Asian Economic and Financial Review
ISSN(e): 2222-6737
ISSN(p): 2305-2147
DOI: 10.55493/5002.v15i4.5381
Vol. 15, No. 4, 608-629.

URL: www.aessweb.com

Online press and banking performance in a controlled media landscape: Evidence from Vietnam

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Article History
Received: 31 December 2024
Revised: 2 April 2025
Accepted: 21 April 2025
Published: 23 May 2025

Keywords
Media-exposure
Media tone
Online news coverage
Sentiment analysis
Textual analysis
Vietnamese bank efficiency.

JEL Classification:
G21; G32; L82; M31; D82.

ABSTRACT

This study examines the impact of digital press coverage on the performance of Vietnamese banks by extending asymmetric information and signaling theories within a controlled media landscape. Using Scrapy to crawl 35 online outlets (2013–2023), we extracted 181,430 articles mentioning 30 Vietnamese banks. We analyzed these articles using sentiment analysis and the VADER dictionary to construct metrics for media coverage and tone. We employed the Fractional Logit model to regress bank efficiency (measured by DEA) on bank coverage and media tone variables. The findings indicate that increased bank visibility in newspapers improves efficiency, as media coverage reduces information asymmetry and enhances transparency. Additionally, bad news, particularly negative coverage from state-owned media and non-financial newspapers, negatively influences banks' performance compared to positive information. These results remain robust after controlling for endogeneity. Given the significant influence of state-owned media in Vietnam, this study offers practical implications for policymakers to utilize state-owned media as a tool to improve bank efficiency and maintain financial stability. Local newspapers, being more accessible to the general public, can also be leveraged by banks to disseminate information and provide transparency about their financial situation, helping to increase public trust and mitigate negative coverage.

Contribution/ Originality: This study provides empirical evidence on the differences in media coverage of banks across different types of media, particularly the role of state-owned newspapers in bank performance in a controlled media environment.

1. INTRODUCTION

Nowadays, the technological shift is becoming increasingly evident, and the number of digital device users is growing significantly to meet their daily needs, such as communication, access to information, and data storage (We Are Social, 2024). This change reflects a clear shift in consumer behavior. Investors today are also gradually turning to digital news sources for financial information instead of reading complex and difficult-to-understand financial reports (Kim, Wang, & Zhang, 2019). Furthermore, Solomon (2012) pointed out that news disclosure by the press has a more significant impact than company announcements or reports. Recognizing this trend, banks have also integrated digital media into their strategies to improve operational efficiency (Parveen, Jaafar, & Ainin, 2016; Quayson, Abubakari, & Attah, 2024).

It is no surprise that media coverage has received considerable attention from scholars recently following the technology boom. Scholars from an economic perspective tend to view the media's role as one of information dissemination, reducing information asymmetries by providing market participants with relevant data (Bushee, Core,

Guay, & Hamm, 2010), thereby contributing to market efficiency (Peress, 2014). However, most studies primarily focus on firms, such as the impact of media coverage on stock prices (Bednar, 2012; Drake, Guest, & Twedt, 2014), stock returns (Fang & Peress, 2009), capital structure (Dang, Dang, Moshirian, Nguyen, & Zhang, 2019), cost of debt (Gao, Wang, Wang, Wu, & Dong, 2020), reputation (Bushman, Williams, & Wittenberg-Moerman, 2017; Love, Lim, & Bednar, 2017), strategy, and governance (Dai, Parwada, & Zhang, 2015). In addition, many studies have used sentiment analysis to examine the impact of media tone on investor behavior, such as those by Tetlock (2007); Tetlock, Saar-Tsechansky, and Macskassy (2008); Yu, Duan, and Cao (2013); and Call, Emett, Maksymov, and Sharp (2020). However, the U.S., a developed country with a free media system and high public education levels, conducted these studies. Consequently, the impact of media in a controlled media landscape, such as Vietnam, where public education levels are lower, may differ significantly from that observed in developed countries.

On the other hand, although banking is an industry highly sensitive to media due to its reliance on public trust (Van der Cruijsen, De Haan, & Roerink, 2023), studies on the impact of media on banks have received less attention compared to firm-level research. Existing studies mainly focus on specific aspects of banking, such as the relationship between media coverage and depositors (Lempsch, 2024), the impact of media coverage on lending decisions (Houston, Lin, & Ma, 2011), the effect of media coverage on bank runs during financial crises (Goedde-Menke, Langer, & Pfingsten, 2014), and the effect of media reputation on the financial ratio ROE (Return on Equity) (Doan, Hoang, & Pham, 2020). However, the impact of media coverage on banking efficiency has not been comprehensively studied.

Bank efficiency is a broader concept when assessing the impact of media coverage, as it involves minimizing inputs and maximizing outputs. Meanwhile, media coverage can influence both inputs and outputs, including staff costs (Core, Guay, & Larcker, 2008; Kang & Kim, 2017), advertising costs (Gurun & Butler, 2012; Rinallo & Basuroy, 2009), investor attraction, deposits (Lempsch, 2024), and loans (Bushman et al., 2017; Houston et al., 2011).

Although a study on the relationship between media and bank performance in Vietnam has been conducted by Doan et al. (2020), it only examines the effect of media reputation on financial ratios (ROE) without comprehensively considering the impact of media coverage on banking efficiency. Moreover, it does not differentiate between media tone or the varying effects of different types of press. Meanwhile, in Vietnam, where the media is controlled by the state and aligned with government policies (Do, 2021; Lim, 2024; Reporters Without Borders (RSF), 2022), the government plays a crucial role in shaping public opinion, regulating the banking industry, and maintaining financial stability (Spitler, 2024), particularly during financial crises. Furthermore, the banking sector requires more regulation and supervision than other industries (Yang, 2019). However, previous studies have overlooked the distinction between the roles of state-owned and private media when examining media's impact on banks.

To address this research gap, our study is the first to investigate the role of media coverage in influencing bank efficiency while considering media tone and the differing effects of various types of newspapers in a controlled media landscape like Vietnam. To conduct this study, we measured media coverage of 30 Vietnamese banks in online articles from 2013 to 2023. Using Scrapy, we extracted 181,430 articles mentioning these banks and applied the VADER dictionary to analyze sentiment, measuring media tone and compiling annual coverage statistics. Our results indicate that banks receiving more media attention tend to perform better. In addition, negative news from state-owned media and non-financial articles significantly impacted bank performance. This study highlights the dominant role of state-owned media in shaping public perception and influencing private press in Vietnam. Because most readers have limited financial knowledge, local newspapers are generally more accessible, leading to bank efficiency being more adversely affected by negative coverage in mainstream media than in financial publications.

Our study contributes to both academic literature and practical applications in several ways:

First, from a theoretical perspective, this study extends asymmetric information theory and signaling theory by applying them to Vietnam's specific context, where corporate disclosure systems are incomplete (Thai, Phong, & Hong, 2021), media is controlled, and political influences on media coverage are prevalent. Despite these factors, media continues to play a crucial role in disseminating information beyond official disclosures from banks.

Second, from a practical perspective, this study highlights the importance of state-owned media in maintaining financial market stability. Negative news from state-owned media has a detrimental impact on bank performance. Therefore, policymakers could utilize state-owned media as an official channel to manage and support banking operations more effectively. Given that Vietnam's education levels are lower than those in developed countries, banks may benefit from leveraging local newspapers rather than financial publications as communication tools to attract investors and depositors, advertise products, recruit staff, and build public trust, ultimately improving operational efficiency. Additionally, banks should ensure transparency in financial disclosures through media channels to enhance public confidence and reduce information asymmetry.

The remainder of this paper is organized as follows. Section 2 provides a literature review. Section 3 describes the methodology and data. Section 4 presents the results. Finally, Section 5 discusses the findings and suggests implications.

2. LITERATURE REVIEW

2.1. Theoretical Perspective

From a theoretical perspective, the information asymmetry theory, as discussed in the Nobel Prize Lecture by Akerlof, Spence, and Stiglitz (2001), suggests that disparities in information among stakeholders, such as depositors, investors, and banks, can lead to inefficient decisions. The media plays an intermediary role in reducing information asymmetry by disseminating information, thereby helping stakeholders make better decisions. As Vietnam is a developing economy, information asymmetry is often higher due to an incomplete information disclosure system (Thai et al., 2021). By disseminating information about banks and providing a transparent environment for investors, electronic newspapers play an important role in reducing information asymmetry, improving transparency, and increasing public trust, ultimately enhancing the efficiency of bank operations.

Based on Spence (1973) Signaling Theory, organizations send signals about their quality through information, such as a positive media presence. These signals help reduce uncertainty and attract customers and investors. In this context, online newspapers serve as a channel to signal the quality of a bank's operations to investors and depositors. The presence of electronic newspapers, especially positive articles, can send strong signals about reputation and efficiency. Therefore, the media plays an important role in signaling management capacity, reducing the cost of capital, and increasing the competitiveness of banks.

2.2. Media Coverage and Media Tone

Although there have been many studies on media coverage in the financial sector, they primarily recognize the media's role as a rational agent in reducing information asymmetry (Fang & Peress, 2009; Fang, Peress, & Zheng, 2014; Gao et al., 2020). By collecting and verifying information from multiple sources, media coverage mitigates information friction and improves firms' information environments. This effect is stronger for firms that are less visible in the business press or financial analyst coverage (Fang et al., 2014). Therefore, firm visibility in the media attracts more attention from investors (Bushee & Miller, 2012). Furthermore, the media impacts other aspects, such as human capital. For example, studies by Core et al. (2008) and Kang and Kim (2017) show that the media can be used to manage human resources effectively and adjust senior managers' salary levels.

In addition to media coverage, another equally important factor in the study is media tone. Factors to be considered include publications' reporting styles—whether the articles are opinion-based or factual—and whether they convey negative or positive tones. Extensive research has employed sentiment analysis techniques to assess how the tone of news content affects investment decisions and investor psychology. For example, studies by Tetlock (2007) and Yu et al. (2013) provide empirical evidence of the relationship between media tone and investor decisions. Dang et al. (2019) reported that media tone plays a monitoring role, helping enterprises adjust their financial leverage structure more quickly in response to negative or positive news. This evidence further supports the argument that a

negative tone is likely to influence firms' behavior in maintaining their image and financial stability. Call et al. (2020) expanded this perspective by examining financial journalists' role as information intermediaries, directly influencing investor and market perceptions. They showed that the tone and presentation of information in financial articles can significantly change investor behavior, especially when negative news is emphasized.

Bednar (2012), who analyzed positive, negative, and neutral press coverage of large companies, showed that media tone can be viewed as a corporate governance mechanism, reinforcing the role of the media as a watchdog that shapes investor perceptions and sentiment. Similarly, Miller (2006) demonstrated that media tone can serve as a watchdog in detecting financial fraud and influencing changes in financial reports to avoid criminal prosecution. Media tone not only influences investor psychology, but it also conveys important signals about a company's financial health and performance that are not easily discernible from traditional financial indicators (Tetlock et al., 2008). For example, when the media publishes negative news about a company's board of directors, when published by the media, can signal potential risks or poor performance (Joe, Louis, & Robinson, 2009). However, most previous studies in the firm context have focused primarily on major financial articles targeted at knowledgeable investors. Another limitation is that these studies were conducted in developed countries with media freedom and highly educated populations, rather than in developing countries with controlled media systems. Consequently, the findings from these studies may not be directly applicable to different media environments.

2.3. Media and Bank Performance

Although there have been many studies on media coverage in the firm context, very few have directly examined the impact of media coverage on bank performance. Instead, existing research assesses media coverage's impact on specific aspects of bank performance, including effects on loans, deposits, and risks. For example, Houston et al. (2011) found that media coverage can influence the quality of bank loans, particularly in areas with concentrated media ownership, where loan quality may be less effective and credit risk may increase. However, this study focused primarily on media concentration and ownership, without clarifying the roles of state-owned and private media in bank performance. Meanwhile, Bushman et al. (2017), using data on private loans in the U.S., analyzed the relationship between public information disseminated through the media and loan conditions to assess media coverage's influence on banks' lending decisions. Their findings suggest that media presence can improve firms' access to financing. However, their study focused solely on the media's role in providing information without examining the impact of media tone. Regarding the impact of media on depositor behavior, Lempsch (2024) classified the effects of different media tones as positive and negative news; however, their study relied on printed newspapers rather than electronic newspapers or social media networks. In Vietnam, Doan et al. (2020) examined the impact of online newspapers on the financial performance of commercial banks and found that media reputation positively affects ROE. However, this study was limited as it only used data from a few Vietnamese newspapers, restricting the analysis of different newspaper types and tones.

Additionally, banks are highly vulnerable to media influence because they rely heavily on public trust, particularly among depositors. Goedde-Menke et al. (2014) found that in the post-crisis period, media coverage could increase banks' risk exposure. While their study suggested leveraging media to reduce risks in the banking sector, it did not examine whether government-owned media could help banks mitigate risk and improve operational efficiency. Another limitation is that it focused mainly on large banks, overlooking small banks and specific controlled media environments.

2.4. Hypothesis

Some suggest that online news coverage increases information asymmetry because journalists tend to align with business interests and maintain close relationships with their sources (Schiffrin, 2012). News content can be biased by political connections, government influence, and journalists' personal preferences (Baron, 2006). Some customers

even avoid online news, perceiving it as untrustworthy. Media avoidance is a growing phenomenon caused by information overload (Cheng, Liu, & Zhang, 2024; Dai, Feng, & Liu, 2020). As a result, depositors rely on banking relationships and social networks rather than media reports (Iyer & Puri, 2012). They select banks based on referrals from personal connections rather than media visibility (Ahern, Duchin, & Shumway, 2014). Consequently, regardless of how frequently a bank is featured in digital newspapers, there may be no significant effect on its performance or customer behavior in choosing banking services. Additionally, advertising spending increases press attention, and positive media coverage may lead companies to spend more on advertising in the future (Gurun & Butler, 2012; Rinallo & Basuroy, 2009).

On the other hand, high-frequency reporting, or frequent appearances in mass media, including television, newspapers, and the Internet, generally increase popularity (Love et al., 2017; Prokofieva, 2015). Increased popularity attracts new investors, business connections, and opportunities (Lee, Cho, Arthurs, & Lee, 2020) and strengthens reputation, which, in turn, enhances the ability to retain and attract valuable employees (Riordan, Gatewood, & Bill, 1997). Greater employee loyalty and productivity are associated with improved human resource management (Strenitzerová & Achimský, 2019). This can enhance banks' performance through more efficient employees. A strong reputation also enables banks to attract more customers and charge higher interest rates on loans. Kim, Kristiansen, and Vale (2005) suggested that customers prefer to borrow from reputable banks even if they must pay higher interest rates. Based on the above discussion, we hypothesize:

H_1: The presence of banks in the media has a positive impact on bank performance in Vietnam.

Negative tones often have a stronger impact on perceptions due to people's sensitivity to bad news (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Tetlock, 2007). Through digital media, negative information about banks spreads quickly and widely, damaging their reputation and negatively affecting sales (Cutlip, 1995; L'Etang, 2004). However, according to Berger, Sorensen, and Rasmussen (2010) bad news is not always detrimental, as some companies can use negative information to strengthen their image by demonstrating transparency and addressing product flaws. Such actions can increase firms' transparency. Given the trust-sensitive nature of the banking industry, we expect media tone to play an even more significant role. Negative news can erode trust and create public fear regarding the safety of deposits and investments. We hypothesize that negative news can erode trust and create public fear regarding the safety of deposits and investments:

H_2: Bad news negatively affects the performance of banks in Vietnam.

Our study extends the theory of information asymmetry and signaling by applying it to a specific context, providing a new perspective on the role of media coverage and media tone in improving bank efficiency in a developing country like Vietnam. Given the government's dominant role in shaping public opinion (Do, 2021), state-owned media are likely to have a stronger impact on banks' reputations than private media channels. Additionally, individuals with limited interest in financial topics and lower education levels are less likely to engage with finance-related media (Lempsch, 2024). Therefore, local newspapers are expected to have a stronger impact than financial newspapers.

H_3: State-owned media have a stronger impact than private media on bank performance in Vietnam.

H_4: Local newspaper articles have a stronger impact on bank performance in Vietnam compared to financial newspapers.

3. METHODOLOGY AND DATA

3.1. Data Collection

We collected financial reports from 30 Vietnamese banks between 2013 and 2023 and used textual analysis to determine how frequently and with what tone they were mentioned in digital newspapers during this period. Our study covers the period from 2013 to 2023 to avoid bias from the 2008 financial crisis and its aftermath. This timeframe represents a more stable economic environment and a decline in financial crisis-related news coverage, which could otherwise skew the selection of news samples. Furthermore, during this period, Vietnam implemented

significant banking sector reforms and experienced technological advancements, including increased digital media adoption (Nguyen, Rault, & Trinh, 2020).

In this study, we focus on online press sources. The reason for using online press volume as a proxy for media coverage is that newspapers are a primary source of financial sector information (Davis, 2006). Media coverage is measured by the number of articles mentioning a company, a straightforward and widely used metric in research (Dai et al., 2015). In addition, media tone is typically conceptualized as the degree of favorable or unfavorable sentiment, a measure employed by many researchers (Carter, 2006).

3.2. Media Exposure and Media Tone: Sentiment Analysis

To analyze sentiment in Vietnamese banking news coverage, we first used Scrapy to extract relevant articles from 35 online news outlets about 30 banks from 2013 to 2023. As Scrapy is open source, it can be installed via the Python terminal (https://scrapy.org/). Each Scrapy spider was assigned to a specific electronic newspaper, programmed with keywords related to Vietnamese bank names, and set to retrieve necessary data, including article titles, content, and publication dates. After Scrapy automatically collected and stored relevant articles, we compiled a dataset of 181,430 news articles. These articles were then analyzed for sentiment to assess their tone. Several word lists are commonly used to measure sentiment, including the Harvard IV-4 dictionary (Henry, 2008), the LM (Loughran-McDonald) sentiment dictionary (Loughran & McDonald, 2016), and the VADER dictionary (Hutto & Gilbert, 2014). Among these, VADER is the most suitable for this study in the Vietnamese market because it is designed to handle modern linguistic elements, which aligns with the simple and widely accessible language used in Vietnamese newspapers. Moreover, VADER is designed to handle modern linguistic elements, such as exclamation marks (!!!) and emoticons. Unlike other dictionary-based tools that primarily focus on specialized or financial language, VADER more accurately reflects sentiment and tone across financial and non-financial, state, and private newspapers. VADER has also been widely used in media and social studies (Chavan, Latthe, Dhorepati, Suryawanshi, & Sharma, 2024; Thapa, 2022) and has demonstrated superior performance in sentiment analysis often (Hutto & Gilbert, 2014). However, as VADER is incompatible with Vietnamese text, each of the 181,430 articles in our dataset was translated into English using Google Translate while preserving punctuation and context to ensure accurate sentiment analysis.

The Google Translate API automatic translation library in Python makes this step easy to perform. Next, we downloaded VADER in Python (https://pypi.org/project/vaderSentiment/) to scan the entire article and calculate a compound score. Each word or phrase is assigned a sentiment score from VADER's sentiment dictionary. A higher proportion of negative words indicates a more negative tone, while a higher proportion of positive words indicates a more positive tone. This score is normalized within a range of -1 to 1. VADER also adjusts sentiment for contextual factors such as intensity and punctuation. Each article is classified as positive (≥ 0.05), negative (≤ -0.05), or neutral (-0.05 to 0.05) based on the compound score. Finally, we compiled statistics and derived two datasets: Media Exposure, which measures the frequency of bank mentions per year, and Media Tone, which categorizes articles as positive or negative based on sentiment analysis.

Using Google Translate may raise concerns about sentiment analysis accuracy, particularly when dealing with polysemous phrases, despite VADER's primary development for English. To increase reliability, we randomly checked five percent of translated articles and compared them with VADER's sentiment classification.

We also categorized financial and local newspapers based on their structure and content. Financial newspapers focus exclusively on finance, banking, and securities, whereas local newspapers cover various topics, including lifestyle, technology, and entertainment, with dedicated financial sections. This categorization ensures that the data accurately reflect the impact of different newspaper types on banking performance. It also helps reach a broad readership, including individuals without financial expertise.

3.3. Measuring Vietnamese Banks' Efficiency Scores

Previous banking studies have widely discussed the measurement of efficiency and proposed various approaches. Efficiency measurement is better than using financial ratios because ratios can't effectively analyze the complex relationships between different factors and don't fully capture how well a bank is performing. Several modeling techniques are available to assess bank efficiency, with stochastic frontier analysis (SFA) and data envelopment analysis (DEA) being the most commonly used. While many studies have adopted SFA-based approaches (Jiang, Yao, & Zhang, 2009; Nguyen, Nghiem, Roca, & Shrma, 2016), DEA is the most widely applied operational research technique for evaluating bank performance (Fethi & Pasiouras, 2010). In this study, we used DEA to estimate bank efficiency and examine how media coverage affects it, as DEA is well suited for assessing the long-term impact of digital news coverage on banking performance.

Our model assumes variable returns to scale (VRS) with an output orientation (maximizing profit). VRS is more appropriate than constant returns to scale in banking efficiency assessment, as the banking industry consists of institutions of varying sizes operating in diverse markets (Zhang & Wang, 2014). We follow a value-added approach consistent with previous studies (e.g., (Anouze & Bou-Hamad, 2019; Ferreira, 2019)). The input variables include fixed assets, salary, and equity, while the output variables consist of loans, deposits, and other income. We assume that media coverage enhances transparency and strengthens public trust, ultimately influencing bank efficiency. Thus, the value-added approach enables us to emphasize the impact of media coverage on the value banks generate.

After evaluating the performance of 30 commercial banks in Vietnam over the 2013–2023 period, we applied the fractional logit estimator to examine the impact of bank coverage in digital newspapers on efficiency. The fractional logit model ensures that predicted values remain within the 0 to 1 range, aligning with DEA efficiency scores. Moreover, this method accommodates potential nonlinear relationships between media variables and bank efficiency. Prior studies have demonstrated its effectiveness (Basílio, Pires, Borralho, & dos Reis, 2019; Papke & Wooldridge, 1996). The fractional logit estimator, developed by Papke and Wooldridge (1996), relies on quasi-likelihood estimation. While Hoff (2007) suggests using ordinary least squares (OLS) for the second stage of DEA modeling, McDonald (2009) believes that efficiency scores should be seen as fractional data from a limited data-generating process. To ensure robustness, we also conducted OLS-based robustness tests.

This study uses the lagged value of the independent variable (media exposure) instead of the current value, which may introduce reverse causality. We chose a one-year lag because Vietnamese banks publish their official consolidated financial statements annually. We use the lagged values of media exposure, bad news, and good news. As a bank's current performance does not directly influence its media coverage from the previous period, this approach effectively minimizes reverse causality. Media exposure in the prior period can influence public awareness, enhance reputation, and attract investors, ultimately affecting financial performance in the subsequent period. However, a bank's current performance is unlikely to retroactively alter media coverage from the previous period. Thus, using lagged variables effectively mitigates reverse causality concerns.

3.4. Control Variables

The selection of control variables is informed by prior studies (e.g., (Cheng & Qu, 2020; Lempsch, 2024)). To account for bank characteristics, we include the following variables: The variables that account for bank characteristics include Age (natural logarithm of bank age), Size (natural logarithm of total assets at the end of the news publication year), Equity (equity-to-total-assets ratio), IC (total interest expenses-to-total-deposit ratio), Foreign (dummy variable equal to 1 if the bank has a foreign shareholder), and Diver (ratio of other operating income to total net interest income). Table 1 provides detailed definitions of these variables.

4. RESULTS AND DISCUSSION

4.1. Descriptive Results

The results in Table 1 indicate that the average technical efficiency score was 0.869, suggesting relatively high efficiency. The standard deviation was 0.159, reflecting moderate variation. Media exposure exhibited a standard deviation of 3.481, suggesting that some banks receive significantly more media attention than others. Most news coverage was neutral rather than positive or negative.

To analyze bank-specific media exposure, we categorized coverage into financial-oriented and local news. Financial-oriented newspapers were defined as outlets primarily dedicated to financial content. Government-owned outlets were distinguished by their role in providing official information to Vietnamese citizens.

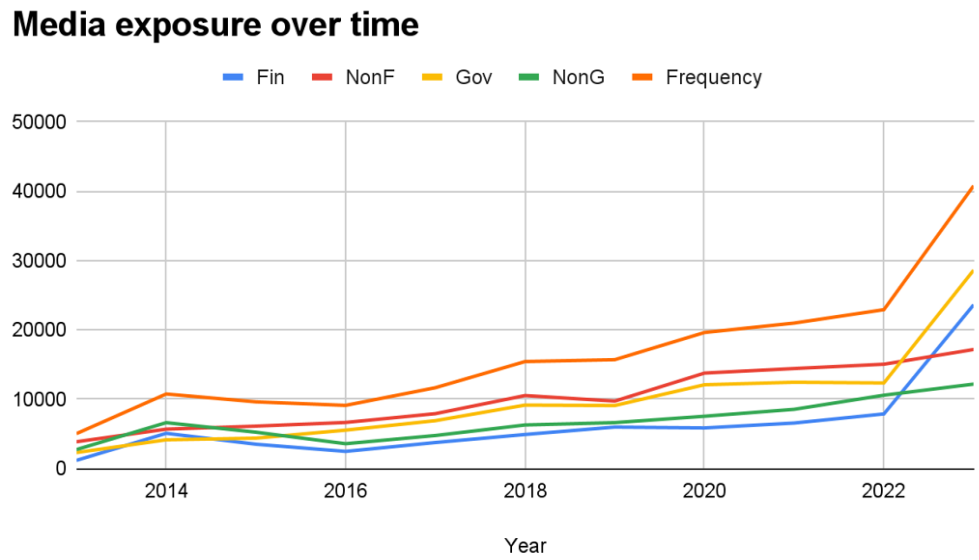

Figure 1. Banking online press coverage: This figure illustrates the media exposure variable for the total media sample. The sample was categorized into financially oriented news, local news, and government and private media outlets. The axis is the number of articles published in a respective year.

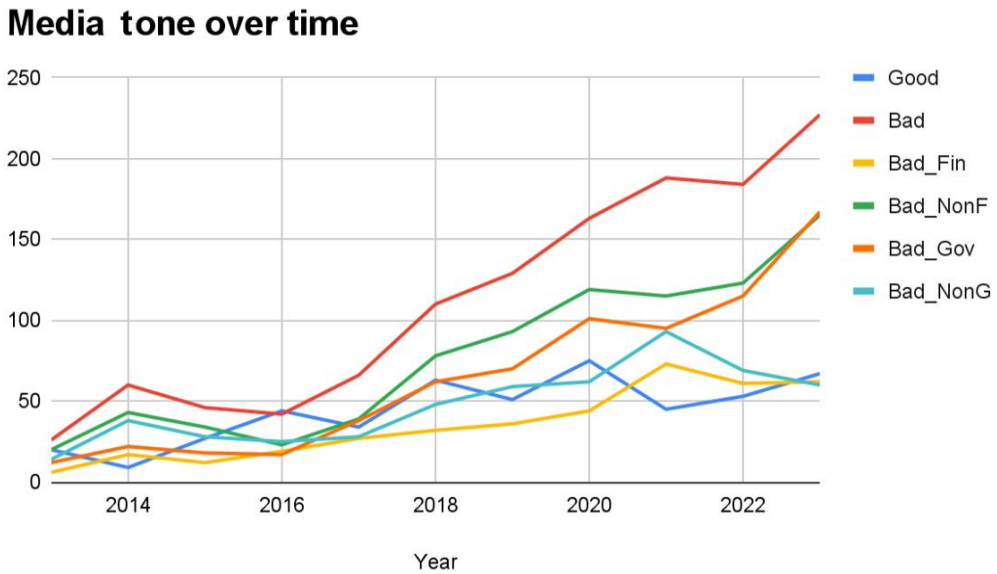

Figure 2. The chart shows the volume of bad and good news about banks, categorized by finance-related content and government-owned outlets. The axis is the number of articles published in a respective year.

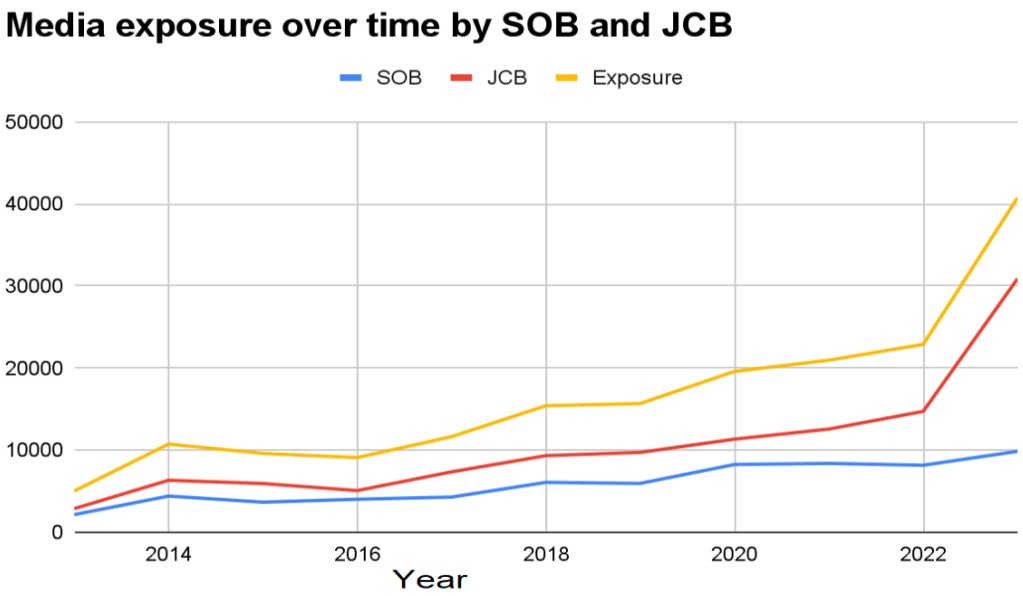

Figure 3. The volume of bank-specific coverage in digital newspapers categorized by state-owned banks (SOBs) and joint-stock commercial banks (JCBs). The axis is the number of articles published in a respective year.

Figure 1 illustrates increasing media interest in the banking sector, particularly after 2022, with local newspapers contributing more coverage than financial-oriented outlets. Government-owned news platforms also displayed heightened attention to banking topics compared to private outlets. Figure 2 shows a steady rise in negative coverage beginning in 2020, coinciding with the COVID-19 pandemic. This trend was particularly evident in non-financial media and government-owned outlets. In contrast, positive coverage remained relatively low and stable, reflecting a stronger focus on negative news during this period. Despite comprising only four institutions, state-owned banks (SOBs) dominated media coverage, accounting for nearly half of all banking-related news. The remaining 26 joint-stock commercial banks (JCBs) shared the rest. However, media attention toward JCBs increased after 2022, indicating a growing focus on the private banking sector (Figure 3).

Table 1. Descriptive statistics, variable definitions, and data source.

Variables	Obs.	Mean	Std. dev	Min.	Max.	Definition	Source
Dependent variables							
DEA	324	0.869	0.159	0.42	1	Bank technical efficiency scores are estimated by DEA (Data envelopment analysis). The efficiency values range from 0 to 1. A score of 1 indicates that the bank is efficient and operating within the efficient frontier.	Author
Media exposure							
Exp	324	3.235	3.481	0.02	13.505	Natural logarithm of the number of online articles published about a Vietnamese bank in a given year.	Author
Media tone							
Bad	324	3.830	6.200	0	40	Bad news: Negative observations of sentiment score of online articles published about a bank each year.	Author
Good	324	1.506	2.653	0	17	Good news: Positive observations of sentiment score of online articles published about a bank in a given year.	Author
AttractB	324	0.623	0.485	0	1	A dummy variable equal's one if a bank has bad news each year; otherwise, 0.	Author
AttractG	324	0.472	0.500	0	1	A dummy variable equals one if a bank has good news each year; otherwise, it is 0.	Author
Bad_Fin	324	1.201	2.741	0	31	The number of bad news articles reported by outlets classified as financial-oriented newspapers each year.	Author
Bad_NonF	324	2.630	4.163	0	26	The number of bad news articles reported by outlets classified as local newspapers each year.	Author
Bad_Gov	324	2.213	3.832	0	27	The number of bad news articles reported by government-owned- outlets in a given year.	Author
Bad_nonG	324	1.481	3.231	0	37	The number of bad news articles reported by private-owned outlets each year is on the rise.	Author
Controls							
Age	324	3.678	2.809	0	18.904	The natural logarithm of the age of the bank was computed by subtracting its year of incorporation from each year of the study.	Financial-statement
Size	324	18.408	3.075	3.05	21.557	Natural logarithm of total assets.	Financial-statement
Equity	324	8.722	3.385	4.06	23.838	Equity = $\frac{Total\ Equity}{Total\ assets}$x100%	Financial-statement
IC	324	6.286	1.69	2.490	12.596	IC = $\frac{Total\ Interest\ expenses}{Total\ deposits}$x100%	Financial-statement
Diver	324	5.336	7.006	0.030	78.331	Diver = $\frac{Other\ operating\ income}{Net\ Interest\ Income}$x100%.	Financial-statement
Forei	324	0.324	0.469	0	1	A dummy variable that is equal to 1 if a bank has a foreign shareholder, otherwise 0.	Financial-statement
ROAA	324	1.985	4.514	-12	24.8	ROAA = $\frac{Net\ Income}{Average\ Total\ assets}$ x100%.	Financial-statement

4.2. Regression Results

The results in Table 2 indicate a significantly positive relationship (at the 5% significance level) between banks' coverage in digital newspapers and their efficiency (Models 1 and 2). This finding suggests that increased public awareness through frequent publicity in online news may have positively influenced bank efficiency during this period. The more banks appear in digital newspapers, the better their performance. This result is consistent with prior studies, such as Fang and Peress (2009) and Gao et al. (2020), which indicate that media coverage enhances the information environment, reducing equity and debt costs. Digital newspapers play an important role in disseminating bank-related information, including marketing efforts, improving communication with customers, enhancing reputation, attracting investors (Bushee & Miller, 2012), and increasing market value (Fang & Peress, 2009). Previous studies in finance suggest that media dissemination can significantly improve the effectiveness of bank disclosures, particularly in addressing information asymmetry (Blankespoor, Miller, & White, 2014). Smith and Wright (2004) reported that mitigating asymmetric information promotes greater transparency, helps eliminate inefficiencies, and positively influences bank financial performance. Our findings are also consistent with the watchdog hypothesis, which posits that online news acts as a "watchdog" by collecting, distributing, and analyzing news from other information intermediaries (Bednar, 2012; Miller, 2006). Psychological research shows that people are significantly affected by negative information (Baumeister et al., 2001), particularly sensationalism and scandal (Darnton, 1975). Consequently, negative news is more likely to damage a bank's image, reputation, and depositor confidence compared to favorable or positive coverage (Tetlock, 2007). Our results show that negative news has a statistically significant negative impact on bank performance and investor and depositor decisions at the 10% significance level (Model 2). This finding aligns with previous studies such as Call et al. (2020) and Dang et al. (2019), which reveal that negative articles exert a greater influence than positive or neutral ones.

Table 2. Media exposure and bank efficiency.

Independent variables	Fractional logit		Fractional logit	
	(1) DEA (Full sample)	(2) DEA (Full sample)	(3) DEA (sub-sample)	(4) DEA (Sub-sample)
Exp_{t-1}	0.4128** (-0.187)	0.443** (-0.196)	0.424** (-0.189)	0.453*** (-0.146)
Bad_{t-1}		-0.031* -0.017)		-0.028** (-0.014)
$Good_{t-1}$		-0.0264 (-0.035)		-0.031 (-0.036)
Size	0.208 (-0.456)	0.41 (-0.441)	0.214 (-0.455)	0.406 (-0.380)
Age	0.098 (-0.704)	0.042 (-0.724)	0.103 (-0.715)	0.067 (-0.823)
Equity	-0.177*** -0.049)	-0.168*** (-0.048)	-0.176** (-0.049)	-0.168*** (-0.037)
IC	0.143* (-0.082)	0.142* (-0.080)	0.151* (-0.083	0.148 (-0.106)
Diver	-0.024** (-0.009)	-0.024*** (-0.009)	-0.024** (-0.010)	-0.024*** (-0.008)
Forei	0.648*** (-0.217)	0.734*** (-0.230)	0.643*** (-0.220)	0.723*** (-0.239
ROAA	0.042* (-0.023)	0.042* (-0.024)	0.040* (-0.024)	0.049 (-0.026)
Year dummies	Yes	Yes	Yes	Yes
Bank dummies	Yes	Yes	Yes	Yes
Observations	294	294	256	256
Prob > chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.2079	0.2095	0.1793	0.1807
Banks	30	30	26	26

Note: The table reports the result for relationship between banks' coverage in digital newspapers and their efficiency by applying a Fractional logit – Quasi-likelihood estimation method. Our models 1 and 2 are full sample of 30 banks, while the results from Models 3 and using the subsample of 26 banks. Robust standard errors are given in the parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively. All regressions use clustered standard errors at the bank level to account for autocorrelation and heteroscedasticity. The variance inflation factors suggest that high multicollinearity is not a concern.

4.3. Subsample

The four SOBs dominate the Vietnamese banking system and receive more media coverage than other banks. This dominance is evident in the media coverage data illustrated in Figure 3, where these SOBs account for nearly half of all banking-related news. To prevent the results from being disproportionately influenced by the SOBs, we created a subsample excluding the four state-owned banks, leaving 26 banks in the new sample. The results from Models 3 and 4, using the subsample of 26 banks, are consistent with those from Models 1 and 2 (using the full sample of 30 banks) and demonstrate even higher statistical confidence levels. We conclude that media coverage significantly enhances bank performance and that bank performance is particularly sensitive to negatively toned media. Given the dominant effect of negative tone, the analysis focuses on the "bad news" variable to reduce noise caused by positive news observations. This result is consistent with Call et al. (2020), which confirms the role of communication tone in influencing bank image and performance, particularly in the Vietnamese context of Vietnam.

Readers with varying levels of education tend to favor different types of newspapers. For example, investors with financial knowledge are more likely to read financial newspapers. The findings raise the question: what kind of bad news is more likely to influence bank performance?

4.4. Additional Analysis

The results suggest that while higher media coverage improves bank performance, bad news has a more significant impact than good news. This is consistent with psychological research Baumeister et al. (2001) which shows that people are more drawn to unfavorable media coverage than to positive stories. Assuming that investors with financial knowledge prefer financial-oriented newspapers, we further separate the online article sample into finance-oriented and local newspapers to determine which type of bad news has a greater impact on bank performance. In addition, given the critical role of the government in providing reliable information in Vietnam, government-owned newspapers—official state outlets—are likely to have a greater influence on readers than private online press outlets. Therefore, we categorize the sample into government-owned and private media outlets to examine the impact of their negative news coverage.

Table 3 suggests that media coverage in finance-oriented and government-owned outlets is more inclined toward a negative tone and has a greater impact on bank performance compared to other sources. Specifically, bad news from local newspapers has a statistically significant negative impact at the 5% level, while bad news published by government-owned outlets negatively affects bank efficiency at the 1% level (Models 5 and 6, respectively). First, this finding is consistent with Miller (2006), who suggests that specialized news outlets produce original content, while less specialized media outlets tend to redistribute content from other sources. This leads to comparable content between the two groups. However, despite these similarities, financial newspapers are more suitable for individuals with a strong interest in and knowledge of finance, whereas local newspapers cater to a broader audience. As the general public is significantly larger in number than those with financial expertise, negative news in local newspapers is likely to have a greater impact on bank performance than in financial newspapers. Non-specialized newspapers often reach a larger readership due to their diverse, easy-to-read, and accessible content. Readers searching for unrelated information may inadvertently come across financial news through suggested articles, increasing their exposure to negative reports about banks. The popularity and accessibility of local newspapers make them an effective channel for disseminating banking information to a broad audience, including those with little interest in finance.

Second, our results show a significant negative correlation between negative news from government-owned outlets and bank performance, highlighting the role of the state and the level of public trust in state-owned media. In Vietnam, the press is a key tool for guiding public opinion and shaping public awareness. Government newspapers are widely considered trustworthy because they reflect official viewpoints and wield influence over public beliefs. As a result, negative information from government-owned newspapers often has a stronger impact, as it is more readily accepted by the public as an official message, thereby affecting banks' reputations and performance. Negative

information from government newspapers may be perceived by the public as a "warning sign," leading to a loss of trust or a shift in behavior toward banks.

Table 3. Finance-oriented and Government-owned media exposure.

Independent variables	Fractional logit	
	(5) DEA	(6) DEA
Exp_{t-1}	0.428** (-0.193)	0.432** (-0.192)
Bad_Fin_{t-1}	0.008 (-0.027)	
Bad_NonF_{t-1}	-0.053** (-0.024)	
Bad_Gov_{t-1}		-0.057*** (-0.031)
Bad_nonG_{t-1}		-0.004 (-0.027)
Controls	Yes	Yes
Year dummies	Yes	Yes
Bank dummies	Yes	Yes
Observations	294	294
Prob > chi2	0.000	0.000
Pseudo R2	0.2096	0.2095

Note: The table reports the result for a Fractional logit – Quasi-likelihood estimation method. Robust standard errors are given in the parentheses. ***, **, * denote statistical significance at the 1% and 5% levels, respectively. All regressions use clustered standard errors at the bank level to account for autocorrelation and heteroscedasticity. The variance inflation factors suggest that high multicollinearity is not a concern. In addition, we also ran t-tests to find out the difference in mean negative tone between the following groups: finance-related and local newspapers, government-owned outlets, and private media outlets. The results indicate that local newspapers and government-owned media outlets report significantly more negative news about banks compared to financial-oriented and private media outlets. This suggests that local and government-owned media may have different reporting styles when covering banking-related topics.

4.5. Robustness

4.5.1. Model Specification

If we don't consider past performance, the media might give more attention to banks that are doing well right now or to those that are struggling with a lot of bad loans, which could lead to misleading conclusions about the relationship between media coverage and bank performance. However, if the media's impact is immediate—for example, if a bank appearing in the news has an immediate effect on its performance—using lagged variables may not be necessary. To confirm whether lagged variables improve the model, we conducted a test comparing models with and without them. After recalculating the regression model without lagged variables, Model 7 in Table 4 shows that media coverage still significantly affects bank performance, while a negative tone continues to harm bank performance (significant at the 10% and 1% levels, respectively). This finding confirms that lagged variables are essential for capturing time-lag effects and ensuring model robustness.

Table 4. Model specification check: Without lagged variables.

Independent variables	Fractional logit
	(7) DEA
Exp	0.358* (-0.205)
Bad	-0.034*** (-0.009)
Good	-0.039 (-0.027)
Size	0.081 (-0.064)
Age	0.0202 (-0.080)

Independent variables	Fractional logit
	(7) DEA
Equity	-0.025*** (-0.005)
IC	0.019 (-0.014)
Diver	-0.004** (-0.002)
Forei	0.097** (-0.038)
ROAA	0.006 (-0.004)
Year dummies	Yes
Bank dummies	Yes
Observations	294
Prob > chi2	0.000
Banks	30

Note: The table reports the results for checking model specification, we re-run the model without lagged variables. Robust standard errors are given in the parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively. All regressions use clustered standard errors at the bank level to account for autocorrelation and heteroscedasticity. The variance inflation factors suggest that high multicollinearity is not a concern.

4.5.2. Endogeneity

A bank with strong performance, a high return on average assets (ROAA), or specific characteristics may attract media attention by reporting significant improvements. By contrast, a bank with high non-performing loans (NPLs) may receive less favorable media sentiment. Therefore, the observed effects are likely driven by changes in bank characteristics. The relationship between media proxies and bank performance can also be influenced by endogeneity. To address the concern of reverse causality caused by selection bias, we apply Heckman's two-step method. First, we use a probit model to estimate the probability that a bank will attract media attention (both positive and negative). In Model 8 (AttractB), a bank receives a value of 1 if it has negative news coverage in a given year; otherwise, the value is 0. In Model 9 (AttractG), the dependent variable takes a value of 1 if the bank has positive news coverage in a given year; otherwise, the value is 0. This step estimates the likelihood that a bank will attract media attention based on past performance and other bank-specific variables. These estimates produce values called Inverse Mills Ratios (IMRs), which are then used as control variables in the OLS regression model to adjust for self-selection bias.

In both cases, media exposure remains significant at the 1% level, as shown in Table 5. However, the variables for positive and negative media tone lose significance. The IMR in Model 8 is significant at the 10% level, suggesting weak selection bias, which the Heckman model corrects. In contrast, the IMR in Model 9 is not statistically significant, indicating that positive coverage is less influenced by unobserved bank-related factors.

Table 5. Heckman Two step correction for endogeneity bias.

Independent variables	Heckman 2steps	
	(8) DEA	(9) DEA
	(AttractB)	(AttractG)
Exp_{t-1}	0.067*** (-0.015)	0.132*** -0.029
Bad_{t-1}	-0.001 (-0.003)	-0.001 (-0.001)
$Good_{t-1}$	0.000 (-0.001)	-0.003 (-0.002)
Size	-0.102** (-0.050)	-0.093 (-0.065)
Age	-0.074 (-0.053)	-0.058 (-0.072)
Equity	0.000	-0.002

Independent variables	Heckman 2steps	
	(8) DEA (AttractB)	(9) DEA (AttractG)
	(-0.004)	(-0.005)
IC	0.023** (-0.011)	-0.005 (-0.015)
Diver	-0.004** (-0.002)	-0.002 (-0.002)
Forei	0.097*** (-0.032)	0.087** (-0.044)
ROAA	0.004* (-0.002)	0.005** (-0.002)
IMR	-0.088*	-0.044
Year dummies	Yes	Yes
Bank dummies	Yes	Yes
Observations	294	294
Prob > chi2	0.000	0.000
Banks	30	30

Note: The table reports the results for correcting selection bias by applying Heckman's two-step method. First, we use a probit model to estimate the probability that a bank will attract media attention (including both good and bad news): Model 8 (AttractB) assigns a value of 1 if a bank has negative news coverage each year; otherwise, the value will be 0. In model 9 (AttractG), the dependent variable will have a value of 1 if a bank has positive news coverage each year; otherwise, the value will be 0. The result of this step is the so-called inverse Mills ratio (IMR). The IMR values are then used as control variables in the OLS regression model to correct for self-selection bias. The estimated results for the IMR are shown in Table 8 (Appendix). Robust standard errors are given in the parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.

4.5.3. ROAA

To check robustness, we replaced DEA with another financial ratio, ROAA, to test the results using efficiency measurement variables. When using ROAA as the dependent variable, the results show that in Model 10 (AttractB), the negative tone remains significant at the 10% level, indicating that negative news reduces bank profitability (ROAA). The IMR is also significant at the 10% level, suggesting a selection bias in which certain banks are more likely to attract negative news due to unobserved factors, reinforcing the need to control for this bias. By contrast, Model 11 (AttractG) shows that positive tone and media coverage do not significantly affect ROAA, and the IMR is also insignificant, indicating no strong self-selection bias for positive media attention. Overall, while the extent of media coverage does not directly affect ROAA, sentiment (negative tone) does. The results are shown in Table 6, while the estimated IMR results are provided in Table 8 (Appendix).

In conclusion, our findings confirm that banks with greater media attention exhibit stronger performance. Additionally, bad news from state-owned media and local newspapers significantly impacts bank performance. In Table 7, we briefly summarize our main results in relation to our hypotheses:

Table 6. Heckman two step for robustness check: Dependent variable ROAA.

Independent variables	Heckman 2steps	
	(10) ROAA (AttractB)	(11) ROAA (AttractG)
Exp_{t-1}	-0.027 -0.39	0.201 -0.751
Bad_{t-1}	-0.151* (-0.087)	0.000 -0.047
$Good_{t-1}$	0.010 (-0.043)	-0.151 (-0.096)
Size	0.536* (-0.311)	0.775* (-0.429)
Age	0.576* (-0.315)	0.773* (-0.429)
Equity	0.230*** (-0.076)	0.290* (-0.104)
IC	0.169 (-0.195)	-0.004 (-0.220)

Independent variables	Heckman 2steps	
	(10) ROAA (AttractB)	(11) ROAA (AttractG)
Diver	-0.016 (-0.050)	-0.024 (-0.062)
Forei	0.384 (-0.496)	0.385 (-0.574)
IMR	-1.703*	0.033
Year dummies	Yes	Yes
Bank dummies	Yes	Yes
Observations	294	294
Prob > chi2	0.000	0.000
Banks	30	30

Note: The table reports the results for robustness check where ROAA is used as the dependent variable instead of DEA. We apply Heckman's two-step method to correct the selection bias. First, we use a probit model to estimate the probability that a bank will attract media attention (including both good and bad news): Model 10 (AttractB) assigns a value of 1 if a bank has negative news coverage in a given year; otherwise, the value will be 0. In model 11 (AttractG), the dependent variable will have a value of 1 if a bank has positive news coverage each year; otherwise, the value will be 0. The result of this step is the so-called IMR. The IMR values are then used as control variables in the OLS regression model to correct for self-selection bias. The estimated results for the IMR are shown in Table 8.

Table 7. A summary of the findings from the study regarding the impact of media coverage and media tone on bank performance.

Findings	Previous studies
The presence of banks in the media has a positive impact on bank performance in Vietnam.	Our result is consistent with the information asymmetry theory that the media plays the role of information dissemination (Call et al., 2020; Gao et al., 2020) and attracts more attention from investors, depositors, and borrowers (Bushee & Miller, 2012; Doan et al., 2020; L. Fang & Peress, 2009; Lempsch, 2024). Our results are also consistent with the watchdog hypothesis that online news serves as a "watchdog" by collecting, distributing, and analyzing the news from other information intermediaries (Bednar, 2012; Miller, 2006) and at the same time influencing banks to change their behavior to meet expectations and avoid penalties, thereby improving bank performance.
Bad news negatively affects the performance of banks in Vietnam.	This result is consistent with signaling theory, according to which negative signals from a firm reflect the poor performance of that firm (Tetlock et al., 2008). This is also supported by psychological studies, such as Darnton (1975) and Baumeister et al. (2001), which show that negative information has a significant impact on people. Furthermore, this research result is consistent with studies by Tetlock (2007); Joe et al. (2009); Call et al. (2020); and Lempsch (2024), which show that bad news from the media will have a negative impact on bank performance.
Bad news from State-owned media has a negative impact on bank performance in Vietnam.	This result is consistent with Spitler (2024) study, which emphasizes the importance of the government in managing information and improving bank performance. Accordingly, information from government sources has a significant impact on public trust compared to information from private newspapers. This result is also consistent in Vietnam, where state media plays a role in shaping public opinion.
Negative coverage of local articles has a negative impact on bank performance in Vietnam	This result is consistent with the study of Lempsch (2024), which argues that news from local newspapers is aimed at the general population with in-depth financial knowledge, easy-to-read, and accessible content. Therefore, the number of readers is larger than that of financial newspapers, and news from local newspapers will significantly impact the efficiency of banks.

5. CONCLUSION

This study investigates the relationship between bank visibility in online newspapers and the performance of Vietnamese commercial banks. To conduct the analysis, we used DEA to measure the efficiency scores of 30 Vietnamese commercial banks between 2013 and 2023. To perform a sentiment analysis of bank-specific media coverage, we applied Scrapy to extract a dataset of over 180,000 articles mentioning Vietnamese banks from 35 Vietnamese online news outlets during this period. Finally, we used fractional logit regression to examine the impact of media coverage on bank performance. Our findings reveal that the more frequently a bank appears in online newspapers, the better its performance. Additionally, readers respond more strongly to negative news than to positive news. After categorizing media content into financial and local newspapers, as well as government-owned and private outlets, we found that a negative writing style from non-specialized newspapers and government-owned outlets negatively affects bank performance. These results remain robust after controlling for endogeneity.

Our study contributes to the theory of information asymmetry in a controlled media context such as Vietnam. We found that not only official information from banks but also unofficial information from the media helps reduce information asymmetry. Moreover, according to signaling theory, media signals—particularly positive and negative tones—can serve as indicators of a bank's management competence and performance. From a practical perspective, given the government's dominant role in shaping public opinion, policymakers can leverage state-owned media as a communication tool to mitigate bank risks and enhance efficiency, especially in times of crisis or when banks face liquidity problems. Regulators should encourage local newspapers to provide accurate and transparent information, particularly on sensitive issues in the banking industry, to prevent reputational damage to banks. Furthermore, as Vietnam's educational level is not as high as that of developed countries, information from non-financial newspapers remains more suitable for most readers. Banks can utilize state-owned media and local newspapers to attract customers, improve their image, and enhance operational efficiency. At the same time, they should ensure transparency in their financial disclosures through the media to strengthen public trust and reduce information asymmetry. The findings from Vietnam may also be applicable to other developing countries with similar press systems, where state-owned media play a leading role.

This study is not without limitations, which present opportunities for further research. For example, cross-country comparisons could help verify and extend these findings. Due to data constraints, our analysis relies on annual data, as not all banks disclose financial statements quarterly. Consequently, media coverage data is also examined annually, which may leave some endogeneity issues unresolved. Finally, the sentiment analysis method using VADER is primarily designed for English contexts, and translating Vietnamese data into English may result in the loss of certain linguistic nuances. In the future, developing a dedicated sentiment dictionary for Vietnamese will be an important step toward improving analytical accuracy. In addition, integrating machine learning tools to analyze sentiment in diverse contexts within Vietnamese newspapers could further support future research.

Funding: This research is supported by University of Economics Ho Chi Minh City (UEH), Vietnam.
Institutional Review Board Statement: Not applicable.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

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APPENDIX

Table 8. Inverse mills ratio estimation for Heckman two-step.

Variables	Inverse mills ratio estimation			
	IMR (8) (AttractB)	IMR (9) (AttractG)	IMR (10) (AttractB)	IMR (11) (AttractG)
DEA_{t-1}	0.963	0.203		
	-0.815	-0.714		
$ROAA_{t-1}$	0.769***	-0.165	1.11	-0.008
	-0.278	-0.209	-0.5	-0.385
Controls	Yes	Yes	Yes	Yes
IMR (Mills)	-0.088*	-0.044	-1.703*	0.033

Note: The table 8 presents the results of estimating the inverse Mills ratio, which estimates bank efficiency in models 8, 9, 10, and 11. This procedure follows Heckman's two-step correction method, designed to address endogeneity bias. The first step involves estimating a probit model using dummy variables. The probit model predicts the probability that a bank will attract media attention, which can be positive or negative. For AttractG, the dependent variable is one if the bank receives good news in a given year and zero otherwise. For AttractB, the dependent variable is one if the bank receives bad news in a given year and zero otherwise. The result of this step is the so-called IMR. The IMR values are then used as control variables in the OLS regression model to correct for self-selection bias.

Table 9 presents the classification of online newspapers based on media ownership type and content. We list 35 online newspaper sources used in our research, along with the number of articles related to Vietnamese banks that they published from 2013 to 2023 (media coverage). These online newspapers are categorized into finance-focused, non-finance-focused, government-owned media, or non-government-owned outlets.

Table 9. Online newspapers sample and classification based on media ownership and content.

Online newspapers cites	Media coverage	Finance	Non-finance	Government	Non-government
https://cafef.vn/	11120	x			x
https://vietnambiz.vn/	11780	x			x
https://kinhtedothi.vn/	5066		x	x	
https://congthuong.vn/	2582		x	x	
https://fili.vn/	619	x			x
https://thuongtruong.com.vn/	1022	x		x	
https://tienphong.vn/	24314		x	x	
https://baophapluat.vn/	12496		x	x	
https://tapchitaichinh.vn/	5005	x		x	
https://vietstock.vn/	4862	x			x
https://nhandan.vn/	4526		x	x	
https://kinhdoanhnet.vn/	13074	x			x
https://kinhtemoi.vn/	892		x		x
https://dantri.com.vn/	4491		x	x	
https://tuoitre.vn/	5641		x	x	
https://doisongphapluat.com.vn/	2794		x		x
https://thanhnien.vn/	8154		x	x	
https://soha.vn/	2038		x		x
https://cafebiz.vn/	3110		x		x
https://kenh14.vn/	552		x		x
https://www.qdnd.vn/	639		x	x	
https://tvphapluat.vn/	238		x	x	
https://znews.vn/	23740		x		x
https://thoibaotaichinhvietnam.vn	4388	x		x	
https://thoibaonganhang.vn	944	x		x	
https://tapchinganhang.gov.vn/	648	x		x	
https://thanhtra.com.vn/	3460		x	x	
http://thanhtravietnam.vn/	260		x	x	
http://nongnghiep.vn/	446		x	x	
https://baochinhphu.vn/	2387		x	x	
https://vtv.vn/	304		x	x	
https://dangcongsan.vn/	1484		x	x	
https://thuonghieuvaphapluat.vn/	1146		x	x	
https://nhadautu.vn/	6163	x		x	
https://www.sggp.org.vn/	45		x	x	
Total 35 online news outlets	181430	11	24	24	11