Ethical bank disclosures and liquidity creation

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ABSTRACT

Ethics in finance and in banks have attracted increasing attention after the global financial crisis of 2007–2009. Although engagement in more ethical activities for banks has been a legitimate social expectation, the impact of it on the financial performance appears to be unclear. We examine whether ethics-related disclosures can help banks create more liquidity by conducting textual analysis of hand-collected bank annual reports and unearth interesting findings. First, we find that the probability of including a code of ethics in the annual report increases with bank risk (i.e. loan loss reserves and risk-weighted assets). Second, our results indicate that liquidity creation is positively associated with the relative frequency of ethics-related terms in the annual reports of banks that publish a code of ethics. Our findings suggest that ethical bank disclosures can mitigate risk concerns and attract more business that allows banks to create more liquidity.

1. Introduction

Ethics in finance and in banks have been long neglected before the financial crisis of 2007–2009 and the numerous failures in the banking industry during the crisis increased the concerns on bank ethics (San-Jose et al., 2011). The crisis is largely cited as a crisis of business ethics that was gradually built up during the previous three decades when the banking industry was transformed morally, financially, and institutionally (Santoro and Strauss, 2013). The responsibilities and ethics of banks are toward not only their clients but also the society as a whole since the effects of unethical bank behaviour on society could be deep and long lasting due to intensive financialization (Herzog, 2019).

Against such a background, banks have been increasingly engaging in more corporate social responsibility (CSR) activities and reporting codes of ethics, acknowledging their obligations to society (Jizi et al., 2014). However, there appear to be concerns about the confrontation between the reported CSR policy and the reality, as the powerful CSR guidelines and ethical principles did not help in assessing and preventing excess risk-taking in banks (Fassin and Gosselin, 2011). For instance, Fortis was the leading financial group in the Benelux and was well-reputed for its commitment to ethical behaviour and engaging in CSR activities, but finally collapsed during the financial crisis. The bankruptcy of Fortis raised the question: to what extent have banks really adopt the ethical principles they disclose and is their engagement in ethical activities altruistic or strategic?

Moreover, before taking actions to the full commitments to their ethical principles and CSR guidelines, banks need to understand the benefit of such involvements. However, how much the focus on CSR and ethics could affect banks' financial performance remains unclear as the empirical evidence tends to be limited and inconclusive (Paulet et al., 2015). Theoretical and empirical literature on the

possible relationship between banks' CSR and financial performance reports different findings, showing that the association could be positive, negative or mixed (Soana, 2011). Surprisingly, although a number of studies offered evidence on the impacts of CSR practices or performance on banks' financial outcomes, such as profitability and risk (e.g. Wu and Shen, 2013), the literature has neglected the ethical implications associated with bank liquidity creation. Aiming to fill this gap in the literature, we investigate the relationship between ethical bank disclosures and liquidity creation.

Our study makes an important contribution to our understanding of ethical implications in banks. Banks are a unique type of firms and one of their key functions in the economy is to create liquidity for depositors and borrowers (Bryant, 1980; Diamond and Dybvig, 1983). On the liability side of the balance sheet, banks create liquidity by allowing depositors to make instant withdrawals and payments, while on the asset side of the balance sheet, banks create liquidity by underwriting different types of loans which are mostly funded with liquid deposits. However, banks are known for completing debit payments instantly, while delaying credit transfers (e.g. Koslowski, 2011), or "hiding" charges (e.g. Armstrong and Vickers, 2012). At the same time, creating loans is inherently associated with risk and banks have been observed to have moral hazard incentives in the past, transferring the excess risk-taking to their creditors such as depositors. Hence, there are solid theoretical indications that liquidity creation is associated with bank ethics and social performance, which however tends to be largely unexplored in the literature, except for a few studies investigating the role of governance (Díaz and Huang, 2017) and fostering a trust environment (Bertrand et al., 2021) on bank liquidity creation. To the best of our knowledge, our study makes the first attempt to explore the direct impact of ethical bank disclosures on liquidity creation.

One of the reasons for the lack of research on this relationship is probably the difficulty associated with measuring both bank ethics and liquidity creation. We partly overcome this issue with our empirical approach. First, following the work by Loughran et al. (2009), we measure bank ethics using textual analysis based on thousands of bank annual reports that we manually collected in PDF form. Bank ethics is proxied as the intensity of ethics-related terms in bank annual reports by calculating the relative frequency of a certain group of words.[1] Second, we employ the Berger and Bouwman (2009) methodology to construct four liquidity creation measures as our dependent variables. Our final sample contains a diverse group of 531 banks from 79 countries over the period of 2005–2018. We find that liquidity creation is positively associated with ethics-related disclosures for banks that report a code of ethics which indicates their strategic preferences. More specifically, our results suggest that banks may increase the use of ethics-related terms in their annual reports to reduce the uncertainty associated with their operations and allow them to create more liquidity by attracting more depositors as well as loan customers.

Our findings also have important policy implications. Regulators must supervise closely banks that create a lot of liquidity because using liquid liabilities to fund illiquid assets increases banks' vulnerability to runs (Diamond and Dybvig, 1983; Leiva and Mendizábal, 2019). Recent evidence shows that high levels of liquidity creation can predict financial crises (Berger and Bouwman, 2017; Chatterjee, 2018) and contribute to systemic risk (Zhang et al., 2021). A better understanding of the influential factors of bank liquidity creation would assist policymakers to nurture economic growth powered by a stable banking system.

The remainder of the paper is structured as follows: Section 2 discusses the theoretical framework of the relationship we investigate; Section 3 describes our main variables and the empirical methodology; Section 4 discusses the data, sample, and descriptive statistics; Section 5 presents the empirical results; Section 6 outlines the robustness tests; and Section 7 concludes and discusses the policy implications of our findings.

2. Theoretical framework and literature review

There are two main strands of literature on the relationship between firms' social and financial performance, from either altruistic or strategic preferences (e.g. Baron, 2001). The altruistic preferences strand suggests that firms might honestly care about social and environmental welfare and want to be involved more in ethical activities. However, these firms need to invest large sums of resources to accomplish their social performance goals, and this may have a negative impact on their financial performance through occurring inefficient costs. On the other hand, firms might make well-estimated investments in their social activities, expecting to yield a high return due to their strategic preferences. Firms that strategically use their social performance should have enhanced financial performance by attracting more customers.

Based on the aforementioned preferences, we argue that there are also two possible relationships between ethical bank disclosures and liquidity creation.

2.1. The negative relationship between ethical bank disclosures and liquidity creation

The literature suggests that when firms have altruistic preferences, their financial performance will deteriorate. Baron (2001) argues that firms with altruistic preferences will enhance their social performance, genuinely doing good for the society and the environment. This behaviour can take several forms, such as engaging in public politics to influence policymakers to take decisions in favour of the public good or voluntarily redistributing shareholder wealth for charity. However, such engagements might not be efficient for the firms. Rather, altruistically engaging in more ethical activities might not be always consistent with the primary objective of the firm that is maximising the shareholders' wealth. Lantos (2002) argues that altruistic preferences are immoral for

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[1] It should be noted that when banks use more ethics-related terms in their annual reports, they do not "give their word" in a contractual sense. It is rather assumed that using such terms more often creates an implicit assurance and expectation that banks have high standards of ethics, values, and conduct of business (Loughran et al., 2009).

public corporations in the context of any ethical perspective, such as utilitarianism, justice, right or care, because the altruistic preferences of managers that want to enhance social welfare conflict with shareholders' rights that should be the firm's primary focus. Therefore, more engagements with ethical behaviour may increase the costs incurred and thus lead to deteriorated financial performance. Applying this incentive to the relationship between ethical bank disclosures and liquidity creation, we would expect a negative association as well.

Creating more liquidity requires banks to manage their balance sheet efficiently as they need to extend their provision of illiquid lending using liquid liabilities, while a lower level of liquidity creation can be seen as a sign of poor balance sheet management and lack of management efficiency. Because of altruistic preferences, bank managers may decide to allocate more resources in ethical-related activities rather than in managing their balance sheet, and this is likely to impede liquidity creation in several ways. First, private creditors such as wholesale financiers who possess superior information on banks may withdraw their funding that support the creation of loans should they observe that the bank is not operating efficiently or not prioritising their needs (Huang and Ratnovski, 2011). Second, fewer resources allocated in core liquidity creation activities may affect the effectiveness of borrower monitoring, which is an important factor of the continuous creation of liquidity (Diamond and Rajan, 2001). Finally, the literature documents that bank cost efficiency is beneficial for profitability (Berger, 1995), asset quality (Berger and DeYoung, 1997) and cost of credit (Shamshur and Weill, 2019), which can further enhance the provision of lending. The more engagements with ethical related activities will lead to the increase of costs, and hence the reduction of lending. We can therefore expect that the altruistic preferences of banks will reflect in a negative relationship between ethical bank disclosures and liquidity creation.

2.2. The positive relationship between ethical bank disclosures and liquidity creation

The strategic preferences strand suggests that a profit maximization firm will only engage in ethical activities if its managers believe that this will increase the demand for the firm's products (Baron, 2001). This behaviour is motivated by the firm's self-interest instead of interest for the broader societal welfare and refers to the strategic preferences of the firm. For example, firms adopt CSR policies to enhance customer loyalty, increase their customer base, and improve their reputation when they evaluate that the benefits of these policies exceed the respective costs. Evidence shows that firms with greater contribution to social welfare benefit from better reputation (Fombrun and Shanley, 1990), while enhanced reputation and brand awareness help firms to expand their competitive advantages (Kay, 1993). At the same time, exploiting CSR as part of a brand can attract customers from competitors and enhance profitability (Brine et al., 2007). Therefore, based on the strategic preferences, engaging in ethical activities will help firms improve their financial performance.

Accordingly, banks that use more ethical disclosures may also be able to attract more customers and enjoy increased profits. Bertrand et al. (2021) find that an established trust environment can help banks to attract a consistent stream of deposits that helps them provide loans through reducing the costs related with the liquidity mismatch. Using more ethics-related terms in the annual report can signal that the bank is well-governed and promote a trust environment that enables liquidity creation. Díaz and Huang (2017) show that better-governed banks create more liquidity. Therefore, communicating the moral foundations of the bank towards the public can develop customers' sense of a bank identity and enhance the bank's brand name. As a result, banks with more disclosure of ethics-related terms may be able to attract more deposit and loan customers, thereby creating more liquidity.

3. Empirical methodology

3.1. Ethical disclosures measures

Different methods have been used to measure corporate social performance in empirical studies, including questionnaire surveys (Helin et al., 2011), reputational measures such as "goodwill" ratios (Brown and Perry, 1994), or ethics- and CSR-related ratings (Goss and Roberts, 2011; Deng et al., 2013; Nguyen et al., 2020). In this study, we employ textual analysis of publicly available documents to measure corporate ethics. This method allows us to measure the frequency with which banks use ethics-related terms in their annual reports. The advantages that textual analysis offers in capturing corporate ethics have been widely appreciated by researchers in the area (e.g. Loughran et al., 2009; Audi et al., 2016; Cannon et al., 2020), and this could also better match our diverse sample of banks across Europe and Asia-Pacific.

Using the names of the banks and their country of origin as reported by the S&P Capital IQ Pro database, we hand-collect approximately 6,000 bank annual reports which are written in English. After cleaning the data and matching the annual reports with our financial dataset, we have final sample of 3,320 annual reports included in our analysis. To count the occurrences of groups of words in PDF documents we employ a custom-made Python code.[2] Our final sample contains 531 banks from 79 countries, mainly from Europe and Asia-Pacific.

We then use the two ethics-related word lists developed by Loughran et al. (2009) to analyse the collected annual reports and identify bank ethics. We present the two word lists in Table 1. The first list is designed to be short and simple, consisting of seven ethics-related terms that we use for estimating our main independent variable (ETHICS) in the regression analysis. CSR and ethics are multi-dimensional constructs that are difficult to capture using textual analysis (Pencle and Mălăescu, 2016). Loughran and McDonald

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[2] https://github.com/sarvesheb/PDF-file-analysis.

Table 1
Ethics-Related Term Lists by Loughran et al. (2009).

Ethics-Related Terms	Code of Ethics-Related Terms
ETHIC	CODE OF BUSINESS CONDUCT AND ETHICS
ETHICS	CODE OF BUSINESS CONDUCT ETHICS
ETHICAL	CODE OF BUSINESS ETHICS
ETHICALLY	CODE OF CONDUCT AND ETHICS
CORPORATE RESPONSIBILITY	CODE OF ETHICAL BUSINESS CONDUCT
SOCIAL RESPONSIBILITY	CODE OF ETHICS
SOCIALLY RESPONSIBLE	CODE OF ETHICS AND BUSINESS CONDUCT
	CODE OF PERSONAL AND BUSINESS CONDUCT AND ETHICS
	CODE OF PROFESSIONAL ETHICS
	CODES OF CONDUCT AND ETHICS
	ETHICS CODE
	PRINCIPLES OF PROFESSIONAL ETHICS

(2016) suggest that focusing on a few terms is a powerful analysis tool that prevents the issues associated with the ambiguity of large word lists that can be prone to error compared to lists that contain a few unambiguous terms. Considering that our sample is highly diverse, a short word list with clear terms can better capture ethics-related sentiment across annual reports published by banks with diverse backgrounds.

To construct our ETHICS variable, we employ a widely used weighting scheme developed by Loughran and McDonald (2011), in its simplified form used by Karapandza (2016).[3] The weighting scheme is presented in Equation (1). The term (word or phrase) is denoted with i and the document (annual report) is denoted with j. The total occurrences of a term in a document are denoted with $tf_{i,j}$ and the total word count in a document is denoted with a_j.

$$w_{i,j} = \begin{cases} \dfrac{(1 + \log(tf_{i,j}))}{(1 + \log(a_j))}, tf_i \geq 1 \\ 0 \, otherwise \end{cases} \tag{1}$$

The second list in Table 1 consists of terms related to codes of ethics. Based on Loughran et al. (2009), banks that use any of these terms in their annual report are very likely to incorporate a code of ethics in their report. Thus, we use this list as an identifier of annual reports that include a code of ethics. To incorporate this in our analysis, we construct a dummy variable that equals 1 when the annual report contains one or more of the code-of-ethics-related terms and 0 otherwise. In our main regression analysis, we use only the annual reports for which the dummy variable equals 1.

3.2. Liquidity creation measures

We create four liquidity creation measures by following the three-step methodology of Berger and Bouwman (2009). We present the liquidity classification of the bank balance sheet items that we use as well as the weights that we assign to them in Table 2.

In the first step, the balance sheet items are classified into three categories with respect to their level of liquidity (i.e. liquid, semi-liquid and illiquid). In the second step, a positive weight of 0.5 is assigned to illiquid assets and liquid liabilities and a negative weight of 0.5 is assigned to liquid assets, illiquid liabilities, and equity. We assign a zero weight to semi-liquid items and do not include them in our calculation. Finally, we add up the weighted balance sheet items to construct our liquidity creation measures which we normalize by total assets. We use two types of illiquid loans (i.e. corporate and long-term loans) and two types of liquid deposits (i.e. transaction and saving, and short-term deposits).[4] This allows the construction of four liquidity creation measures based on all possible combinations.

3.3. Baseline regression framework

Our baseline regression framework is split into two components. First, we conduct a preliminary analysis using panel data logit estimators, while our main analysis uses a fixed-effects estimator.

Our preliminary analysis aims to examine the influence that bank risk can have on the probability of a bank including a code of ethics in its annual report. To address this issue empirically, we use fixed- and random-effects logit regressions in the following form:

$$COE_{i,t} = \alpha_i + \sum_{j=1}^{6} \beta_j BankRisk_{i,t-1} + \beta_1 BankSize_{i,t-1} + \sum_{j=1}^{3} \beta_j TextualControl_{i,t-1} + \lambda_t + \varepsilon_{i,t} \tag{2}$$

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[3] The original term weighting scheme by Loughran and McDonald (2011) includes the inverse document frequency parameter. We do not use this parameter since we exclude all reports in which any of terms in the first list of Table 1 do not appear.

[4] Long-term loans refer to loans with maturity greater than one year and short-term deposits refer to deposits with maturity less or equal to one year.

Table 2
Liquidity Classification of Bank Activities.

Assets		
Illiquid Assets (weight = 1/2)	**Semi-Liquid Assets (weight = 0)**	**Liquid Assets (weight = -1/2)**
Corporate Loans	Mortgage and Retail Loans	Cash and Cash Balances
(Long-term Loans)	(Short-term Loans)	
Fixed Assets		Total Securities
Intangible Assets		Trading Assets
Other Assets		
Liabilities & Equity		
Liquid Liabilities (weight = 1/2)	**Semi-Liquid Liabilities (weight = 0)**	**Illiquid Liabilities & Equity (weight = -1/2)**
Short-term Deposits	Long-term Deposits	Total Subordinated Debt
(Transaction and Savings Deposits)	(Time Deposits)	
Trading Liabilities		Other Liabilities
		Equity

This table illustrates the liquidity classification of bank balance sheet items and the weight assigned to each item.

where the dependent variable COE is a dummy variable that takes the value of 1 when the annual report contains any terms related to a code-of-ethics and 0 otherwise. We include six uncorrelated accounting-based variables that are widely used in the literature as proxies of bank risk. More specifically, we use the ratio of loan loss reserves to total loans and leases (LLR), the ratio of risk weighted assets to total assets (RWATA), the equity ratio (EQRAT), the natural logarithm of the Z-SCORE (LNZSCORE), the ratio of operating expenses to operating income (MQ) and the return on average assets (ROAA). As banks that increase in size can be required by authorities to report a code of ethics, we also include the natural logarithm of total assets (LNTA) to control for bank size. Finally, we introduce three text-based control variables as the COE variable is also constructed with the textual analysis method. These variables are the ETHICS variable as described in Section 3.1 and the POSITIVE and NEGATIVE variables based on the respective positive and negative sentiment word lists developed by Loughran and McDonald (2011) and measured in the same way as the ETHICS variable.[5] α_i is the bank fixed effect, λ_t is the year fixed effect,[6] while $\varepsilon_{i,t}$ is the unobservable error term that has a standard logistic distribution with mean zero and variance one.

We control for the bank fixed-effects because publishing a code of ethics could be attributed to the unobservable characteristics of each bank. Yet, it is important to report the random-effects estimator results too because approximately half of the banks in our sample have no variation in the COE dummy variable. As a result, in the fixed-effects estimations, many observations are dropped. The random-effects estimator can remedy this issue and its results are more informative compared to the fixed-effects estimator results.

In Table 3, we summarize the definitions of all variables used in our regressions, while in Table 4, we present the variable's descriptive statistics. In Table 5, we report the correlation coefficients between the pairs of all variables. We observe that the liquidity creation variables are positively correlated among them as expected, and that they are all positively correlated with ETHICS. Moreover, we do not observe any large correlation coefficients among our control variables that would trigger multicollinearity concerns. Only RWATA and EQRAT appear to be moderately correlated but our results hold when excluding either one of them or both.

Our main analysis examines the relationship between ethical disclosures and liquidity creation. Our analysis focuses on the sample of banks for which the COE variable is equal to 1. Previous studies suggest that codes of ethics are used strategically (e.g., Long and Driscoll, 2008; Helin et al., 2011; Adelstein and Clegg, 2016). Our preliminary analysis results in section 5.1 also show that the disclosure of a code of ethics is more likely to be driven by strategic preferences. Overall, the prevailing view is that firms disclose codes of ethics to subtly and strategically enhance their risk management and protection processes. We posit that banks that report codes of ethics are more likely to use their ethical writing to strategically enable their business of deposit and loan making. Therefore we run our main regressions on this more focused sample.

To investigate this relationship, we use fixed-effects regressions in the following form:

$$LiquidityCreation_{i,t} = \alpha_0 + \beta_1 ETHICS_{i,t-1} + \sum_{j=1}^{8} \beta_j BankControl_{i,t-1} + \sum_{j=1}^{2} \beta_j CountryControl_{c,t-1} + \lambda_t + \varepsilon_{i,t} \qquad (3)$$

where $LiquidityCreation_{i,t}$ is one of our liquidity creation measures (LC1-LC4) as described in Section 3.2, while $ETHICS_{i,t-1}$ is the variable measuring the relative frequency of ethics-related terms as described in Section 3.1. We include seven bank-level control variables as in the logit regressions of the preliminary analysis as well as the ratio of employee compensation to total revenue to control for bank governance. Moreover, we include two country-level control variables, i.e. GDP growth and unemployment of the host country. λ_t are the time dummies that mitigate autocorrelation issues, while $\varepsilon_{i,t}$ is the unobservable error term. To further account for country characteristics and heteroskedasticity, we cluster standard errors at the country level, allowing for the possibility of correlations between the errors within each country. We also present random-effects regressions to allow for the inclusion of country fixed-

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[5] The positive and negative word lists can be found at https://sraf.nd.edu/loughranmcdonald-master-dictionary/. The variables POSITIVE and NEGATIVE are calculated as the relative frequency of the respective group of words in an annual report using Eq. (1).

[6] We also run the random-effects logit regressions with country fixed-effects (dummies).

Table 3
Variable Description.

Variable	Definition	Calculation	Source
Liquidity Creation Variables			
LC1	Liquidity Creation 1	Calculated as in Section (3.2) based on all balance sheet items and their weights outlined in Table 2 and including corporate loans as illiquid loans and short-term deposits as liquid deposits.	S&P Global Market Intelligence (authors' calculation)
LC2	Liquidity Creation 2	Calculated as in Section (3.2) based on all balance sheet items and their weights outlined in Table 2 and including corporate loans as illiquid loans and transactional and saving deposits as liquid deposits.	S&P Global Market Intelligence (authors' calculation)
LC3	Liquidity Creation 3	Calculated as in Section (3.2) based on all balance sheet items and their weights outlined in Table 2 and including long-term loans as illiquid loans and short-term deposits as liquid deposits.	S&P Global Market Intelligence (authors' calculation)
LC4	Liquidity Creation 4	Calculated as in Section (3.2) based on all balance sheet items and their weights outlined in Table 2 and including long-term loans as illiquid loans and transactional and saving deposits as liquid deposits.	S&P Global Market Intelligence (authors' calculation)
Textual Variables			
ETHICS	Ethics-related Disclosures	The relative frequency of ethics-related terms in an annual report based on the list Loughran et al. (2009) and calculated as in Eq. (1).	Manually collected and constructed
ETHICS-ORD	Ethics-related Disclosures (Ordinal)	The number of ethics-related terms based on the list by Loughran et al. (2009) that appear in the annual report at least once.	Manually collected and constructed
COE	Code of Ethics	= 1 if at least one of the code of ethics-related terms based on the list by Loughran et al. (2009) appears in the annual report, =0 otherwise.	Manually collected and constructed
POSITIVE	Positive Sentiment	The relative frequency of positive sentiment terms in an annual report based on the positive word list by Loughran and McDonald (2011) and calculated as in Eq. (1).	Manually collected and constructed
NEGATIVE	Negative Sentiment	The relative frequency of negative sentiment terms in an annual report based on the negative word list by Loughran and McDonald (2011) and calculated as in Eq. (1).	Manually collected and constructed
LNWORDS	Annual Report Size	The natural logarithm of the total number of words in the annual report.	Manually collected and constructed
Bank Control Variables			
COMPENSATION	Employee Compensation	Employee Compensation / Total Revenue	S&P Global Market Intelligence
RWATA	Risk-Weighted Assets	Risk-Weighted Assets / Total Assets	S&P Global Market Intelligence
LLR	Loan Loss Reserves	Total loan loss and allocated transfer risk reserves / total loans and leases, net of unearned income and gross of reserve	S&P Global Market Intelligence
EQRAT	Equity Ratio	Total Equity/ Total Assets	S&P Global Market Intelligence
ROAA	Return on Average Assets	Net Income/Average Assets	S&P Global Market Intelligence
LNTA	Bank Size	Natural logarithm of total assets	S&P Global Market Intelligence (authors' calculation)
LNZSCORE	Bank Risk	Natural logarithm of the ZSCORE which is calculated as the sum of EQRAT and ROAA divided by the standard deviation of ROAA	S&P Global Market Intelligence (authors' calculation)
MQ	Managerial Quality	Operating Expenses/ Operating Income	S&P Global Market Intelligence
Country Control Variables			
GDPG	Real GDP Growth	Annual percentage change of real GDP of the host country	International Monetary Fund
UNEMP	Unemployment	The number of unemployed people as a percentage of the total labour force of the host country	International Monetary Fund

effects with standard errors clustered at the bank level.

4. Data, sample and descriptive analysis

We obtain bank-specific financial data from the S&P Capital IQ Pro database and country-specific data from the International Monetary Fund (IMF). Bank-specific textual data is manually collected and transformed as described in Section 3.1. After cleaning the data and matching the employed databases, the sample used in our analysis consists of 531 banks from 79 countries and the observations range in the period of 2005–2018. Table 6 presents the distribution of liquidity creation variables across the six regions in our sample, indicating that banks from Europe and Asia-Pacific dominate our analysis. We observe that among banks from the two regions, banks from Asia-Pacific countries create on average more liquidity and use more ethics-related terms in their annual reports than banks from European countries.

Table 4
Descriptive Statistics.

Variable	Obs.	Mean	Median	St. Dev.	5th Perc.	95th Perc.
LC1	914	0.226	0.244	0.156	−0.087	0.445
LC2	887	0.091	0.097	0.133	−0.149	0.307
LC3	912	0.262	0.291	0.203	−0.161	0.524
LC4	861	0.133	0.136	0.176	−0.178	0.388
ETHICS	2886	0.337	0.341	0.085	0.180	0.479
ETHICS-ORD	1184	3.506	3.000	1.099	2.000	5.000
COE	2886	0.410	0.000	0.492	0.000	1.000
POSITIVE	2886	0.664	0.670	0.037	0.599	0.708
NEGATIVE	2886	0.638	0.639	0.032	0.586	0.680
LNWORDS	2886	11.241	11.287	0.724	9.964	12.370
COMPENSATION	2886	0.281	0.269	0.125	0.135	0.459
RWATA	2886	0.563	0.581	0.205	0.216	0.888
LLR	2886	0.033	0.022	0.038	0.002	0.104
EQRAT	2886	0.087	0.081	0.039	0.036	0.159
ROAA	2886	0.008	0.008	0.011	−0.005	0.023
LNTA	2886	17.303	17.185	1.814	14.573	20.507
LNZSCORE	2886	3.036	3.194	0.974	1.247	4.169
MQ	2886	0.557	0.535	0.242	0.297	0.846
GDPG	2886	0.027	0.024	0.032	−0.029	0.075
UNEMP	2886	0.073	0.060	0.050	0.029	0.185

The table presents the descriptive statistics of all variables used in the regressions. The number of observations across LC1, LC2, LC3 and LC4 varies because their samples are slightly different to increase the informativeness of the regressions. Some of the items required to calculate the liquidity creation measures are not available for all banks and years. ETHICS-ORD has fewer observations because it is only used in the regressions with liquidity creation that use a smaller sample.

Table 5
Distribution of observations across regions.

Region	LC1 Mean	LC1 Obs.	LC2 Mean	LC2 Obs.	LC3 Mean	LC3 Obs.	LC4 Mean	LC4 Obs.	ETHICS Mean	ETHICS Obs.
Europe	0.200	415	0.095	403	0.217	458	0.130	421	0.366	600
Asia-Pacific	0.274	346	0.083	345	0.333	354	0.135	346	0.397	422
Latin America and Caribbean	0.226	44	0.122	46	0.218	34	0.118	37	0.384	50
Middle East	0.298	44	0.136	36	0.343	25	0.173	24	0.349	45
Africa	0.168	38	0.104	32	0.196	26	0.145	20	0.428	39
United States and Canada	−0.019	27	0.001	25	0.006	15	0.123	13	0.334	28

Figs. 1 and 2 show the time-series evolution of ethics-related text usage across all banks during the sample period. In Fig. 1, we present the three-year moving average of the mean of our ETHICS variable, and in Fig. 2, we present the three-year moving average of the sum of the COE variable for all banks normalized by the total number of observations per year. In both Figures, we observe a constant growth in usage of ethics-related terms and codes of ethics which is accelerated in recent years. Potential rationale for such observations could be that banks have engaged in more ethical/CSR activities year by year; they want to attract more business and financial benefits; or there have been increased regulatory requirements of ethics-related disclosures. Fig. 2 indicates that towards the last years of the sample period (2017–2018), more than half of the banks are disclosing a code of ethics in their annual reports.

5. Empirical results and discussion

5.1. Which banks include a code of ethics in their annual Reports?

We begin our investigation with a preliminary analysis using logit regressions to evaluate whether financial variables associated with bank risk can influence the probability of a bank disclosing a code of ethics. These results are presented in Table 7 where the dependent dummy variable is COE that takes the value of 1 if the annual report contains any of the code of ethics terms in the second column of Table 1. Although the nature of our data requires the use of the fixed-effects logit estimator, we also report the results using the random-effects logit estimator to allow the inclusion of significantly more observations which makes the regression results more informative.[7] In columns (1) to (3), we include only financial independent variables and in columns (4) to (6) we introduce three textual control variables too. Moreover, we include time dummies in all regressions and in the random-effects regressions (columns (3)

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[7] This large difference in the number of observations between fixed- and random-effects regressions derives from the fact that COE is time-invariant for many banks that either disclose or not a code of ethics in their annual reports consistently.

Table 6
Correlation matrix.

	LC1	LC2	LC3	LC4	ETHICS	ETHICS-ORD	COE	POSITIVE	NEGATIVE	LNWORDS
LC1	1.000									
LC2	0.786***	1.000								
LC3	0.730***	0.602***	1.000							
LC4	0.516***	0.717***	0.847***	1.000						
ETHICS	0.096***	0.041*	0.044**	0.019	1.000					
ETHICS-ORD	−0.015	−0.025	−0.033	−0.018	0.747***	1.000				
COE	0.043**	−0.033	0.016	0.011	0.413***	0.383***	1.000			
POSITIVE	0.004	−0.008	−0.036*	−0.042*	0.417***	0.417***	0.131***	1.000		
NEGATIVE	−0.187***	−0.077***	−0.071***	0.029	0.033*	0.173***	0.141***	0.345***	1.000	
LNWORDS	−0.120***	−0.074***	−0.088***	−0.026	0.337***	0.388***	0.291***	0.364***	0.658***	1.000
COMPENSATION	−0.088***	−0.049**	−0.049**	0.030	−0.022	0.022	−0.025	−0.019	0.079***	0.074***
RWATA	0.449***	0.310***	0.133***	0.010	0.050***	−0.046**	0.095***	−0.057***	−0.228***	−0.101***
LLR	0.083***	0.076***	−0.076***	−0.051**	−0.022	−0.025	0.073***	−0.038**	−0.047**	−0.066***
EQRAT	0.261***	0.202***	0.046**	0.009	0.051***	−0.050***	0.071***	−0.127***	−0.194***	−0.126***
ROAA	0.089***	0.046**	0.004	−0.048**	0.104***	0.044**	0.036**	0.065***	−0.127***	−0.006
LNTA	−0.366***	−0.273***	−0.293***	−0.165***	0.114***	0.194***	0.043**	0.406***	0.314***	0.367***
LNZSCORE	0.024	−0.008	0.092***	0.009	0.051***	0.033*	0.051***	0.056***	−0.055***	−0.028
MQ	−0.089***	−0.029	−0.047**	0.043*	−0.029	−0.003	−0.052***	−0.038**	0.071***	0.054***
GDPG	0.123***	0.003	0.016	−0.122***	0.090***	0.034*	0.041**	0.052***	−0.122***	0.053***
UNEMP	−0.052**	0.087***	−0.047**	0.085***	0.041**	0.064***	0.042**	0.010	0.017	0.007

|	COMPENSATION	RWATA	LLR	EQRAT	ROAA	LNTA	LNZSCORE	MQ	GDPG	UNEMP
COMPENSATION	1.000									
RWATA	−0.146***	1.000								
LLR	0.024	0.328***	1.000							
EQRAT	−0.121***	0.646***	0.321***	1.000						
ROAA	−0.386***	0.221***	−0.262***	0.335***	1.000					
LNTA	−0.049**	−0.383***	−0.206***	−0.471***	−0.096***	1.000				
LNZSCORE	−0.249***	−0.037**	−0.406***	0.088***	0.375***	0.043**	1.000			
MQ	0.870***	−0.172***	0.080***	−0.137***	−0.430***	−0.057***	−0.274***	1.000		
GDPG	−0.166***	0.182***	−0.117***	0.139***	0.290***	−0.051***	0.243***	−0.162***	1.000	
UNEMP	0.035*	0.048**	0.365***	0.031**	−0.106***	−0.048**	−0.209***	0.088***	−0.244***	1.000
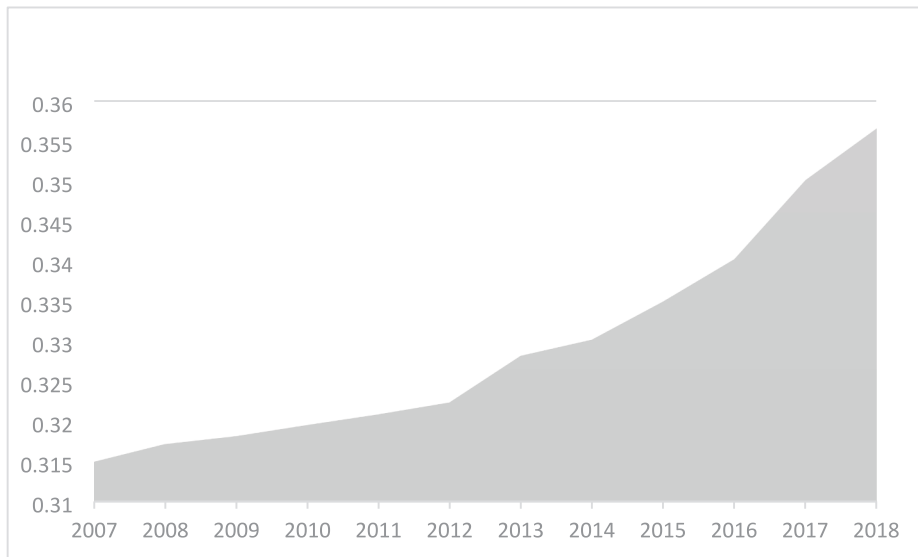
Fig. 1. ETHICS over time. The figure presents the three-year moving average of the mean of the ETHICS variable across all banks.
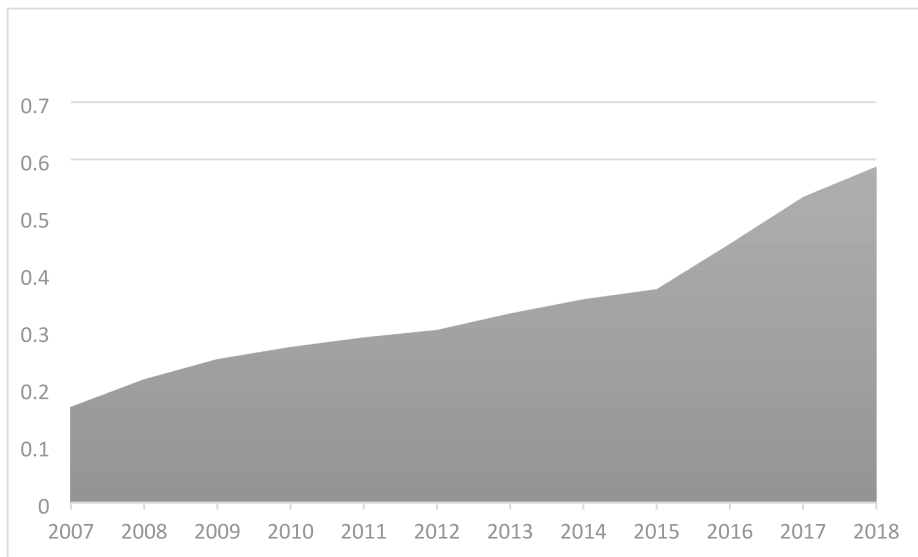

Fig. 2. The ratio banks that include a code of ethics in their annual report over time. The figure presents the three-year moving average of the sum of COE for all banks normalized by the number of available observations per year.

and (6)) we also include country dummies.

The results presented in Table 7 indicate that bank risk increases the probability of a bank to disclose a code of ethics in the annual report. More specifically, the coefficient of LLR is positive and significant at the 1 % level across all columns, while the coefficient of RWATA is positive and significant at the 5 % or 1 % level depending on the method used. These results are also economically significant. In particular, the size of the coefficients of LLR and RWATA suggest that an increase of one percentage point in these variables increases the probability of an annual report containing a code of ethics by 19.5 % and 3.4 %, respectively.[8]

We also observe that the coefficient of LNTA is positive and significant at the 1 % level in all regressions which suggests that balance sheet expansions can trigger the disclosure of a code of ethics. Furthermore, the signs of the significant coefficients of the NEGATIVE and POSITIVE variables support our expectations about the role of adverse circumstances in the disclosure decisions of banks. More specifically, the results indicate that the probability of including a code of ethics in the annual report is positively associated with

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[8] We use the odds ratios of the fixed-effects regressions to calculate the economic significance of the predictors.

Table 7
Predictors of codes of ethics in annual reports.

	(1) COE	(2) COE	(3) COE	(4) COE	(5) COE	(6) COE
LLR	0.178***	0.136***	0.136***	0.173***	0.137***	0.130***
	(0.054)	(0.041)	(0.045)	(0.054)	(0.040)	(0.044)
RWATA	0.033**	0.046***	0.036***	0.029**	0.039***	0.029***
	(0.015)	(0.009)	(0.011)	(0.015)	(0.009)	(0.010)
EQRAT	−0.188*	−0.087	−0.146**	−0.170	−0.066	−0.136**
	(0.100)	(0.054)	(0.058)	(0.104)	(0.052)	(0.058)
LNZSCORE	1.118	0.083	−0.152	1.132	0.152	−0.070
	(0.709)	(0.199)	(0.209)	(0.731)	(0.182)	(0.201)
MQ	0.008	0.000	0.005	0.010	0.000	0.004
	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)
ROAA	0.142	0.301	0.209*	0.166	0.306**	0.217*
	(0.172)	(0.122)	(0.124)	(0.195)	(0.129)	(0.131)
LNTA	1.878***	0.458***	0.695***	1.661***	0.367***	0.528***
	(0.465)	(0.122)	(0.129)	(0.475)	(0.114)	(0.125)
ETHICS				0.073***	0.132***	0.110***
				(0.019)	(0.015)	(0.016)
NEGATIVE				0.058	0.137***	0.130***
				(0.036)	(0.033)	(0.034)
POSITIVE				−0.118**	−0.160***	−0.135***
				(0.054)	(0.044)	(0.044)
Time Dummies	YES	YES	YES	YES	YES	YES
Country Dummies	NO	NO	YES	NO	NO	YES
Method	FE	RE	RE	FE	RE	RE
Obs.	1,315	2,587	2,543	1,315	2,587	2,543
N. of Banks	201	488	472	201	488	472
Pseudo R2	0.331	0.362	0.416	0.348	0.387	0.434

The table reports fixed- and random effects logit regressions. The dependent variable is COE which proxies whether an annual report contains a code of ethics or not. LLR are the loan loss reserves. RWATA is the risk-weighted assets normalized by total assets. EQRAT is the equity to total assets ratio. LNZSCORE is the natural logarithm of the ZSCORE. MQ is the cost-to-income ratio. ROAA is the return on average assets. LNTA is the natural logarithm of total assets in Euros. ETHICS stands for the relative frequency of ethics-related terms in the annual report. POSITIVE and NEGATIVE stand for positive and NEGATIVE sentiment in the annual report, respectively. All regressions include time dummies and two random-effects logit regressions include country dummies too. Standard errors are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

negative sentiment and negatively associated with positive sentiment. In other words, banks are more likely to disclose a code of ethics when things are not going well. Considering the coefficients of the financial risk variables and those of the textual sentiment variables, our findings support our expectations that a code of ethics in an annual report tends to play a risk management role rather than its original purpose of moral foundations.

The results of our preliminary analysis are closely related to the arguments in the literature for the strategic use of codes of ethics by firms (e.g. Long and Driscoll, 2008; Helin et al., 2011; Adelstein and Clegg, 2016). Although such tools may prove to be useful for banks, moving away from the original purpose of the code of ethics, which is enabling self-regulation and management control, can lead to adverse consequences. In particular, using the code of ethics as a strategic/risk management tool can create a false sense of legitimacy about the bank's conduct of business which further distances the essence of the code from its moral foundation (Long and Driscoll, 2008). Evidence suggests that these moral deviations can even take the form of managers using the code to blame others for their own failures of diligence (Helin et al., 2011). Similar adverse consequences include increasing the selectivity of disciplinary actions and the segmentation of focus on organizational members (Adelstein and Clegg, 2016).

5.2. Ethical bank disclosures and liquidity creation

Table 8 presents the results of our main analysis on the relationship between the use of ethics-related terms in annual reports and liquidity creation. In these regressions, we use only the observations for which the variable COE is equal to one.[9] The dependent variables are the measures of liquidity creation (LC1-LC4), and the main independent variable is ETHICS which measures the relative frequency of ethics-related terms in an annual report. We report the total sample results with bank fixed-effects in columns (1) to (4) and with country fixed-effects in columns (5) to (8). We observe that in the total sample regressions the coefficient of ETHICS is positive and statistically significant across seven of the eight regressions. This finding is also economically significant as the coefficients suggest that a one standard deviation increase in ETHICS is associated with an increase of 0.5 to 1 percentage points in liquidity creation.

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[9] We fail to find a significant relationship in the total sample and for brevity we do not report these results. As shown earlier in Section 5.1, including a code of ethics in the annual reports is a sign of banks' strategic preferences.

Table 8
The relationship between ethics-related disclosures and liquidity creation for banks that report a code of ethics.

	(1) LC1	(2) LC2	(3) LC3	(4) LC4	(5) LC1	(6) LC2	(7) LC3	(8) LC4
ETHICS	0.121**	0.080*	0.130***	0.062**	0.128**	0.080**	0.141**	0.073
	(0.055)	(0.040)	(0.047)	(0.030)	(0.055)	(0.040)	(0.061)	(0.048)
COMPENSATION	0.142*	0.060	0.032	−0.202*	0.114	0.065	−0.011	−0.202**
	(0.083)	(0.090)	(0.144)	(0.112)	(0.090)	(0.087)	(0.113)	(0.092)
EQRAT	−0.701**	−0.545	−0.560	−0.196	−0.788***	−0.505**	−0.725**	−0.300
	(0.316)	(0.462)	(0.463)	(0.492)	(0.269)	(0.253)	(0.320)	(0.269)
LNTA	−0.031	−0.006	−0.006	0.004	−0.015*	0.002	−0.009	0.003
	(0.022)	(0.016)	(0.022)	(0.019)	(0.008)	(0.008)	(0.008)	(0.009)
LLR	−0.545***	−0.457	−0.288**	−0.368	−0.479***	−0.431*	−0.284**	−0.345*
	(0.161)	(0.278)	(0.141)	(0.224)	(0.149)	(0.231)	(0.140)	(0.181)
RWATA	0.134***	0.032	0.214***	0.073	0.152***	0.052	0.225***	0.085
	(0.045)	(0.039)	(0.049)	(0.052)	(0.044)	(0.041)	(0.058)	(0.056)
LNZSCORE	0.019*	0.027	0.011	0.007	0.031**	0.029*	0.020	0.014
	(0.011)	(0.024)	(0.014)	(0.016)	(0.012)	(0.016)	(0.013)	(0.012)
ROAA	−0.462	−0.288	−0.165	0.494	−0.641	−0.340	−0.336	0.417
	(0.531)	(0.678)	(0.548)	(0.496)	(0.587)	(0.531)	(0.665)	(0.522)
MQ	−0.067	−0.047	−0.019	0.099*	−0.046	−0.043	−0.004	0.094*
	(0.050)	(0.061)	(0.072)	(0.056)	(0.053)	(0.056)	(0.061)	(0.049)
GDPG	0.079)	0.047	0.259	0.197	0.094	0.049	0.269*	0.202
	(0.137	(0.147)	(0.187)	(0.188)	(0.125)	(0.133)	(0.162)	(0.163)
UNEMP	−0.222	−0.278	0.209	−0.046	−0.216	−0.262	0.205	−0.037
	(0.188)	(0.238)	(0.230)	(0.304)	(0.226)	(0.230)	(0.313)	(0.323)
Constant	0.702	0.170*	0.193	−0.025	0.432***	−0.008	0.308	0.154
	(0.390)	(0.303)	(0.399)	(0.376)	(0.158)	(0.158)	(0.214)	(0.216)
Bank FE	YES	YES	YES	YES	NO	NO	NO	NO
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	YES	YES	YES	YES
S.E. Cluster Level	Country	Country	Country	Country	Bank	Bank	Bank	Bank
Obs.	775	755	773	733	775	755	773	733
N. of Banks	223	217	226	209	223	217	226	209
R2 (Within)	0.170	0.243	0.151	0.226	0.166	0.241	0.150	0.225

The table reports fixed-effects regressions. The dependent variables are LC1, LC2, LC3 and LC4 which are the liquidity creation measures normalized by total assets. ETHICS stands for the relative frequency of ethics-related terms in the annual report. COPMENSATION is employees' compensation normalized by total revenue. EQRAT is the equity to total assets ratio. LNTA is the natural logarithm of total assets in Euros. LLR are the loan loss reserves. RWATA is the risk-weighted assets normalized by total assets. LNZSCORE is the natural logarithm of the ZSCORE. ROAA is the return on average assets. MQ is the cost-to-income ratio. GDPG is the real GDP growth of the host country. UNEMP is the unemployment rate of the host country. The regressions in columns 1–4 include bank and time fixed-effects with robust standard errors clustered at the country level. The regressions in columns 5–8 use the random-effects estimator and include country and time fixed-effects with robust standard errors clustered at the bank level. The standard errors are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

In Table 9, we split the sample in half between small and large banks by the median of average total assets. We find that the positive relationship derives mainly by the large banks sample. More specifically, the coefficient of ETHICS for large banks is significant and larger in size relative to the respective coefficients in the total sample results, while the coefficient of ETHICS for small banks is consistently insignificant. The signs of the statistically significant coefficients of the control variables are largely consistent with our expectations. The coefficient of EQRAT is negative in most regressions except for column (8) in Table 9 where it is positive. This is not surprising considering that Berger and Bouwman (2009) find a negative relationship for small banks and positive one for large banks. The coefficient of LLR is negative in the total and the small banks sample, suggesting that small banks probably struggle more to create liquidity when their asset quality has deteriorated. The coefficient of RWATA is positive and significant in most regressions, indicating a positive association between asset risk and liquidity creation as we expected. The coefficient of ROAA is positive and significant in two regressions of the large banks sample suggesting that earnings stability enables bank liquidity creation. Finally, although the coefficient of LNZSCORE is positive and significant in two regressions of the small banks sample indicating that overall stability enables bank liquidity creation for small banks, the sign of the coefficient is rather inconsistent for large banks.

The results in Tables 8 and 9 support our expectations that liquidity creation is positively associated with ethical disclosures for banks that report a code of ethics. Our finding complements recent evidence that connects soft elements of bank management, such as governance (Díaz and Huang, 2017) and trust (Bertrand et al., 2021), to creating more liquidity. It is also related to studies that provide evidence of a positive relationship between alternative measures of financial performance (e.g. profitability, efficiency, asset quality) and various measures of social performance (e.g. CSR ratings) (e.g. Chih et al., 2010; Soana, 2011; Wu and Shen, 2013; Shen et al., 2016; Finger et al., 2018).

Table 9
Baseline regressions by size class.

	Small Banks				Large Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LC1	LC2	LC3	LC4	LC1	LC2	LC3	LC4
ETHICS	0.081	0.010	0.152	0.039	**0.171*****	**0.132****	**0.136****	**0.101***
	(0.084)	(0.057)	(0.087)	(0.062)	(0.048)	(0.053)	(0.058)	(0.054)
COMPENSATION	0.132	0.147	0.137	−0.060	0.215*	−0.016	0.049	−0.151
	(0.116)	(0.117)	(0.211)	(0.205)	(0.110)	(0.095)	(0.138)	(0.095)
EQRAT	−0.719**	−0.362	−1.059**	−0.594	−0.918	−0.847*	0.585	1.203**
	(0.328)	(0.574)	(0.488)	(0.506)	(0.593)	(0.498)	(0.507)	(0.543)
LNTA	−0.021	0.012	−0.029	0.009	−0.032	0.008	−0.003	−0.008
	(0.035)	(0.025)	(0.030)	(0.028)	(0.029)	(0.023)	(0.024)	(0.020)
LLR	−0.527***	−0.596**	−0.446***	−0.534**	−0.242	0.155	0.078	0.169
	(0.188)	(0.258)	(0.140)	(0.221)	(0.413)	(0.336)	(0.268)	(0.208)
RWATA	0.111*	0.021	0.219***	0.075	0.190**	0.103*	0.257***	0.121*
	(0.062)	(0.042)	(0.080)	(0.068)	(0.077)	(0.055)	(0.072)	(0.064)
LNZSCORE	0.019**	0.013	0.035***	0.022	0.048	0.061**	−0.041*	−0.041**
	(0.008)	(0.021)	(0.010)	(0.016)	(0.044)	(0.035)	(0.019)	(0.024)
ROAA	−0.808	−0.388	−1.101	−0.297	0.736	0.119	2.729**	2.425***
	(0.648)	(0.582)	(0.495)	(0.416)	(0.790)	(0.763)	(1.071)	(0.659)
MQ	−0.031	−0.138*	−0.152	−0.082	−0.114	−0.001	−0.005	0.086
	(0.066)	(0.072)	(0.096)	(0.108)	(0.074)	(0.070)	(0.075)	(0.052)
GDPG	−0.050	0.015	0.177	0.283	0.255	0.206	0.345	0.124
	(0.179)	(0.250)	(0.261)	(0.254)	(0.269)	(0.168)	(0.263)	(0.170)
UNEMP	−0.029	0.495	0.386	0.591	−0.266	−0.696*	−0.019	−0.591
	(0.338)	(0.452)	(0.274)	(0.343)	(0.419)	(0.382)	(0.426)	(0.448)
Constant	0.528	−0.048	0.611	−0.021	0.572	−0.238	0.146	0.175
	(0.527)	(0.387)	(0.450)	(0.459)	(0.623)	(0.470)	(0.491)	(0.403)
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
S.E. Cluster Level	Country	Country	Country	Country	Country	Country	Country	Country
Obs.	370	357	369	352	405	398	404	381
N. of Banks	113	110	113	104	110	107	113	105
R2 (Within)	0.188	0.276	0.219	0.305	0.207	0.350	0.179	0.302

The table reports fixed-effects regressions. The dependent variables are LC1, LC2, LC3 and LC4 which are the liquidity creation measures normalized by total assets. ETHICS stands for the relative frequency of ethics-related terms in the annual report. COPMENSATION is employees' compensation normalized by total revenue. EQRAT is the equity to total assets ratio. LNTA is the natural logarithm of total assets in Euros. LLR are the loan loss reserves. RWATA is the risk-weighted assets normalized by total assets. LNZSCORE is the natural logarithm of the ZSCORE. ROAA is the return on average assets. MQ is the cost-to-income ratio. GDPG is the real GDP growth of the host country. UNEMP is the unemployment rate of the host country. The regressions include bank and time fixed-effects. Robust standard errors clustered at the country level are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

Our finding suggests that bank managers that report a code of ethics may intentionally increase the volume of ethics-related content in their annual reports to attract more business and mitigate perceived risk, allowing banks to create more liquidity.[10] More ethical disclosure can promote a trust environment, which can enable liquidity creation through maintaining a smooth stream of deposits that helps banks to create loans (Bertrand et al., 2021). Moreover, ethics-related activities can be seen as the indicators of an organisation's internal governance. Díaz and Huang (2017) show that internal governance indicators can positively influence bank liquidity creation. They suggest that strong governance can increase risk absorption that enables liquidity creation and document that this effect is more likely to appear in large banks. As Berger and Bouwman (2009) argue, larger banks are in greater need of risk absorption since they usually create more liquidity. We also document that the positive relationship between ethical bank disclosures and liquidity creation derives from the larger banks sample, suggesting that risk absorption can be facilitated through ethics-related disclosures.

6. Robustness tests

We conduct several additional tests to evaluate the robustness of our main results. First, we test whether our baseline results can be attributed to the strategic preferences of banks, i.e. they purposefully include more ethics-related terms in their annual reports to manage risk and attract more business. We introduce an interaction term between ETHICS and LNZSCORE to our baseline model. If the strategic preferences of banks prevail, we expect that the coefficient of the interaction term will be negative, indicating that bank stability mitigates the positive effect of using more ethics-related terms on liquidity creation. We present these results in columns (1) to (4) of Table 10 and they are consistent with our expectations. More specifically, in columns (1), (2) and (4), the coefficient of ETHICS is positive and statistically significant, while it is also larger than the coefficient of ETHICS in Table 8. At the same time, the coefficient of

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[10] The variable ETHICS is a measure of the relative frequency of terms related to "ethics" and "CSR". We assume that using these terms more frequently creates an implicit assurance that the bank holds high standards of ethics, values, and business conduct (Loughran et al., 2009).

the interaction term in the same regressions is negative and significant. Our results in this test increase our confidence that banks use their ethical disclosures strategically as a tool that can possibly absorb the risk associated with creating more liquidity.

Second, we use an alternative method to measure ethical disclosures. Some may argue that measuring the relative frequency of ethics-related terms in a document can be biased as it may assign large weights to terms that are used repetitively by banks in the annual report, especially when investigating ethics-related terms since firms may use these terms repetitively to define their corporate culture (Audi et al., 2016). Moreover, the repetition of terms can be attributed to differences in the writing style as some writers may use a term repetitively and other use pronouns such as "it" to avoid repetitions. We address these concerns by constructing the ETHICS-Ord variable which only considers the first occurrence of each term. Therefore, ETHICS-Ord can be defined as the sum of how many of the terms in the list appear at least once in the annual report.[11] We present the results of this test in Columns (5) to (8) of Table 10 and they confirm our baseline findings as the coefficient of ETHICS-Ord is positive and significant.

Finally, we use two alternative estimators to further address endogeneity concerns. Garcia-Castro et al. (2010) suggest that when investigating the relationship between social and financial performance, addressing endogeneity concerns should not be neglected. First, we employ the system generalised method of moments (S-GMM) where we add the first lag of the liquidity creation measures to control for the sluggishness of liquidity creation. The S-GMM specification is in the following form:

$$LiquidityCreation_{i,t} = \alpha_0 + \beta_1 LiquidityCreation_{i,t-1} + \beta_2 ETHICS_{i,t-1} + \sum_{j=1}^{8} \beta_j BankControl_{i,t-1} + \sum_{j=1}^{2} \beta_j CountryControl_{c,t-1} + \lambda_t + \varepsilon_{i,t}$$

$$(4)$$

The S-GMM uses the lags of the endogenous variables as instruments to address endogeneity issues. We treat the macroeconomic control variables and the time dummies as exogenous, while we treat all other bank-level variables as endogenous. This allows us to use their second and longer lags as instruments. The validity of selected instruments is evaluated with the Hansen J test, while we also test for second order autocorrelation using the Arellano and Bond (1991) test. We present the results of this test in Table 11. The coefficient of ETHICS remains positive and significant in three of the four regressions which supports our baseline results.

Second, we use the instrumental variables two-stage least squares (2SLS) approach, to further address endogeneity concerns. In the 2SLS estimator, we use the same control variables as in the baseline regressions and two text-based instruments. As an instrument for ETHICS, we first use the variable POSITIVE that captures positive sentiment in the annual reports in columns (1) to (4) of Table 12. We expect that positive sentiment can positively affect the relative frequency of ethics-related terms since it contains ethical connotations (Cook, 2017). We observe that in these regressions the coefficient of ETHICS maintains its positive sign and significance, while the coefficient of POSITIVE in the first-stage regressions is also positive and significant, suggesting that the variable is a good instrument (see Table 12).

However, one can have concerns that positive sentiment is not truly exogenous since it might be related to improved bank performance that leads to increased levels of liquidity creation. For this reason, we also employ annual report size measured by the natural logarithm of the total words in the PDF file (LNWORDS) as a second instrument and the results are presented in columns (5) to (8) of Table 12. Generally, the longer the annual report is, the more comprehensive and detailed information is provided. It could be reasonably assumed that the ethics-related terms would be observed more frequently. At the same time, we cannot expect that annual report size and liquidity creation are associated in any way. We observe that in all first-stage regressions, the coefficient of LNWORDS is positive and significant, while the coefficient of ETHICS in the second-stage regressions is also positive and significant in two of the regressions. In columns (9) to (12) of Table 12, we use both instruments together. We employ the Hansen J-test of overidentifying restrictions to partially test the validity of the instruments, and the null hypothesis is not rejected, indicating that the instruments used are correctly excluded from the second-stage regressions. The results again confirm our baseline findings and further mitigate endogeneity concerns.

7. Conclusions and policy implications

In this paper, we examine the relationship between ethical bank disclosures and liquidity creation. We use a unique sample of hand-collected annual reports and conduct textual analysis to develop text-based variables. Considering that there is no consistent expectation derived from theoretical literature on whether ethical disclosures can enable or hinder bank liquidity creation, our analysis contributes to the better understanding of this relationship.

Generally, there are two opposing views on how ethical bank disclosures may influence liquidity creation. First, should a bank have altruistic preferences and make suboptimal investments on ethical activities, it may misallocate its resources in a way that impedes liquidity creation. Second, a bank may have strategic preferences and use ethics-related disclosures to attract more business that enables liquidity creation. Our results suggest that banks use their ethical disclosures strategically to establish trustworthiness in the market which helps them create more liquidity. First, we show that banks are more likely to include a code of ethics in their annual reports when their risk increases (measured by loan loss reserves and risk-weighted assets). Second, we find that liquidity creation is positively associated with the relative frequency of ethics-related terms in annual reports of banks that report a code of ethics. This is consistent with our expectations that ethics-related disclosures have the power to attract more customers and can be used as a risk management tool.

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[11] Loughran and McDonald (2014) and Audi et al. (2016) use similar methods to address these concerns in their analyses.

Table 10
Robustness tests.

	(1) LC1	(2) LC2	(3) LC3	(4) LC4	(5) LC1	(6) LC2	(7) LC3	(8) LC4
ETHICS	**0.664*****	**0.568*****	0.566	**0.381****				
	(0.204)	(0.151)	(0.342)	(0.164)				
ETHICS-ORD					**0.006****	**0.006****	**0.004***	**0.005****
					(0.002)	(0.002)	(0.002)	(0.002)
ETHICS *LNZSCORE	**−0.168*****	**−0.153*****	−0.135	**−0.100****				
	(0.056)	(0.041)	(0.104)	(0.050)				
LNZSCORE	0.094***	0.095***	0.069	0.050	0.021*	0.027	0.011	0.007
	(0.027)	(0.032)	(0.054)	(0.030)	(0.011)	(0.024)	(0.015)	(0.016)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
S.E. Cluster Level	Country	Country	Country	Country	Country	Country	Country	Country
Obs.	775	755	773	733	775	755	773	733
N. of Banks	223	217	226	209	223	217	226	209
R2 (Within)	0.185	0.260	0.161	0.233	0.167	0.248	0.144	0.229

The table reports fixed-effects regressions. The dependent variables are LC1, LC2, LC3 and LC4 which are the liquidity creation measures normalized by total assets. ETHICS stands for the relative frequency of ethics-related terms in the annual report. ETHICS-ORD is the count of how many of the ethics-related terms appear at least once in the annual report. LNZSCORE is the natural logarithm of the ZSCORE. The same control variables as in Table 8 are included. The regressions include bank and time fixed-effects. Robust standard errors clustered at the country level are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

Table 11
The relationship between ethics-related disclosures and liquidity creation using the System-GMM estimator.

	(1) LC1	(2) LC2	(3) LC3	(4) LC4
Dependent Variable	0.735***	0.866***	0.825***	0.860***
	(0.094)	(0.078)	(0.109)	(0.075)
ETHICS	0.204***	0.066	0.186**	0.087*
	(0.064)	(0.057)	(0.087)	(0.052)
Control Variables	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES
Obs.	766	750	754	719
N. of Banks	220	216	225	208
AR(2)	0.210	0.151	0.549	0.983
Hansen J	0.691	0.129	0.023	0.196
Instruments	150	150	151	151

The table reports two-step system-GMM regressions. The dependent variables are LC1, LC2, LC3 and LC4 which are the liquidity creation measures normalized by total assets. ETHICS stands for the relative frequency of ethics-related terms in the annual report. The same control variables as in Table 6.5 are included. The regressions include bank and time fixed-effects. Robust standard errors clustered at the country level are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

Our results have important implications for policymakers and bank managers. The numerous failures in the banking industry in the recent past suggest that there is considerable distance between the principles outlined in disclosures (e.g. codes of ethics) and the ones that bank management adheres to. Our findings further highlight that adopting a code of ethics is merely a strategic decision, while ethics-related terms are more likely to be used to attract more business and manage risk rather than moral consideration. Therefore, a question remains on whether ethical disclosures are effective in disciplining banks through self-regulation. One may argue that prudential regulatory frameworks such as capital and liquidity requirements constitute the only effective solution that can promote stability in the banking industry. However, traditional legal regulations are usually rigid and inflexible and cannot quickly address new arising risks. Hence, it is of high importance that regulators ensure that ethical codes are not misused.

CRediT authorship contribution statement

George Kladakis: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing. **Lei Chen:** Conceptualization, Writing – review & editing, Formal analysis. **Sotirios K. Bellos:** Conceptualization, Writing – review & editing, Formal analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Table 12

The relationship between ethics-related disclosures and liquidity creation using the instrumental variables 2SLS estimator.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
First stage												
	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS	ETHICS
POSITIVE	1.468***	1.682***	1.476***	1.625***					1.342***	1.562***	1.390***	1.542***
	(0.099)	(0.112)	(0.097)	(0.107)					(0.105)	(0.123)	(0.100)	(0.112)
LNWORDS					0.042***	0.046***	0.031***	0.032***	0.033***	0.038***	0.019***	0.022***
					(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)	(0.005)
Second stage												
	LC1	LC2	LC3	LC4	LC1	LC2	LC3	LC4	LC1	LC2	LC3	LC4
ETHICS	0.441***	0.507***	0.449***	0.423***	0.212	0.665***	0.494	0.931***	0.379***	0.552***	0.455***	0.495***
	(0.119)	(0.103)	(0.145)	(0.138)	(0.186)	(0.158)	(0.340)	(0.357)	(0.105)	(0.091)	(0.144)	(0.139)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Obs.	775	755	773	733	775	755	773	733	775	755	773	733
N. of Banks	223	217	226	209	223	217	226	209	223	217	226	209
R2	0.334	0.153	0.213	0.078	0.341	0.114	0.211	0.149	0.339	0.144	0.213	0.071
Hansen J									0.271	0.361	0.893	0.118

The table reports instrumental variables 2SLS regressions. The dependent variables are LC1, LC2, LC3 and LC4 which are the liquidity creation measures normalized by total assets. ETHICS stands for the relative frequency of ethics-related terms in the annual report. POSITIVE stands for positive sentiment in the annual report. LNWORDS is to natural logarithm of the total number of words in the annual report. The same control variables as in Table 8 are included. The regressions include time fixed-effects. Robust standard errors clustered at the bank level are reported in parentheses. *, ** and *** denote significance at the 10 %, 5 %, and 1 % level, respectively.

Data availability

The authors do not have permission to share data.

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