loan loss provisions (*LLP_{it-2j}*), non-traditional asset mix measured by trading securities *($TRADE_{it-2j}$)*, capital adequacy captured by regulatory Tier 1 capital ratio (*$T1R_{it-2j}$*), short-term funding showed by deposits and short-term funding *($DSTF_{it-2j}$)*, profitability measured by earnings before provision and taxes (*$EBPT_{it-2j}$*), and macro-economic fundamentals captured by change of Gross Domestic Product (*ΔGDP_{tj}*), and change of unemployment rate (*$\Delta UNEMP_{tj}$*). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.5 Effect of stress tests on market-based transparency using alternative textual estimates

Panel A: Bid-ask spreads and alternative textual measures

Variables	(1) $BIDASK_{itj}$	(2) $BIDASK_{itj}$	(3) $BIDASK_{itj}$
$STHC\_I_t$	-0.0001	0.0001	-0.0010
	(0.0014)	(0.0014)	(0.0014)
$ST\_FACT\_1_i$	-0.0005		
	(0.0006)		
$STHC\_I_t$*$ST\_FACT\_1_i$	0.0015**		
	(0.0006)		
$ST\_FACT\_2_i$	-0.0006		
	(0.0005)		
$STHC\_I_t$*$ST\_FACT\_2_i$	0.0007		
	(0.0005)		
$LD\_FACT\_1_i$		-0.0008	
		(0.0005)	
$STHC\_I_t$*$LD\_FACT\_1_i$		0.0012**	
		(0.0005)	
$LD\_FACT\_2_i$		-0.0001	
		(0.0003)	
$STHC\_I_t$*$LD\_FACT\_2_i$		-0.0004	
		(0.0003)	
$TONE\_ALT_{itj}$			0.0402
			(0.0880)
$STHC\_I_t$*$TONE\_ALT_{itj}$			-0.2048***
			(0.0732)
$IPRICE_{it-2j}$	0.0005	0.0006	0.0004
	(0.0021)	(0.0021)	(0.0021)
$RVOL_{it-2j}$	0.1304**	0.1333**	0.1337**
	(0.0640)	(0.0652)	(0.0657)
$TOVER_{it-2j}$	-0.0059	-0.0087	-0.0116
	(0.0280)	(0.0288)	(0.0301)
$MVALLN_{it-2j}$	-0.0001	-0.0000	0.0001
	(0.0019)	(0.0019)	(0.0019)
Constant	0.0031	0.0026	0.0030
	(0.0180)	(0.0181)	(0.0187)
Observations	2,014	2,014	2,014
Number of banks	57	57	57
Adjusted R-squared	0.1136	0.1125	0.1099
Bank fixed effects	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes

Table IA.5 continued

Panel B: Analyst recommendation and alternative textual measures

Variables	(1) $RECNO_{itj}$	(2) $RECNO_{itj}$	(3) $RECNO_{itj}$
$STHC\_I_t$	0.1073	0.0253	0.7630
	(0.4878)	(0.5150)	(0.5314)
$ST\_FACT\_1_i$	0.3294		
	(0.2483)		
$STHC\_I_t$*$ST\_FACT\_1_i$	-0.7458***		
	(0.2251)		
$ST\_FACT\_2_i$	0.1783		
	(0.3379)		
$STHC\_I_t$*$ST\_FACT\_2_i$	-0.6009**		
	(0.2581)		
$LD\_FACT\_1_i$		0.1331	
		(0.2785)	
$STHC\_I_t$*$LD\_FACT\_1_i$		-0.7368***	
		(0.1898)	
$LD\_FACT\_2_i$		-0.0874	
		(0.2116)	
$STHC\_I_t$*$LD\_FACT\_2_i$		-0.0270	
		(0.1846)	
$TONE\_ALT_{itj}$			-3.1985
			(46.8871)
$STHC\_I_t$*$TONE\_ALT_{itj}$			129.9594***
			(32.8114)
$IPRICE_{it-2j}$	1.8913***	1.9379***	1.9937***
	(0.6283)	(0.6563)	(0.6596)
$RVOL_{it-2j}$	-59.0975**	-59.7221**	-59.6645**
	(24.3788)	(24.2852)	(24.4212)
$TOVER_{it-2j}$	9.5121	12.2549	12.8048
	(10.5581)	(10.8254)	(10.7502)
$MVALLN_{it-2j}$	2.5167***	2.4819***	2.4481***
	(0.7823)	(0.7815)	(0.7948)
Constant	-4.3100	-4.2810	-4.1064
	(8.0029)	(7.9408)	(8.1507)
Observations	1,931	1,931	1,931
Number of banks	54	54	54
Adjusted R-squared	0.2767	0.2728	0.2719
Bank fixed effects	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes

Table IA.5 continued

Panel C: Analyst recommendation consensus and alternative textual measures

Variables	(1) $RECCON_{itj}$	(2) $RECCON_{itj}$	(3) $RECCON_{itj}$
$STHC\_I_t$	0.0798	0.0803	0.1372*
	(0.0655)	(0.0669)	(0.0765)
$ST\_FACT\_1_i$	-0.0478		
	(0.0343)		
$STHC\_I_t$*$ST\_FACT\_1_i$	0.0044		
	(0.0258)		
$ST\_FACT\_2_i$	0.0171		
	(0.0321)		
$STHC\_I_t$*$ST\_FACT\_2_i$	-0.0386		
	(0.0245)		
$LD\_FACT\_1_i$		-0.0128	
		(0.0346)	
$STHC\_I_t$*$LD\_FACT\_1_i$		-0.0240	
		(0.0266)	
$LD\_FACT\_2_i$		-0.0178	
		(0.0199)	
$STHC\_I_t$*$LD\_FACT\_2_i$		0.0222	
		(0.0210)	
$TONE\_ALT_{itj}$			-6.9447
			(4.9288)
$STHC\_I_t$*$TONE\_ALT_{itj}$			10.9527**
			(4.5667)
$IPRICE_{it-2j}$	-0.3530**	-0.3558**	-0.3654**
	(0.1504)	(0.1483)	(0.1514)
$RVOL_{it-2j}$	2.7181	2.7846	2.5289
	(2.1443)	(2.0967)	(2.0512)
$TOVER_{it-2j}$	1.0214	1.0058	0.9815
	(1.3933)	(1.3873)	(1.3741)
$MVALLN_{it-2j}$	-0.0980	-0.0980	-0.0937
	(0.0962)	(0.0981)	(0.0974)
Constant	3.3630***	3.3670***	3.3331***
	(0.9614)	(0.9742)	(0.9733)
Observations	1,931	1,931	1,931
Number of banks	54	54	54
Adjusted R-squared	0.2134	0.2102	0.2119
Bank fixed effects	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes

This table reports the individual effect of stress test participation and disclosure tone on transparency and private information production using alternative textual estimates. We measure market-based bank transparency using bid-ask-spread (Panel A: $BIDASK_{itj}$), number of analyst recommendations (Panel B: $RECNO_{itj}$), analyst recommendation consensus (Panel C: $RECCON_{itj}$). We estimate the impact of stress test disclosure sentiment and disclosure tone using factor analysis measures from Table IA.1 ($ST\_FACT\_1_{itj}$, $ST\_FACT\_2_{itj}$, $LD\_FACT\_1_{itj}$, and $LD\_FACT\_2_{itj}$) and $TONE\_ALT_{itj}$, which are built on the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures, the word lists by Loughran and McDonald (2011), and the formula as in Henry and Leone (2016). We combine latter measures with a time-dummy that estimates the individual stress test participation effect ($STHC\_I_t$). We control for the following market microstructure characteristics, lagged by two quarters: Inverse share price ($IPRICE_{it-2j}$), standard deviation of continuously compounded share price returns ($RVOL_{it-2j}$), share turnover ($TOVER_{it-2j}$), and market value ($MVALLN_{it-2j}$).Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.6 Effect of stress test disclosure sentiment on (future change of) disclosure tone of stress tested banks that participated three or more times

Variables	(1) $\Delta TONE_{itj}$	(2) $\Delta TONE_{it+2j}$	(3) LD_AGGNUM_{itj}	(4) LD_AGGNUM_{it+2j}
$STHC\_I_t$	-0.1777**	-0.0454	0.0010	0.0021*
	(0.0670)	(0.0484)	(0.0006)	(0.0012)
$GHP\_ST\_ALL_i$	-1.7183**	0.0502	0.3947***	0.1109***
	(0.6866)	(0.5630)	(0.0225)	(0.0310)
$STHC\_I_t$*$GHP\_ST\_ALL_i$	2.3243**	1.2200	-0.0192*	-0.0372**
	(0.9393)	(0.7993)	(0.0105)	(0.0166)
$SIZE_{it-2j}$	-0.0213	-0.0568**	-0.0000	-0.0003
	(0.0169)	(0.0220)	(0.0007)	(0.0009)
$LOAN_{it-2j}$	0.0896	0.0204	-0.0014	-0.0013
	(0.0727)	(0.0783)	(0.0014)	(0.0022)
LLR_{it-2j}	0.0310	0.2905	0.0216***	0.0280**
	(0.1762)	(0.2402)	(0.0040)	(0.0114)
LLP_{it-2j}	0.3818	0.6642	0.0507***	0.0533
	(0.8098)	(0.5170)	(0.0165)	(0.0361)
$TRADE_{it-2j}$	-0.0042	0.3424**	-0.0012	-0.0065
	(0.0876)	(0.1319)	(0.0031)	(0.0039)
$T1R_{it-2j}$	0.1619	-0.0318	0.0002	-0.0015
	(0.1858)	(0.1153)	(0.0032)	(0.0062)
$DSTF_{it-2j}$	-0.0606	-0.1590**	-0.0017	0.0002
	(0.0547)	(0.0700)	(0.0012)	(0.0020)
$EBPT_{it-2j}$	0.3757	0.1147	-0.0051	0.0630
	(0.8585)	(1.2666)	(0.0292)	(0.0445)
ΔGDP_{tj}	0.1911	0.3160	-0.0025	-0.0130
	(0.3387)	(0.2660)	(0.0042)	(0.0095)
$\Delta UNEMP_{tj}$	-0.3092***	-0.3098***	0.0037*	0.0113***
	(0.0935)	(0.0894)	(0.0019)	(0.0023)
Constant	0.3450*	0.6498**	-0.0015	0.0117
	(0.1927)	(0.2627)	(0.0081)	(0.0105)
Observations	1,382	1,307	1,430	1,326
Number of banks	56	53	56	53
Adjusted R-squared	0.1310	0.1295	0.7196	0.3304
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table analyses the individual effect of stress test participation and stress test disclosure sentiment on disclosure tone of banks that participated three or more times in stress tests. We measure (future change of) disclosure tone using the word count of Loughran and McDonald's (2011) word lists and Henry and Leone's (2016) formulas ($\Delta TONE_{ij}$ and $LD\_AGGNUM_{ij;\ t,\ t+2)}$. We estimate the impact of stress test disclosure sentiment using the accumulated word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_i$), in combination with a time-dummy that estimates the individual stress test participation effect ($STHC\_I_t$). We control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves (LLR_{it-2j}) *and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities $(TRADE_{it-2j})$, capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding $(DSTF_{it-2j})$, profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.7 Effect of stress tests on market-based transparency of low-ranked stress tested banks

Variables	(1) $BIDASK_{itj}$	(2) $RECNO_{itj}$	(3) $RECCON_{itj}$
$STHC\_I_t$	-0.0008	0.4124	0.1255
	(0.0013)	(0.6773)	(0.0970)
$TONE_{itj}$	-0.0016	0.4005	-0.1066
	(0.0012)	(1.0799)	(0.0824)
$STHC\_I_t$*$TONE_{itj}$	-0.0030*	2.0003**	0.2721***
	(0.0015)	(0.7846)	(0.0857)
$IPRICE_{it-2j}$	0.0022	1.9244**	-0.4060**
	(0.0014)	(0.7414)	(0.1607)
$RVOL_{it-2j}$	0.1372	-68.2901**	-0.2521
	(0.0846)	(30.6746)	(1.9288)
$TOVER_{it-2j}$	-0.0052	9.7663	0.5368
	(0.0321)	(11.2304)	(1.3335)
$MVALLN_{it-2j}$	0.0031**	1.5187	-0.1823*
	(0.0014)	(1.1334)	(0.0965)
Constant	-0.0284*	7.4458	4.0830***
	(0.0148)	(11.0959)	(0.9190)
Observations	1,207	1,184	1,184
Number of banks	34	34	34
Adjusted R-squared	0.1972	0.2306	0.2589
Bank fixed effects	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes

This table reports the individual effect of stress test participation and disclosure tone on transparency and private information production of low-ranked stress tested banks. We rank stress tested banks according to their capital adequacy performance based on stress test disclosures and run the regression on the banks in the lower half of our ranking. We measure market-based bank transparency using bid-ask-spread ($BIDASK_{itj}$), number of analyst recommendations ($RECNO_{itj}$), analyst recommendation consensus ($RECCON_{itj}$). We estimate the impact of disclosure tone using $TONE_{itj}$, created based on the word count of 'negative' and 'positive' word lists (Loughran and McDonald, 2011) and the formula as in Henry and Leone (2016) in combination with a time-dummy that estimates the individual stress test participation effect ($STHC\_I_t$). We control for the following market microstructure characteristics, lagged by two quarters: Inverse share price ($IPRICE_{it-2j}$), standard deviation of continuously compounded share price returns ($RVOL_{it-2j}$), share turnover ($TOVER_{it-2j}$), and market value ($MVALLN_{it-2j}$). Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.8 Sensitivity tests of textual components using sample adjustments

Panel A: Stress test disclosure sentiment, disclosure tone and quantitative disclosure behaviour

Variables	(1) $GHP\_ST\_ALL_{itj}$	(2) $TONE_{itj}$	(3) $TRANX_{itj}$	(4) $GHP\_ST\_ALL_{itj}$	(5) $TONE_{itj}$	(6) $TRANX_{itj}$	(7) $GHP\_ST\_ALL_{itj}$	(8) $TONE_{itj}$	(9) $TRANX_{itj}$
$P\_ST\_201011_t$	0.0201***	-0.2989***	0.0541**	0.0208***	-0.3236***	0.0349*	0.0199***	-0.2893***	0.0599**
	(0.0033)	(0.0690)	(0.0242)	(0.0037)	(0.0746)	(0.0178)	(0.0034)	(0.0780)	(0.0270)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	0.0022	-0.0118	0.0001	0.0030*	-0.0170	0.0074	0.0021	-0.0123	-0.0021
	(0.0015)	(0.0207)	(0.0085)	(0.0015)	(0.0226)	(0.0105)	(0.0015)	(0.0209)	(0.0087)
$P\_ST\_201415_t$	0.0301***	-0.3205***	0.0789***	0.0329***	-0.3161***	0.0608**	0.0297***	-0.3200***	0.0899***
	(0.0031)	(0.0730)	(0.0269)	(0.0036)	(0.0865)	(0.0244)	(0.0033)	(0.0825)	(0.0287)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.0029**	-0.0290	0.0152*	-0.0043***	-0.0564**	0.0023	-0.0030***	-0.0289	0.0144
	(0.0011)	(0.0230)	(0.0088)	(0.0013)	(0.0266)	(0.0095)	(0.0011)	(0.0225)	(0.0087)
$P\_ST\_2016_t$	0.0309***	-0.2792***	0.0918***	0.0331***	-0.2927***	0.0726***	0.0302***	-0.2732***	0.0998***
	(0.0034)	(0.0748)	(0.0270)	(0.0038)	(0.0874)	(0.0259)	(0.0036)	(0.0839)	(0.0295)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.0032**	-0.0305	0.0384***	-0.0048***	-0.0581**	0.0338**	-0.0037**	-0.0343	0.0354***
	(0.0015)	(0.0213)	(0.0122)	(0.0016)	(0.0246)	(0.0149)	(0.0015)	(0.0207)	(0.0120)
$SIZE_{it-2j}$	-0.0054**	0.0912**	0.0366**	-0.0088***	0.1034**	0.0290	-0.0051**	0.0900**	0.0248
	(0.0021)	(0.0372)	(0.0163)	(0.0026)	(0.0484)	(0.0204)	(0.0024)	(0.0401)	(0.0162)
$LOAN_{it-2j}$	0.0024	0.1971**	-0.0382	-0.0009	0.1902	-0.0426	-0.0006	0.1654*	-0.0315
	(0.0056)	(0.0886)	(0.0361)	(0.0071)	(0.1212)	(0.0502)	(0.0063)	(0.0938)	(0.0344)
LLR_{it-2j}	0.0357*	-0.7172**	-0.0281	0.0422**	-0.7623**	0.0924	0.0351*	-0.6761**	-0.0586
	(0.0203)	(0.3085)	(0.1958)	(0.0210)	(0.3267)	(0.1852)	(0.0204)	(0.3128)	(0.1934)
LLP_{it-2j}	0.0211	-1.1669	-0.1783	0.0257	-1.3856	-0.5609	0.0336	-1.1684	-0.3091
	(0.0409)	(1.0069)	(0.4229)	(0.0465)	(1.1170)	(0.4762)	(0.0407)	(1.0122)	(0.4328)
$TRADE_{it-2j}$	-0.0086	-0.1262	0.0103	0.0003	-0.0721	0.0468	-0.0090	-0.0804	-0.0330
	(0.0068)	(0.1744)	(0.0665)	(0.0118)	(0.3154)	(0.0935)	(0.0067)	(0.1697)	(0.0633)
$T1R_{it-2j}$	0.0050	0.5779**	0.2291***	-0.0012	0.5619**	0.1132	0.0037	0.5503**	0.2182***
	(0.0097)	(0.2197)	(0.0799)	(0.0134)	(0.2461)	(0.0817)	(0.0097)	(0.2204)	(0.0819)
$DSTF_{it-2j}$	-0.0039	0.0393	-0.0305	-0.0015	-0.0023	-0.0259	-0.0029	0.0461	-0.0339
	(0.0038)	(0.0687)	(0.0289)	(0.0051)	(0.1033)	(0.0407)	(0.0039)	(0.0690)	(0.0291)
$EBPT_{it-2j}$	-0.1451	1.6117	0.4186	-0.2838***	1.6184	0.3632	-0.1236	2.2613	0.2364
	(0.0899)	(1.3396)	(0.5773)	(0.1056)	(1.5743)	(0.8051)	(0.0880)	(1.3883)	(0.5651)
ΔGDP_{tj}	0.0406***	-0.1875	-0.1103	0.0428***	-0.0910	-0.2207*	0.0413***	-0.1931	-0.1231
	(0.0109)	(0.2283)	(0.1089)	(0.0143)	(0.2510)	(0.1271)	(0.0109)	(0.2259)	(0.1101)
$\Delta UNEMP_{tj}$	0.0121**	-0.3147***	-0.0056	0.0116**	-0.3455**	0.0068	0.0096*	-0.3482***	0.0006
	(0.0049)	(0.1163)	(0.0385)	(0.0052)	(0.1402)	(0.0478)	(0.0052)	(0.1184)	(0.0398)
Constant	0.0946***	-1.2349***	0.0980	0.1342***	-1.3119**	0.1993	0.0944***	-1.2302***	0.2339
	(0.0248)	(0.4211)	(0.1894)	(0.0311)	(0.5662)	(0.2418)	(0.0285)	(0.4508)	(0.1906)
Observations	1,837	1,836	1,911	1,334	1,333	1,407	1,847	1,846	1,908
Number of Bank	79	79	84	62	62	67	79	79	83
Adjusted R-squared	0.3430	0.1440	0.5813	0.3757	0.1546	0.5403	0.3214	0.1366	0.5836
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.8 continued

Panel B: Effect of stress test disclosure sentiment on (future change of) disclosure tone

Variables	(1) $\Delta TONE_{itj}$	(2) LD_AGGNUM_{itj}	(3) $\Delta TONE_{itj}$	(4) LD_AGGNUM_{itj}	(5) $\Delta TONE_{itj}$	(6) LD_AGGNUM_{itj}
$STHC\_I_t$	-0.1071**	0.0012**	-0.1197*	0.0012	-0.1122**	0.0014**
	(0.0497)	(0.0006)	(0.0653)	(0.0007)	(0.0490)	(0.0006)
$GHP\_ST\_ALL_i$	-0.7960	0.4216***	-0.3643	0.4329***	-1.0902**	0.4099***
	(0.6176)	(0.0178)	(0.8205)	(0.0176)	(0.5166)	(0.0192)
$STHC\_I_t$*$GHP\_ST\_ALL_i$	1.5365**	-0.0213**	1.5320	-0.0209*	1.6464**	-0.0249**
	(0.7508)	(0.0100)	(1.0093)	(0.0124)	(0.7289)	(0.0103)
$SIZE_{it-2j}$	-0.0175	0.0002	-0.0228	0.0007	-0.0069	-0.0003
	(0.0158)	(0.0005)	(0.0237)	(0.0007)	(0.0175)	(0.0006)
$LOAN_{it-2j}$	0.0833	-0.0021*	0.0840	-0.0022	0.0471	-0.0013
	(0.0635)	(0.0012)	(0.0873)	(0.0017)	(0.0657)	(0.0012)
LLR_{it-2j}	0.1372	0.0175***	0.0992	0.0187***	0.1682	0.0174***
	(0.1702)	(0.0042)	(0.1767)	(0.0046)	(0.1708)	(0.0040)
LLP_{it-2j}	0.0675	0.0525***	0.2922	0.0413***	0.2465	0.0471***
	(0.7156)	(0.0144)	(0.8202)	(0.0148)	(0.7042)	(0.0143)
$TRADE_{it-2j}$	0.0999	-0.0004	0.1502	0.0037	0.0685	-0.0017
	(0.0805)	(0.0030)	(0.1394)	(0.0037)	(0.0825)	(0.0029)
$T1R_{it-2j}$	0.1948	-0.0007	0.2739**	-0.0025	0.2065	0.0002
	(0.1273)	(0.0024)	(0.1365)	(0.0034)	(0.1297)	(0.0024)
$DSTF_{it-2j}$	-0.0310	-0.0032***	-0.0249	-0.0029**	-0.0222	-0.0032***
	(0.0469)	(0.0011)	(0.0590)	(0.0014)	(0.0477)	(0.0011)
$EBPT_{it-2j}$	1.0411	0.0055	1.4145	0.0064	1.0263	-0.0108
	(0.7886)	(0.0213)	(1.0320)	(0.0227)	(0.7576)	(0.0251)
ΔGDP_{tj}	0.0556	-0.0033	0.0634	-0.0019	-0.0074	-0.0042
	(0.2801)	(0.0033)	(0.2901)	(0.0042)	(0.2720)	(0.0035)
$\Delta UNEMP_{tj}$	-0.2971***	0.0012	-0.3067***	0.0010	-0.3184***	0.0021
	(0.0747)	(0.0015)	(0.0867)	(0.0019)	(0.0768)	(0.0016)
Constant	0.1972	-0.0036	0.2161	-0.0105	0.1150	0.0014
	(0.1807)	(0.0061)	(0.2676)	(0.0076)	(0.2054)	(0.0076)
Observations	1,766	1,837	1,273	1,334	1,780	1,847
Number of Bank	79	79	62	62	79	79
Adjusted R-squared	0.1076	0.7761	0.1271	0.7750	0.0994	0.7544
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.8 continued

Panel C: Effect of stress tests on market-based transparency

Variables	(1) BIDASK	(2) RECNO	(3) RECCON	(4) BIDASK	(5) RECNO	(6) RECCON	(7) BIDASK	(8) RECNO	(9) RECCON
$STHC\_I_t$	-0.0007	0.5324	0.1467**	-0.0007	0.6090	0.1368	-0.0006	0.4879	0.1430*
	(0.0015)	(0.5597)	(0.0716)	(0.0012)	(0.6763)	(0.0852)	(0.0014)	(0.5586)	(0.0724)
$TONE_{itj}$	0.0001	0.2683	-0.1507*	0.0003	0.1748	-0.1062	-0.0009	0.3168	-0.1035
	(0.0014)	(0.9337)	(0.0857)	(0.0015)	(1.0773)	(0.0906)	(0.0010)	(0.9198)	(0.0791)
$STHC\_I_t$*$TONE_{itj}$	-0.0028**	1.4724*	0.2433***	-0.0028*	1.8229**	0.2224**	-0.0030**	1.4593*	0.2252***
	(0.0014)	(0.7561)	(0.0830)	(0.0016)	(0.7701)	(0.0854)	(0.0013)	(0.7437)	(0.0834)
$IPRICE_{it-2j}$	0.0003	2.0549***	-0.3484**	-0.0003	2.4026***	-0.3189**	0.0023	1.9082***	-0.4145***
	(0.0022)	(0.6358)	(0.1482)	(0.0021)	(0.6654)	(0.1397)	(0.0015)	(0.6965)	(0.1535)
$RVOL_{it-2j}$	0.1469**	-62.6478**	2.8663	0.1286*	-59.6465**	3.2542	0.1172*	-65.2904**	0.8267
	(0.0688)	(26.3035)	(2.2031)	(0.0728)	(27.3379)	(2.2049)	(0.0689)	(25.3458)	(1.6359)
$TOVER_{it-2j}$	-0.0135	13.8992	0.7267	-0.0114	10.0071	0.2346	0.0033	11.9907	0.7750
	(0.0304)	(10.6554)	(1.4115)	(0.0305)	(10.4595)	(1.3878)	(0.0297)	(11.1209)	(1.3661)
$MVALLN_{it-2j}$	0.0002	2.4013***	-0.0753	-0.0001	1.8442*	-0.0286	0.0022*	2.2174**	-0.1926**
	(0.0019)	(0.8205)	(0.0975)	(0.0022)	(0.9144)	(0.1001)	(0.0012)	(0.9396)	(0.0755)
Constant	0.0019	-3.7667	3.1315***	0.0019	4.2034	2.6392***	-0.0174	-1.6970	4.3184***
	(0.0191)	(8.3895)	(0.9700)	(0.0210)	(8.9348)	(0.9584)	(0.0125)	(9.5920)	(0.7541)
Observations	1,900	1,817	1,817	1,362	1,340	1,340	1,992	1,912	1,912
Number of Bank	54	51	51	40	38	38	56	53	53
Adjusted R-squared	0.1154	0.2714	0.2125	0.1252	0.2760	0.2580	0.1134	0.2392	0.2283
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports sensitivity tests of textual components using adjusted samples. Panel A presents stress test disclosure sentiment, disclosure tone and quantitative disclosure behaviour excluding banks from the UK (Models 1, 2, 3), of non-EMU countries (Models 4, 5, 6) and inactive banks (Models 7, 8, 9). Panel B illustrates the effect of stress test disclosure sentiment on (future change of) disclosure tone excluding banks from the UK (Models 1, 2), of non-EMU countries (Models 3, 4) and inactive banks (Models 5, 6). Panel C shows the effect of stress tests on market-based transparency excluding banks from the UK (Models 1, 2, 3), of non-EMU countries (Models 4, 5, 6) and inactive banks (Models 7, 8, 9). We measure stress test disclosure sentiment using the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_{itj}$). We measure disclosure tone using the word count of Loughran and McDonald's (2011) word lists and Henry and Leone's (2016) formulas ($TONE_{itj}$). We measure quantitative disclosure behaviour using a transparency index ($TRANX_{itj}$) following Nier and Baumann (2006). We measure market-based bank transparency using bid-ask-spread ($BIDASK_{itj}$), number of analyst recommendations ($RECNO_{itj}$), analyst recommendation consensus ($RECCON_{itj}$). The following dummy variables measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$), and individual stress test participation ($STHC\_I_t$). In Panels A and B, we control for bank characteristics, lagged by two quarters, and country-specific fundamentals using the following variables: Bank size captured by natural logarithm of total assets ($SIZE_{it-2j}$); traditional asset mix showed by outstanding loans ($LOAN_{it-2j}$); loan quality measured by loan loss reserves *(LLR_{it-2j}) and* loan loss provisions (LLP_{it-2j}), non-traditional asset mix measured by trading securities *($TRADE_{it-2j}$)*, capital adequacy captured by regulatory Tier 1 capital ratio ($T1R_{it-2j}$), short-term funding showed by deposits and short-term funding *($DSTF_{it-2j}$)*, profitability measured by earnings before provision and taxes ($EBPT_{it-2j}$), and macro-economic fundamentals captured by change of Gross Domestic Product (ΔGDP_{tj}), and change of unemployment rate ($\Delta UNEMP_{tj}$). In Panel C, we control for the following market microstructure characteristics, lagged by two quarters: Inverse share price ($IPRICE_{it-2j}$), standard deviation of continuously compounded share price returns ($RVOL_{it-2j}$), share turnover ($TOVER_{it-2j}$), and market value ($MVALLN_{it-2j}$).Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.

Table IA.9 Sensitivity tests of textual components using market-based measures

Panel A: Stress test disclosure sentiment

Variables	(1) $GHP\_ST\_ALL_{itj}$	(2) $GHP\_ST\_ID_{itj}$	(3) $GHP\_ST\_PERF_{itj}$	(4) $GHP\_ST\_PRO_{itj}$	(5) $GHP\_ST\_REGIN_{itj}$	(6) $GHP\_ST\_REGREQ_{itj}$	(7) $GHP\_ST\_RM_{itj}$
$P\_ST\_201011_t$	0.0103***	0.0000	-0.0000	0.0008**	0.0005**	0.0038***	0.0053***
	(0.0021)	(0.0001)	(0.0003)	(0.0003)	(0.0002)	(0.0007)	(0.0014)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	0.0033***	0.0001**	0.0003**	0.0002	0.0004***	-0.0002	0.0025***
	(0.0010)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0003)	(0.0007)
$P\_ST\_201415_t$	0.0210***	0.0003*	0.0010***	0.0022***	0.0009***	0.0058***	0.0109***
	(0.0030)	(0.0002)	(0.0003)	(0.0004)	(0.0002)	(0.0008)	(0.0019)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.0032	-0.0002**	-0.0004	-0.0003	0.0000	-0.0007	-0.0018
	(0.0020)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0013)
$P\_ST\_2016_t$	0.0226***	0.0003*	0.0007**	0.0021***	0.0010***	0.0066***	0.0119***
	(0.0029)	(0.0001)	(0.0003)	(0.0004)	(0.0002)	(0.0009)	(0.0018)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.0045**	-0.0002	-0.0002	-0.0004	-0.0002	-0.0011*	-0.0027*
	(0.0021)	(0.0001)	(0.0003)	(0.0002)	(0.0002)	(0.0005)	(0.0014)
$IPRICE_{it-2j}$	0.0006	0.0001	0.0003	-0.0001	0.0002	-0.0012***	0.0014
	(0.0016)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0009)
$RVOL_{it-2j}$	0.0019	0.0004	0.0065	-0.0011	0.0058**	-0.0210***	0.0113
	(0.0270)	(0.0011)	(0.0042)	(0.0043)	(0.0022)	(0.0064)	(0.0200)
$TOVER_{it-2j}$	0.0306	0.0022	0.0054*	0.0028	0.0003	0.0018	0.0184
	(0.0230)	(0.0019)	(0.0031)	(0.0040)	(0.0020)	(0.0074)	(0.0136)
$MVALLN_{it-2j}$	-0.0011	-0.0000	-0.0002	-0.0002*	-0.0001**	-0.0003*	-0.0002
	(0.0007)	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0006)
Constant	0.0481***	0.0009**	0.0052***	0.0044***	0.0030***	0.0104***	0.0239***
	(0.0071)	(0.0004)	(0.0011)	(0.0010)	(0.0005)	(0.0020)	(0.0056)
Observations	2,124	2,124	2,124	2,124	2,124	2,124	2,124
Number of banks	59	59	59	59	59	59	59
Adjusted R-squared	0.3794	0.3334	0.1651	0.4138	0.2052	0.2465	0.2535
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.9 continued

Panel B: Textual disclosure tone and quantitative disclosure behaviour

Variables	(1) $TONE_{itj}$	(2) $\Delta TONE_{itj}$	(3) LD_AGGNUM_{itj}	(4) LD_NEG_{itj}	(5) $TRANX_{itj}$
$P\_ST\_201011_t$	-0.0406	-0.0324	0.0037***	0.0006	0.0400**
	(0.0474)	(0.0403)	(0.0013)	(0.0008)	(0.0169)
$P\_ST\_201011_t$*$FT\_PART\_201011_i$	-0.0452**	-0.0064	0.0016**	0.0011***	0.0104
	(0.0208)	(0.0283)	(0.0006)	(0.0003)	(0.0104)
$P\_ST\_201415_t$	-0.1071**	-0.0214	0.0081***	0.0034***	0.0772***
	(0.0452)	(0.0350)	(0.0016)	(0.0008)	(0.0185)
$P\_ST\_201415_t$*$FT\_PART\_201011_i$	-0.0353	-0.0274	-0.0013	-0.0002	0.0128
	(0.0305)	(0.0200)	(0.0010)	(0.0006)	(0.0108)
$P\_ST\_2016_t$	-0.0547	0.0492*	0.0074***	0.0024***	0.0951***
	(0.0468)	(0.0274)	(0.0015)	(0.0008)	(0.0208)
$P\_ST\_2016_t$* $FT\_PART\_201011_i$	-0.0293	0.0081	-0.0016	-0.0003	0.0269*
	(0.0302)	(0.0227)	(0.0010)	(0.0006)	(0.0145)
$IPRICE_{it-2j}$	-0.0144	0.0002	0.0017**	0.0014***	0.0120
	(0.0236)	(0.0157)	(0.0008)	(0.0005)	(0.0103)
$RVOL_{it-2j}$	-1.1755***	-0.1825	0.0270**	0.0306***	0.1777
	(0.4172)	(0.2713)	(0.0117)	(0.0076)	(0.1930)
$TOVER_{it-2j}$	0.5464	0.1275	0.0084	0.0060	-0.1106
	(0.3382)	(0.2207)	(0.0096)	(0.0048)	(0.2220)
$MVALLN_{it-2j}$	0.0351**	-0.0002	-0.0007*	-0.0006*	0.0181***
	(0.0172)	(0.0086)	(0.0004)	(0.0003)	(0.0058)
Constant	-0.4894***	0.0144	0.0190***	0.0145***	0.3329***
	(0.1708)	(0.0841)	(0.0036)	(0.0033)	(0.0580)
Observations	2,123	1,972	2,124	2,124	2,133
Number of banks	59	59	59	59	59
Adjusted R-squared	0.1580	0.1150	0.3793	0.2678	0.5924
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes	Yes

Panel C: Effect of stress test disclosure sentiment on (future change of) disclosure tone

Variables	(1) $\Delta TONE_{itj}$	(2) $\Delta TONE_{it+2j}$	(3) LD_AGGNUM_{itj}	(4) LD_AGGNUM_{it+2j}
$STHC\_I_t$	-0.0822*	-0.0355	0.0015**	0.0032***
	(0.0431)	(0.0403)	(0.0006)	(0.0011)
$GHP\_ST\_ALL_i$	-1.2012**	0.0338	0.4133***	0.1127***
	(0.4979)	(0.3754)	(0.0163)	(0.0313)
$STHC\_I_t$*$GHP\_ST\_ALL_i$	1.4477**	1.2287*	-0.0261**	-0.0453**
	(0.6350)	(0.6798)	(0.0113)	(0.0173)
$IPRICE_{it-2j}$	0.0054	-0.0049	0.0014***	0.0020**
	(0.0153)	(0.0164)	(0.0003)	(0.0009)
$RVOL_{it-2j}$	-0.1636	0.5855**	0.0262***	0.0243***
	(0.2629)	(0.2495)	(0.0074)	(0.0083)
$TOVER_{it-2j}$	0.2438	0.1009	-0.0046	0.0135
	(0.2116)	(0.2057)	(0.0047)	(0.0084)
$MVALLN_{it-2j}$	-0.0008	0.0078	-0.0002	-0.0005*
	(0.0088)	(0.0071)	(0.0002)	(0.0003)
Constant	0.0724	-0.0706	-0.0009	0.0180***
	(0.0911)	(0.0754)	(0.0022)	(0.0029)
Observations	1,972	1,910	2,124	1,963
Number of banks	59	58	59	58
Adjusted R-squared	0.1190	0.1212	0.7786	0.3615
Bank fixed effects	Yes	Yes	Yes	Yes
Quarterly fixed effects	Yes	Yes	Yes	Yes

This table reports sensitivity tests of textual components using market-based control estimates. Panel A presents stress test disclosure sentiment. Panel B illustrates disclosure tone and quantitative disclosure behaviour. Panel C shows the effect of stress test disclosure sentiment on (future change of) disclosure tone. We measure stress test disclosure sentiment using the word count of our customized stress test, regulation and risk management word lists based on stress test disclosures ($GHP\_ST\_ALL_{itj}$, $GHP\_ST\_ID_{itj}$, $GHP\_ST\_PERF_{itj}$, $GHP\_ST\_PRO_{itj}$, $GHP\_ST\_REGIN_{itj}$, $GHP\_ST\_REGREQ_{itj}$, and $GHP\_ST\_RM_{itj}$). We measure disclosure tone using the word count of Loughran and McDonald's (2011) word lists and Henry and Leone's (2016) formulas ($TONE_{itj}$, $\Delta TONE_{itj}$, LD_AGGNUM_{itj}, and LD_NEG_{itj}). We measure quantitative disclosure behaviour using a transparency index ($TRANX_{itj}$) following Nier and Baumann (2006). The following dummy variables measure first-time and regular participation ($FT\_PART\_201011_i$) and the stress test participation effect in 2010 and 2011 ($P\_ST\_201011_t$), 2014 and 2015 ($P\_ST\_201415_t$), and 2016 ($P\_ST\_2016_t$), and individual stress test participation ($STHC\_I_t$). We control for the following market microstructure characteristics, lagged by two quarters: Inverse share price ($IPRICE_{it-2j}$), standard deviation of continuously compounded share price returns ($RVOL_{it-2j}$), share turnover ($TOVER_{it-2j}$), and market value ($MVALLN_{it-2j}$).Standard errors (parentheses) are clustered at bank level. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. The description of the variables and the relevant data sources are provided in Appendix A.