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Is the mispricing of bank earnings related to financial regulation uncertainty?

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Abstract: We examine the impact of financial regulation uncertainty on the mispricing of earnings in the banking sector. To the extent that the uncertainty generated by the regulatory process can trigger opinion divergence (rational attention), we expect it to delay (accelerate) share price responses to banks' earnings news. Consistent with the dominance of the opinion divergence effect, we show that such uncertainty is positively associated with banks' post-earnings announcement drift and this effect is stronger among banks that are more sensitive to financial regulatory changes. Further analyses through analyst forecast error, analyst forecast dispersion, and idiosyncratic return volatility provide corroborative evidence of opinion divergence. Our findings remain consistent after a series of robustness tests. Although financial regulations seek to provide capital market stability, our evidence implies that regulatory uncertainty can invoke negative externalities on market information efficiency.

JEL Codes: G21; G18; G14

Keywords: Financial regulation uncertainty; market information efficiency; post-earnings announcement drift; banks

1. Introduction

We examine whether and how financial regulation uncertainty influences the mispricing of earnings among banks, which are directly and strongly affected by regulatory policies. Financial regulation uncertainty can be broadly defined as variability in the anticipated outcome of regulatory changes in financial institutions or markets that is unforecastable from the perspective of economic agents (Jurado et al., 2015; Baker et al., 2016). Governments and politicians often instigate financial regulatory initiatives with the intention of strengthening the competitiveness and rectifying the imperfections of financial institutions and markets (Boot and Thakor, 1993; Benston and Kaufman, 1996). Nevertheless, given the complexity and ramifications for stakeholders, formulating financial regulations often involves a protracted period of development and revision, which generates extensive uncertainty for the capital market (Cochrane, 2015; Davis, 2015). Despite this, previous studies have focused largely on the post-enactment impact of financial regulations on lenders and borrowers (Kaufman et al., 1984; Dimitrov et al., 2015) rather than the effect of policy uncertainty due to regulatory development processes. Given the inherent association between economic uncertainty and information economics (Stigler, 1961; Kothari, 2001), as well as the banking sector's pivotal role in the capital market, the extent to which financial regulation uncertainty induces information efficiency among banks warrants investigation.[1]

[1] We focus on the banking sector because financial regulations directly affecting banks have changed greatly and unpredictably. Prior to the 2007-2008 financial crisis, as noted by Taylor (2014), "monetary policy, regulatory policy, and fiscal policy each became more discretionary, more interventionist, and less predictable in the years leading up to the crisis". Some of these major developments include the Depository Institutions Deregulation and Monetary Control Act of 1980, the Federal Deposit Insurance Corporation Improvement Act of 1989, the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, and the Gramm-Leach-Bliley Act of 1999. After the 2007-2008 financial crisis, which affected the banking industry considerably more than other industries, the U.S. Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act in response to the banking industry's excessive risk-taking behaviour that led to the financial crisis. The Dodd-Frank Wall Street Reform and Consumer Protection Act sought to make the U.S. financial system safer for consumers and taxpayers. These, and other economic policies, such as the

Existing studies find that economic policy uncertainty negatively influences corporate information environments (e.g., Nguyen and Phan, 2017; Nagar et al., 2019; Chourou et al., 2021), and may exacerbate industrial firms' security mispricing. However, it is difficult to extrapolate and generalize the empirical findings from the industrial firms to the banking sector due to two important characteristics of banks. First, banks are heavily regulated, supervised, and monitored, and as such they are expected to be less susceptible to external uncertainty's influence than industrial firms (Barth et al., 2004; Demirgue-Kunt et al., 2008). For example, U.S. banks are subject to multiple sources of supervision such as the Federal Reserve, the Federal Deposit Insurance Corporation, the Office of the Comptroller of the Currency, various state agencies, etc. (Akhigbe and Martin, 2006). Furthermore, when compared to industrial firms, banks also have more institutional ownership and greater media coverage, which also contributes to their monitoring and accountability (Boone and White, 2015; Fang and Peress, 2009). Because stronger market information efficiency is expected under greater supervision and monitoring, it is possible that the valuation of banks would be less affected by external policy uncertainty than industrial firms. Second, banks are characterized by more opaque information environments (Flannery et al., 2004; Bratten et al., 2019) than industrial firms. This is because banks' operations and business models are complicated for outside investors to understand (Morgan, 2002; Beatty and Liao, 2011; Bushman and Williams, 2012; Blau et al., 2017). Prior studies find that it is more difficult for outside investors to value banks (Jones et al., 2013; Flannery et al., 2013; Mohanram et al., 2018). Given that opaque information environments lead to deteriorated market information efficiency

U.S. Federal Reserve's Troubled Asset Relief Program and Quantitative Easing, significantly influenced the banking industry. The high level and variations of financial regulation uncertainty that directly affected the banking industry over an extended period likely have larger effects on information efficiency. Consequently, the banking industry provides a powerful setting for examining our research question.

(Blau et al., 2017), it is also possible that the security valuation among banks is more susceptible to the impact of external policy uncertainty than industrial firms. Due to these two potentially counteracting reasons, the influence of financial regulatory uncertainty on the mispricing of bank earnings is unknown ex ante.

The theoretical framework and tension underlying our research question stem from two opposing effects that financial regulation uncertainty can induce in the banking sector's market information efficiency. On the one hand, investor opinion divergence may increase with the economic uncertainty generated by regulatory interventions. As a result of market imperfections, heterogeneity in investor expectations likely increases when future economic outcomes are more difficult to predict (Miller, 1977; Diamond and Verrecchia, 1987).[2] Because of differences in opinion, the arrival of common information tends to be interpreted differently by investors (Harris and Raviv, 1993; Kandel and Pearson, 1995), who process the news based on their own subjective judgements (Holthausen and Verrecchia, 1990; Kim and Verrecchia, 1994).[3] Theoretical studies suggest that investors are more likely to underreact to publicly available information when they place greater weight on their own judgement (Daniel et al., 1998; Fischer, 2001). Consistent with this conjecture, empirical evidence shows that greater opinion divergence among investors delays share price responses to earnings announcements (Liang, 2003; Garfinkel and Sokobin, 2006), supporting the argument that investor disagreement weakens market information efficiency.

On the other hand, investors' rational attention may increase in response to the economic uncertainty associated with financial regulations. When market parameters are less predictable,

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[2] This heterogeneity will also increase among investors who are not well diversified, given that they will demand compensation for the idiosyncratic risk of the securities they hold (Merton, 1987; Diether et al., 2002).

[3] Empirical studies provide evidence that increased opinion divergence likely drives rises in trading volume around earnings announcements (Bamber, 1987; Atiase and Bamber, 1994; Bamber et al., 1997).

economic agents have greater incentives to gather new information and revise their beliefs accordingly in line with Bayesian updating (Kandel and Stambaugh, 1996; Pastor and Veronesi, 2009; Garcia Osma and Grande-Herrera, 2021; Barth, 2022).[4] This is because additional information will improve investors' ability to interpret news disclosed by firms and contribute to investment decision-making in uncertain times (Banker et al., 1993; Case, 2012).[5] Existing literature also suggests that investors' attention affects their price reactions to the arrival of new information (Huberman and Regev, 2001; Dellavigna and Pollet, 2009). For instance, price corrections after earnings announcements are accelerated among firms with more attention from investors (Drake et al., 2015; Ben-Rephael et al., 2017), consistent with the conjecture that investor attention strengthens market information efficiency.

Given that there is no clear a priori prediction on whether the weakening or strengthening effect of financial regulation uncertainty on market information efficiency in the banking sector will dominate, the direction of such influence is ultimately an empirical question. If the opinion divergence effect tends to outweigh the rational attention effect among outside investors whenever uncertainty is high, increased investor underreaction to the information content of banks' earnings announcements can be expected. In other words, financial regulation uncertainty will exacerbate price correction delays after earnings announcements and weaken market information efficiency among banks. Alternatively, if the rational attention effect prevails over the opinion divergence

[4] Changes in the levels of attention and information gathering among investors increase with the perceived likelihood of economic shocks (Epstein and Schneider, 2008; Woodford, 2009). Because of limitations in information channels and cognitive constraints, rational agents distribute their attention between market, industry, and firm-specific information depending on the relative importance of each (Sims, 2003; Peng and Xiong, 2006), and investors proactively gather information whenever benefits exceed the costs (Grossman and Stiglitz, 1980; Hirshleifer et al., 2011).

[5] Theoretical studies stipulate that investors' attention varies with the state of the economy (Kacperczyk et al., 2009; Andrei and Hasler, 2015), and empirical evidence shows more investor learning during periods of greater economic policy uncertainty (Starks and Sun, 2016).

effect among outside investors whenever uncertainty escalates, decreased investor underreaction to banks' earnings news can be expected. In this case, financial regulation uncertainty will accelerate price corrections after earnings announcements and strengthen market information efficiency among banks.

Our identification strategy has three components. First, to capture exogenous variations in the level of financial regulation uncertainty, we adopt the news-based index developed by Baker et al. (2016). They construct this index through a comprehensive search across 10 leading U.S. newspapers to identify articles that contain a trio of terms relating to the economy, policy, and uncertainty, as well as terms relating to financial regulations.[6] Second, to evaluate the level of market information efficiency, we apply the well-established phenomenon of post-earnings announcement drift (PEAD) in equity prices (Bernard and Thomas, 1989; Richardson et al., 2010).[7] Empirical studies confirm that PEAD increases with investor opinion divergence (Liang, 2003; Garfinkel and Sokobin, 2006) and decreases with investor rational attention (Drake et al., 2015; Ben-Rephael et al., 2017). Third, to verify the causal effect further, we divide banks into those with higher and lower sensitivity to financial regulation uncertainty, based on their Tier 1 capital adequacy, stock return association with financial regulation uncertainty, and whether their business is universal or commercial only. Because banks with lower capital adequacy, banks with stock returns more negatively affected by regulatory uncertainty, and universal banks are more likely to be targeted and affected by financial regulations than their respective counterparts, we

[6] These range from broader terms such as banking supervision, financial reform, capital requirements, and stress tests, to more specific terms such as Glass-Steagall and Dodd-Frank. The index shows noticeable variations around both finance-related events such as 1987's 'Black Monday', the 2002 Worldcom collapse, and the 2008 Lehman Brothers failure, and non-financial events, such as the 9/11 terrorist attack.

[7] Existing literature largely interprets PEAD as equity mispricing due to investors' underreaction to, or delays in, price corrections following earnings announcements (Fama, 1998; Lee et al., 2014).

expect the impact of financial regulation uncertainty on market information efficiency among such banks to be greater.

Based on a sample of U.S. banks, we obtain two sets of main findings. First, we find incrementally longer delays in share price responses to earnings announcements, or stronger PEAD, following periods of greater financial regulation uncertainty. In other words, regulatory uncertainty induces deterioration in market information efficiency among the banking sector in ways consistent with the dominance of the investor opinion divergence effect over the rational attention effect. Second, we find that the influence of financial regulation uncertainty is significantly more pronounced among banks that are more sensitive to financial regulations, i.e., banks with lower Tier 1 capital adequacy, banks with stock returns more negatively affected by financial regulation uncertainty, and universal banks, relative to their counterparts. This finding is consistent with investor opinion divergence being more exacerbated among banks that the regulations are more likely to affect. Evidence that such uncertainty exerts greater influence among banks that are more sensitive to the policy impact further supports the inference of a causal effect.

To substantiate financial regulation uncertainty's influence on the mispricing of earnings among banks further, we provide a set of additional analyses and robustness tests. First, we find significant increases in analyst forecast error, analyst forecast dispersion, and idiosyncratic return volatility among banks following high financial regulation uncertainty periods. These findings corroborate those from the PEAD analysis by providing further confirmation that financial regulation uncertainty escalates investor opinion divergence. Second, we employ the polarization index at the Senate level and the House level as instrumental variables in a two-stage least squares (2SLS) regression to address the causality concern. Higher levels of political polarization in the Senate (House) and its committees can result in higher degrees of policy uncertainty, including higher uncertainty related to financial regulations, but they are unlikely to impact investor opinions and security mispricing directly. The 2SLS regression results support the causality between financial regulation uncertainty and the mispricing of bank earnings. Third, we also show that the influence of financial regulation uncertainty on banks' PEAD is neither subsumed by other sources of economic policy uncertainty nor driven by confounding effects associated with other macroeconomic and monetary policy variables. To the extent that these alternative policy uncertainty, macroeconomic, and monetary policy effects also likely affect banks, either directly or indirectly, our findings suggest that financial regulation uncertainty plays a unique role in driving bank-related security mispricing and investor opinion divergence.

Our study contributes to two strands of literature. The first strand is the recent, growing literature on economic policy uncertainty, facilitated by researchers' promulgation of data (Jurado et al., 2015; Baker et al., 2016). Economic uncertainty generally tends to increase the real-option value of delaying investment activities (Bernanke, 1983; Dixit, 1989), and expectations over future policy changes can affect economic agents' current decisions (Lucas, 1976; Kydland and Prescott, 1977). Existing literature supports this conjecture but mainly emphasizes the impact of uncertainty stemming from the general economic policy rather than category-specific policies that exert greater influence on specific sectors.[8] In the case of the banking sector, existing studies focus primarily on the influence of general economic uncertainty, providing evidence of the impact on loan loss provisions (Ng et al., 2020), accounting opacity (Jin et al., 2019), and liquidity hoarding (Berger et al., 2020). Unlike previous studies in this literature, we focus specifically on financial

[8] For example, existing studies document that general economic policy uncertainty negatively relates to corporate investment (Gulen and Ion, 2016; Amore and Minichilli, 2018) and acquisitions (Nguyen and Phan, 2017; Bonaime et al., 2018), and positively relates to equity risk premia (Pastor and Veronesi, 2013; Brogaard and Detzel, 2015), credit spreads (Kaviani et al., 2018), corporate use of derivatives (Nguyen et al., 2018), corporate cash holdings (Li, 2019), and voluntary disclosure (Nagar et al., 2019).

regulation uncertainty and confirm its influence on the banking sector after controlling for other categories of policy uncertainty.

The second strand of literature that we inform relates to the information environment of the banking sector (Beatty and Liao, 2014; Lobo, 2017). This literature concentrates largely on the financial reporting quality of banks in association with their loan loss provisions (Wahlen, 1994; Kilic et al., 2013) and fair value accounting (Barth, 1994; Landsman, 2007). Unlike these studies, we examine a determinant of banks' market information efficiency by analysing variations in their PEAD. Although examination of the efficient market hypothesis through stock return predictability is well-established in the finance and accounting literatures (Fama, 1998; Richardson et al., 2010), existing studies typically exclude banks and financial institutions from their analyses.[9] Attention has recently been paid to the influences of size (Gandhi and Lustig, 2015; Goyal, 2017) and financial ratios (Mohanram et al., 2018) on stock return predictability among banks; however, research on the impact of exogenous determinants such as financial regulation uncertainty is limited. In this study, we seek to fill this research gap.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature and develops hypotheses. Section 3 describes the research design, sample, and descriptive statistics. Section 4 presents the results of the empirical analyses, and Section 5 concludes the paper.

2. Literature review and hypothesis development

2.1. Financial regulation uncertainty

Economists and politicians have long debated the pros and cons of regulatory interventions for banks and financial services, especially given these institutions' central roles in the wider

[9] These studies usually justify such exclusion based on the differences in capitalization and regulations between financial and industrial firms (Diamond, 1984; Fama and French, 1992).

economy (Boot and Thakor, 1993; Hellmann et al., 2000). On the one hand, proponents commonly justify financial regulations as necessary for maintaining the stability, correcting imperfections, reducing externalities, enhancing the efficiency, and increasing the competitiveness of the financial market (Dow and Gorton, 1997; Llewellyn, 1999). On the other hand, sceptics often question the effectiveness of financial regulations and suggest that some interventions may exacerbate crisis and delay recovery (Benston and Kaufman, 1996; Claessens and Kodres, 2014). To inform these debates, existing literature focuses extensively on examination of the ex-post consequences of financial regulations (Goodhart et al., 2004; Duffie, 2018). Much of this literature examines regulatory outcomes' impacts on lenders (Kane, 1981; Laeven and Levine, 2009) and corporate borrowers (Beck et al., 2006; Amore et al., 2013). Nevertheless, financial regulations can influence the capital market not only in their aftermath, but also through the economic uncertainty generated as their legislative and development processes unfold (Desai and Stover, 1985; Gissler et al., 2016). Regulatory uncertainty can be generated by unpredictable actions on the parts of the politicians, governments, and regulators that devise and implement the regulations (Birnbaum, 1984). Existing studies document regulatory uncertainty's impacts on corporate strategy in other areas such as environmental protection (Reinelt and Keith, 2007; Engau and Hoffmann, 2009) and energy and resources (Morana and Sawkins, 2000; Maxwell and Davidson, 2015). However, in the context of financial regulations, existing studies pay substantially more attention to the consequences of the outcome than of the economic uncertainty associated with the process.

In the context of the economic uncertainty generated specifically by financial regulations, studies to date also identify significant effects on banks' decisions. For instance, Gissler et al. (2016) document decreased mortgage lending among banks that perceived higher regulatory uncertainty during the 2011–13 rule-making process carried out by the Consumer Financial Protection Bureau with regard to lending requirements. Hendricks et al. (2018) provide evidence of costly changes in business models during the period when authorities discussed and developed the Basel III Accord. Beyond the banks' own responses to financial regulation uncertainty, the literature mostly does not investigate such uncertainty's effects on banks' information environments. Given that banks are on the one hand heavily regulated, supervised, and monitored (Barth et al., 2004; Demirgue-Kunt et al., 2008), and yet on the other hand also more informationally opaque than industrial firms to outside investors (Flannery et al., 2004; Bratten et al., 2019), whether and how financial regulation uncertainty could affect market information efficiency in the banking sector warrants examination.

2.2. Post-earnings announcement drift

According to the Efficient Market Hypothesis (EMH), all price-sensitive information should be quickly and fully reflected in security prices in an informationally efficient market (Fama, 1970, 1991). Information efficiency is widely recognized as having broader socio-economic implications, given its influence on financial resource allocation in the capital market (Grossman and Stiglitz, 1980; Kothari, 2001). Because financial statement information helps investors anticipate firms' future prospects and risk, such information serves important valuation and monitoring roles in the capital market (Bushman and Smith, 2001; Beyer et al., 2010). However, long-standing empirical evidence also shows that share prices respond to earnings announcements with significant delays (Ball and Brown, 1968; Dehaan et al., 2017), referred to as post-earnings announcement drift or earnings momentum. This phenomenon is described as the "granddaddy" of all stock return anomalies (Fama, 1998) because it starkly contrasts with the EFM prediction despite reported earnings being both prominent and publicly available information. In general, the consensus in the literature regarding the underlying explanation of the PEAD effect can be summarized as follows, according to Richardson et al. (2010, 427): "Investors attempt to forecast a firm's earnings using innovations to current reported earnings, but they underestimate the implications that current earnings have for future earnings. This underreaction generates anomalous returns because prices do not fully reflect all the information contained in current earnings changes."

Existing literature provides evidence that variations in market efficiency observed through changes in the PEAD effect can be determined by either the supply or the demand side of information. On the supply side, previous studies document that PEAD negatively relates to the strength of information environments. For instance, PEAD is weaker among firms that supplement earnings announcements with additional disclosures (Kimbrough, 2005) and when analysts issue forecast revisions after earnings announcements (Zhang, 2008). Furthermore, there is evidence of reduced PEAD following the enactment of disclosure regulations in the U.S. (Lee et al., 2014) and international accounting standards around the world (Hung et al., 2015). On the demand side, previous studies consistently show that PEAD increases with investors' opinion divergence and decreases with investors' rational attention. In line with the opinion divergence explanation, PEAD is more pronounced when abnormal trading volume is greater (Garfinkel and Sokobin, 2006) and when investors are more overconfident about their private information (Liang, 2003). In support of the rational attention explanation, PEAD is less pronounced when investors carry out more information searches (Drake et al., 2015) or when information costs are lower (Shivakumar, 2006; Ben-Rephael et al., 2017). In general, the PEAD effect provides an empirical research platform for examining cross-sectional or temporal variations in capital market information efficiency.

2.3. Hypothesis development

To formulate our testable hypotheses, we intersect the two aforementioned strands of literature. We expect financial regulation uncertainty to affect capital market information efficiency through two competing explanations based on investors' behaviour under uncertainty. First, the opinion divergence explanation suggests that uncertainty over future economic outcomes would increase the heterogeneity of investors' expectations (Miller, 1977; Diamond and Verrecchia, 1987) and create a wider range of interpretations of the same news (Harris and Raviv, 1993; Kandel and Pearson, 1995). When investors depend more on their own judgement, publicly available information could exacerbate disagreement (Holthausen and Verrecchia, 1990; Kim and Verrecchia, 1994) and be underreacted to (Daniel et al., 1998; Fischer, 2001). Empirical evidence supports this conjecture, showing that opinion divergence increases the PEAD effect or investors' underreactions to earnings announcements (Liang, 2003; Garfinkel and Sokobin, 2006). Second, the rational attention explanation stipulates that economic agents deal with uncertainty by obtaining new information (Kandel and Stambaugh, 1996; Pastor and Veronesi, 2009; Liu, 2022; Oesch and Urban, 2022) if the information costs do not exceed the benefits (Grossman and Stiglitz, 1980; Hirshleifer et al., 2011). When investors rely on obtaining new information to manage uncertainty, their attention to publicly available information will increase with their anticipation of economic shocks (Epstein and Schneider, 2008; Andrei and Hasler, 2015). Empirical studies corroborate this conjecture, revealing that greater attention decreases the PEAD effect or investors' underreactions to earnings announcements (Drake et al., 2015; Ben-Rephael et al., 2017).

Overall, there is no clear a priori prediction on whether the opinion divergence or rational attention explanation will dominate in the context of financial regulation uncertainty's influence on market information efficiency among banks. Therefore, we propose the following hypotheses, testable through the PEAD effect:

H1a: Financial regulation uncertainty increases the PEAD effect among banks if the investor opinion divergence effect dominates.

H1b: Financial regulation uncertainty decreases the PEAD effect among banks if the investor rational attention effect dominates.

3. Research design

3.1. Tests of Hypotheses H1a and H1b

To test hypotheses H1a and H1b, we first identify abnormal returns after quarterly earnings announcements, i.e., PEAD, which captures the degree of bank earnings mispricing, and then examine the effect of financial regulation uncertainty on banks' PEAD in both the subsample comparison tests and the interaction term approach. First, we divide our sample into the subsample with high financial regulation uncertainty periods and the subsample with low financial regulation uncertainty periods, based on the sample median. Financial regulation uncertainty (*FinU) is* measured by the average of the monthly Baker et al. (2016) financial regulation uncertainty index over the three months before earnings announcement for quarter *t*. We then estimate the following model for the two subsamples separately:

$$ExRet_{i,t} = \alpha_0 + \alpha_1 QSUE_{i,t} + Controls + Year + Bank + \varepsilon_{i,t} \quad (1)$$

ExRet is the market-adjusted cumulative abnormal return from 2 days to 61 days after the quarter *t* earnings announcement. We use the value-weighted market index return obtained from CRSP (Center for Research in Security Prices) as the market return. *QSUE* is the scaled quintile rank of standardized unexpected earnings (*SUE*) in quarter *t*, ranging from zero to one; *SUE* is calculated as actual earnings per share minus analyst forecast earnings per share for quarter *t* scaled by share price at the end of quarter *t*. Analyst forecast earnings per share is the median of forecasts in the 90 days prior to the quarter *t* earnings announcement.

The coefficient α_1 on *QSUE* represents PEAD magnitude, and we expect α_1 to be positive for both subsamples. We then compare α_1 between the subsamples for high and low financial regulation uncertainty periods. If the former is greater (smaller) than the latter, then it indicates that banks' PEAD is stronger (weaker) following high financial regulation uncertainty periods than low financial regulation uncertainty periods, supporting hypothesis H1a (H1b). However, if α_1 is not significantly different between the two subsamples, then it indicates no significant relation between financial regulation uncertainty and the mispricing of bank earnings.

Second, we estimate the following model based on the whole sample by adding financial regulation uncertainty in an interaction term:

$$ExRet_{i,t} = \beta_0 + \beta_1 QSUE_{i,t} + \beta_2 HiFinU_{i,t} + \beta_3 HiFinU_{i,t} \times QSUE_{i,t} + Controls + Year + Bank + \varepsilon_{i,t} \quad (2)$$

HiFinU is an indicator for high financial regulation uncertainty, which equals one if *FinU* is higher than the sample median, and zero otherwise. Our focus is on the coefficient β_3 which captures the effect of financial regulation uncertainty on the magnitude of banks' PEAD. A positive (negative) β_3 indicates that PEAD is stronger (weaker) among banks when financial regulation uncertainty is high, consistent with the prediction of hypothesis H1a (H1b). Alternatively, if β_3 does not differ from zero, there will be no evidence that such uncertainty affects bank earnings mispricing.

For both equations, *Controls* includes a set of firm-specific and information environment variables motivated by the relevant literature. To address the baseline PEAD effect, we follow previous studies (Chordia and Shivakumar, 2005; Hung et al., 2015) and include: firm size (*Size*), measured as the logarithm of the market value of equity at the end of quarter *t*; book-to-market ratio (*Bm*), measured as the book value of equity divided by the market value of equity at the end of quarter *t*; market model beta (*Beta*), estimated from regressing daily stock returns on daily value-weighted market index returns over the 250 trading days before the quarter *t* earnings announcement; and past return (*Ret3m*), measured as the three-month market-adjusted abnormal cumulative returns before the earnings announcement for quarter *t*. Prior research documents that banks use loan loss provision to manage earnings and capital (Kim and Kross 1998; Kanagaretnam et al., 2004). Therefore, we control for discretionary loan loss provision (*DLLP*) using the estimation approach of Beatty and Liao (2015). Zhang (2006, 2008) show that analyst coverage affects security mispricing, and thus we control for analyst coverage (*AnCov*), measured as the logarithm of one plus the number of analysts following the bank in quarter *t*. Market uncertainty and sentiment can drive investors' concern about economic policy uncertainty (Baker et al., 2016) or influence security mispricing (Baker and Wurgler, 2006). To address this, we control for the option-implied volatility index (*VIX*), which is the 30-day option-implied volatility on the S&P500 index before the earnings announcement for quarter *t*.[10] Existing literature suggests that fourth-quarter earnings announcements are more difficult for investors to interpret because they are associated with greater differences between GAAP and street earnings (Bradshaw and Sloan, 2002). To control for this effect, we include the indicator *Q4*, which equals one for the fourth fiscal quarter and zero otherwise. Table 1 provides detailed definitions of these variables.

[Insert Table 1 here]

3.3. Sample selection

We first collect U.S. bank holding data from Compustat (Bank) for the period from 1995 to 2019. This yields an initial sample of 75,963 bank-quarter observations. We then merge this

[10] The data can be accessed at Federal Reserve Bank of St. Louis's website: https://fred.stlouisfed.org/series/VIXCLS.

sample with analyst forecast data obtained from I/B/E/S to estimate analyst-forecast-based earnings surprise. We obtain stock prices, stock returns, and market returns from CRSP and accounting data from Compustat. The requirements for availability of I/B/E/S analyst forecast data and matching between I/B/E/S tickers, i.e., GVKEY in Compustat, and bank names in Bank Regulatory database, result in 22,934 bank-quarter observations.[11] To mitigate the influence of extreme values, we winsorize all continuous variables included in our regression analyses at the top and bottom one percent of their distributions.

We obtain separate categorical policy uncertainty indices from the Economic Policy Uncertainty website.[12] Baker et al. (2016) constructs the general economic policy uncertainty index and 11 specific categorical policy uncertainty indices based on newspaper coverage frequency. Our study focuses on the categorical index associated with financial regulation uncertainty. In robustness tests, we control for other categorical uncertainty indices that may also influence the banking sector, such as monetary policy, tax policy, sovereign debt, government spending, and trade policy. We also obtain data for macroeconomic and monetary policy variables used in robustness tests from the Federal Research Economic Data (FRED) website.

3.4. Summary statistics and correlations

Table 2 reports the summary statistics for the key variables included in the regression analyses of our main hypothesis tests and additional tests. The highest and lowest percentiles of abnormal returns after earnings announcements (*ExRet*) are 0.434 and −0.408, respectively. This

[11] According to Correia (2015), keeping singleton groups (i.e., groups with only one observation) in linear regressions where fixed effects are nested within clusters can lead to incorrect statistical significance and inference. Following DeHaan et al. (2017) and Coimbra et al. (2021), we drop the observations with singleton fixed effects in all our regression analyses, leading to a reduction in the numbers of observations. For example, the number of observations for our main regression as shown in Table 4 is 22,852 rather than 22,934.

[12] We thank Scott Baker, Nick Bloom, and Steven Davis for making the index and its components available. The data on economic policy uncertainty are available at: http://www.policyuncertainty.com.

suggests that the sample varies substantially in abnormal returns over the drift window for our tests of hypotheses H1a and H1b. In the case of banks' sensitivity to financial regulation uncertainty, although the mean value of *Tier1* is relatively high (mean is 11.749), the lowest percentile value is 5.590, which implies the existence of some riskier banks. Similarly, the lowest and highest percentiles of *FinUBeta* are −0.097 and 0.120, which suggest a substantial range of banks' stock return association with financial regulation uncertainty. The mean value of *Universal* is 0.459, indicating that 45.9% of the observations are from universal banks, and the rest are from commercial banks. Again, banks' sensitivity to financial regulation uncertainty varies sufficiently for our additional tests.

[Insert Table 2 here]

Table 3 reports the Pearson correlations between key variables. It shows that the abnormal returns after earnings announcements (*ExRet*) are positively correlated with standardized earnings surprises (*SUE*), consistent with the PEAD literature on an underreaction or delayed reaction to earnings news (Ball and Brown 1968; Bernard and Thomas 1990). In other words, we confirm the existence of the baseline PEAD effect required to test our hypotheses H1a and H1b. Financial regulation uncertainty (*FinU*) is negatively correlated with earnings surprises (*SUE*), suggesting that financial regulation uncertainty may have a negative impact on firm performance.

[Insert Table 3 here]

4. Empirical findings

4.1. Tests of Hypotheses H1a and H1b

Table 4 reports the results of our tests of hypotheses H1a and H1b, which examine the impact of financial regulation uncertainty on the mispricing of bank earnings based on the PEAD effect. Columns (1) and (2) report the results of Equation (1) for the low financial regulation uncertainty period subsample and the high financial regulation uncertainty period subsample, respectively, and Column (3) presents the results of Equation (2) based on the whole sample. The coefficients on *QSUE* are positive and statistically significant in both Column (1) (coef. = 0.018; t = 5.76) and Column (2) (coef. = 0.039; t = 9.31), confirming the delayed share price response to earnings information, i.e., PEAD, among banks for periods with both high and low financial regulation uncertainty. Meanwhile, the coefficients on *QSUE* for the two subsamples are significantly different (F = 23.17), showing significantly greater PEAD among banks following periods of high financial regulation uncertainty than periods of low financial regulation uncertainty. This suggests that financial regulation uncertainty increases banks' PEAD, supporting hypothesis H1a. Turning to Column (3), the coefficient on *HiFinU*×*QSUE* is positive and statistically significant (coef. = 0.024, t = 4.81). This finding suggests that investors react more slowly to bank earnings when regulatory uncertainty is higher, which is consistent with the evidence provided in Columns (1) and (2) based on the subsample comparison tests. Taken together, these findings imply that the opinion divergence effect dominates over the rational attention effect in driving the impact of financial regulation uncertainty on market information efficiency among banks.

[Insert Table 4 here]

4.2 Additional tests—Heterogeneity effects

To strengthen the inference and causal effect of our study, we conduct the following heterogeneity tests, i.e., we examine whether the relationship between financial regulation uncertainty and market informational efficiency is more pronounced among banks that are more sensitive to financial regulatory changes. The uncertainty generated through the development process of financial regulations is more likely to concern such banks' outside investors. If financial regulation uncertainty indeed affects banks' PEAD through exacerbating opinion divergence among investors, we should expect this effect to be more pronounced for banks with higher sensitivities to financial regulations. In this section, we measure banks' sensitivity to financial regulatory changes in three ways.

First, we consider banks with lower Tier 1 capital adequacy to be more sensitive to financial regulations than banks with higher Tier 1 capital adequacy (*Tier1*). Because financial regulations are usually intended to improve the stability and efficiency of the banking system, riskier banks such as those with lower capital adequacy are expected to experience a greater impact from regulatory interventions. Previous studies show that regulators use capital requirements (Tarullo, 2010; Bernanke, 2013) to discipline banks (Goldstein and Sapra, 2014; Shahhosseini, 2014). Consequently, we expect financial regulations to make a greater difference for banks with lower Tier 1 capital adequacy. Second, we compare universal banks (*Universal*) with commercial banks and consider universal banks more sensitive to financial regulations. Universal banks engage in more diverse business, such as banking, securities, and insurance services (Benston, 1994; Walter, 1997), so they are exposed to a wider range of financial regulations than are commercial banks. In addition, the organizational and business complexity of universal banks increases investors' information processing costs, which may lead to further delays in responding to earnings news (You and Zhang, 2009; Chen et al., 2023). Therefore, we expect financial regulation uncertainty's influence on PEAD to be more pronounced among universal banks than commercial ones. Third, we use the association between banks' stock returns and financial regulation uncertainty (*FinUBeta*) to measure banks' sensitivity to regulatory changes. For each stock, we regress monthly stock returns on the lagged financial regulation uncertainty over the past 36 months, controlling for Fama and French (1992)'s three factors and the momentum factor; *FinUBeta* is the coefficient on financial regulation uncertainty. A negative *FinUBeta* indicates that banks' stock returns are adversely affected by financial regulation uncertainty, i.e., stock returns are lower when financial regulation uncertainty is higher. As such, we expect that financial regulation uncertainty's influence on PEAD should be more evident among banks with extremely negative *FinUBeta* than other banks.

We examine these heterogeneity effects in two ways for mutual robustness reasons. First, we divide our sample into subsamples of banks with above and below sample median *Tier1*, into subsamples of universal banks and commercial banks, and into subsamples of banks with *FinUBeta* below and above the sample bottom quintile, separately. We then estimate Equation (2) for each of these subsamples. We expect the coefficient on *HiFinU*×*QSUE* to be more positive for banks with lower *Tier1*, for universal banks, and for banks with extremely negative *FinUBeta*, than their respective counterparts. Second, we estimate the following regression for the whole sample, which permits the coefficient on *HiFinU*×*QSUE* to differ across banks with different sensitivities to financial regulation uncertainty:

$$\begin{aligned} ExRet_{i,t} = &\delta_0 + \delta_1 QSUE_{i,t} + \delta_2 HiFinU_{i,t} + \delta_3 HiFinU_{i,t} \times QSUE_{i,t} + \delta_4 HiSen_{i,t} \\ &+ \delta_5 HiSen_{i,t} \times HiFinU_{i,t} + \delta_6 HiSen_{i,t} \times QSUE_{i,t} + \delta_7 HiSen_{i,t} \times HiFinU_{i,t} \times QSUE_{i,t} \\ &+ Controls + Year + Bank + \varepsilon_{i,t} \end{aligned} \quad (3)$$

HiSen is an indicator for banks with higher sensitivity to financial regulations. It is represented by *LoTier1, Universal, and NegFinUBeta* for the heterogeneity effects based on Tier 1 capital adequacy, bank business types, and *FinUBeta*, respectively. *LoTier1* equals one for banks with below the sample median *Tier1*, and zero otherwise. *Universal* equals one for universal banks, and zero for commercial banks. *NegFinUBeta* equals one for banks in the bottom quintile of *FinUBeta*, and zero otherwise. All other variables are defined in Equation (2). The coefficient δ_7 on $HiSen \times HiFinU \times QSUE$ indicates the difference in financial regulation uncertainty's influence on PEAD for banks with higher sensitivity to regulatory changes, relative to banks with lower sensitivity to regulatory changes. A positive δ_7 supports our conjecture that the influence of financial regulation uncertainty on PEAD is stronger among banks that are more sensitive to financial regulatory changes.

Table 5 reports the heterogeneity effects based on Tier 1 capital adequacy. Columns (1) and (2) present the estimation results for the subsamples with high and low Tier 1 capital ratios, respectively. The coefficient on *HiFinU×QSUE* is positive and statistically significant for the low Tier 1 capital subsample (coef. = 0.038; *t* = 3.24) but is not significantly different from zero for the high Tier 1 capital subsample (coef. = 0.009, *t* = 1.24), and the difference between these two coefficients is statistically significant (F = 7.35). The results in Column (3) show that the coefficient on *LoTier1×HiFinU×QSUE* is positive and significant (coef. = 0.030; *t* = 2.57). These findings are consistent with our conjecture that the effect of opinion divergence arising from high financial regulation uncertainty on the delayed response to bank earnings news is more pronounced among banks with lower capital adequacy.

[Insert Table 5 here]

Table 6 presents the heterogeneity effects based on bank business types. Columns (1) and (2) report the estimation results for commercial banks and universal banks, respectively. In support of our conjecture, the coefficient on *HiFinU×QSUE* is positive and statistically significant for the universal bank subsample (coef. = 0.033; *t* = 4.20) but is not significantly different from zero for the commercial bank subsample (coef. = 0.016, *t* = 1.63), and the difference between these two coefficients is statistically significant (F = 5.84). The results in Column (3), based on the whole sample, confirm the tests based on the subsamples and show that the coefficient on *Universal×HiFinU×QSUE* is positive and significant (coef. = 0.018; *t* = 2.42).

[Insert Table 6 here]

Table 7 presents the heterogeneity effects based on the association between banks' stock returns and financial regulation uncertainty. Banks are expected to be more adversely affected by the escalation of financial regulation uncertainty if their stock returns are lower when financial regulation uncertainty is higher.[13] The coefficient on *HiFinU*×*QSUE* is significantly positive for banks with extremely negative (i.e., in the bottom quintile) *FinUBeta* (coef. = 0.046; t = 3.67) in Column (2) and for other banks (coef. = 0.021; t = 3.61) in Column (1), and the coefficient for the former group is significantly higher than that for the latter group (F = 5.03). This is confirmed by the results in Column (3), based on the whole sample, which show that the coefficient on *NegFinUBeta*×*HiFinU*×*QSUE* is positive and significant (coef. = 0.027; t = 2.24). Collectively, Tables 5 to 7 provide consistent, robust evidence that financial regulation uncertainty's influence on PEAD is more pronounced among banks that are more susceptible to the regulatory changes. This further corroborates our hypothesis that the increase in PEAD is indeed due to uncertainty relating to financial regulatory changes rather than some other, unidentified confounding effects.

[Insert Table 7 here]

4.3. Additional tests—Analyst forecast error, dispersion, and idiosyncratic return volatility

To substantiate further whether the opinion divergence or the rational attention effect dominates, we also examine the impact of financial regulation uncertainty on analyst forecast error and dispersion, as well as on bank stocks' idiosyncratic return volatility. Existing literature suggests that differences in analyst opinion about future earnings could be exacerbated when future earnings are more difficult to forecast. Under such circumstances, optimistic analysts are more likely to bias their forecasts further upward (Lim, 2001; Jackson, 2005), and pessimistic analysts

[13] We are grateful to the anonymous reviewer for suggesting this additional test.

are more likely to stay silent (Sadka and Scherbina, 2007) in order to appease firms. Therefore, we expect the disagreement between optimistic and pessimistic analysts that results from firm performance uncertainty to drive up their average forecast error and dispersion. Alternatively, when analysts are better able to anticipate future earnings, their forecast error and dispersion tend to decrease (Lang and Lundholm, 1996; Diether et al., 2002). In other words, to the extent rational attention and information gathering improve analysts' ability to predict firms' future performance, the error and dispersion in their forecasts are both likely to decline. In terms of idiosyncratic return volatility, previous studies provide evidence that the component of stock return variation unrelated to systematic factors positively relates to opinion divergence of market participants (Danielsen and Sorescu, 2001; Boehme et al., 2006; Chatterjee et al., 2012). This component will be higher (lower) when investors place greater weight on private (public) information because of opinion divergence (rational attention). Thus, we expect stock return idiosyncratic volatility to be higher (lower) under financial regulation uncertainty if the opinion divergence (rational attention) effect dominates.

Table 8 shows the results of the impact of financial regulation uncertainty on analyst forecast error, analyst forecast dispersion, and idiosyncratic return volatility in Columns (1), (2), and (3), respectively. We find that the coefficient on *HiFinU* is significantly positive in all three columns, i.e., it is 0.052 (t = 2.68) in Column (1), 0.003 (t = 2.05) in Column (2), and 0.032 (t = 2.81) in Column (3). These results suggest that when financial regulatory uncertainty is high, analyst forecast error, analyst forecast dispersion, and idiosyncratic return volatility increase. The consistent, robust findings for all three measures indicate that financial regulation uncertainty increases investors' opinion divergence. These results corroborate our main hypothesis H1a and confirm the dominance of the opinion divergence over the rational attention explanation for the effect of financial regulation uncertainty on investors' processing of bank earnings news.

[Insert Table 8 here]

4.4. Robustness tests — Instrumental variables/2SLS approach

To alleviate endogeneity concerns arising from other confounding effects further, we employ the instrumental variables/2SLS regression approach. Following Gulen and Ion (2016), we adopt the level of political polarization as our instrument for the reasons below. First, political polarization is relevant to financial regulation uncertainty. McCarty (2012) argue that political polarization is associated with fewer legislative coalitions, policy gridlock, and greater policy variation. Thus, high levels of political polarization in the Senate and the House committees can lead to higher policy uncertainty overall and higher uncertainty related to financial regulations. Second, political polarization satisfies the exclusion restriction because it is unclear how the overall level of disagreement in Congressional roll-call votes on various policy decisions can directly affect banks' mispricing except through its effect on financial regulation uncertainty.

Table 9 presents the 2SLS regression results. In the first stage, we measure political polarization at the Senate level (*Polar_S*) and the House level (*Polar_H*) based on the DW-NOMINATE scores of McCarty et al. (1997).[14] *Polar_S* (*Polar_H*) is calculated as the average of these scores for Republican Party members in the Senate (House) minus that for Democratic Party members in the Senate (House). We then create an indicator variable for high political polarization *HiPolar_S* (*HiPolar_H)* if *Polar_S* (*Polar_H*) is above the sample median. Since the endogenous variable *HiFinU* is in the interaction term, following Wooldridge (2002), we specify both *HiFinU* and *HiFinU*×*QSUE* as the endogenous variables, and therefore also include *HiPolar_S*×*QSUE* and *HiPolar_H*×*QSUE* as instrumental variables. As shown in Columns (1) and (2), when

[14] We can only obtain the roll-call data at the Senate level and the House level, not the Senate (House) committee level (e.g., United States Senate Committee on Banking, Housing, and Urban Affairs), to serve as the closest instrument for financial regulation uncertainty.

HiFinU is the endogenous variable, the coefficient on *HiPolar_S* is 0.353 (t = 44.00) and the coefficient on *HiPolar_H* is 0.147 (t = 21.68). This suggests that both instruments (political polarization at the Senate and House levels) have significantly positive effects on financial regulation uncertainty. Similarly, in the first stage, we also regress the endogenous variable *HiFinU*×*QSUE* on the same set of independent variables and we do not report the regression results for brevity.[15]

In the second stage, we re-estimate Equation (2) using the predicted values of *HiFinU*, i.e., *Fitted HiFinU_S* and *Fitted HiFinU_H*, and the predicted values of *HiFinU*×*QSUE*, i.e., *Fitted HiFinU_S*×*QSUE* and *Fitted HiFinU_H*×*QSUE*, estimated from the first stage regressions. As reported in Columns (3) and (4), the coefficients on *Fitted HiFinU_S*×*QSUE* (0.039, t = 4.30) and *Fitted HiFinU_H*×*QSUE* (0.032, t = 2.00) are significantly positive. This suggests that the instrumented financial regulation uncertainty significantly affects banks' PEAD. Overall, the evidence from Table 9 suggests that other unidentified confounding factors likely do not drive the positive relationship between financial regulation uncertainty and the mispricing of bank earnings.

[Insert Table 9 here]

4.5. Robustness tests — Controlling for other categorical policy uncertainty indices

Table 10 presents the results of robustness tests of financial regulation uncertainty's effect on banks' PEAD, in which we control for the effects of other categorical economic policy uncertainty indices from Baker et al. (2016). We do so to show that other sources of policy uncertainty do not drive the impact of financial regulation uncertainty on the mispricing of bank

[15] Following the anonymous reviewer's suggestion, we use the statistical package "ivreghdfe" in STATA to estimate the two-stage linear regressions simultaneously. Untabulated results show that we obtain a statistically similar inference when we use an alternative statistical package "ivreg2" in STATA (without controlling for bank fixed effects) or when we estimate first stage and second stage linear regressions separately.

earnings. Specifically, we control for monetary policy uncertainty, tax policy uncertainty, sovereign debt uncertainty, government spending policy uncertainty, and trade policy uncertainty because they may also impact banks.

Given that the different economic policy uncertainty indices can be highly correlated, inclusion of the raw indices of other kinds of policy uncertainty in the same regression model with the financial regulation uncertainty index may lead to multicollinearity issues. To address this concern, we first regress each of the other policy uncertainty indices on the financial regulation uncertainty index (*FinU*) and extract the residuals as alternative measures of that policy uncertainty index (*XPU*) orthogonal to *FinU*. In other words, *XPU* captures variations in policy uncertainty beyond that associated with the effect of *FinU*. We then construct the indicator variable *HiXPU*, which equals one if *XPU* is higher than the sample median, and zero otherwise. We interact these indicators with the earnings surprise variables to determine whether they subsume financial regulation uncertainty's effect on PEAD.

In Table 10, we estimate the following model:

$$\begin{aligned} ExRet_{i,t} &= \lambda_0 + \lambda_1 QSUE_{i,t} + \lambda_2 HiFinU_{i,t} + \lambda_3 HiFinU_{i,t} \times QSUE_{i,t} + \lambda_4 HiXPU_{i,t} \\ &\quad + \lambda_5 HiXPU_{i,t} \times QSUE_{i,t} + Controls + Year + Bank + \varepsilon_t \end{aligned} \tag{4}$$

If another categorical policy uncertainty (*HiXPU*) does not subsume the effect of financial regulation uncertainty on banks' PEAD, the coefficient λ_3 should remain positive and statistically significant. The empirical results show that the coefficient on *HiFinU*×*QSUE* is consistently significantly positive throughout Table 10, despite the presence of *HiXPU*×*QSUE*, which separately captures the effects of monetary, taxation, sovereign debt, government expenditure, and trade policy uncertainties on the PEAD effect. In other words, we show that our evidence is consistent with hypothesis H1a, i.e., the positive effect of financial regulation uncertainty on PEAD among banks is not subsumed by other confounding economic policy uncertainties.

[Insert Table 10 here]

4.6. Robustness tests—Controlling for macroeconomic conditions

Table 11 reports the results of robustness tests that evaluate the influence of financial regulation uncertainty on banks' PEAD after controlling for macroeconomic conditions, which may affect PEAD and financial regulation uncertainty simultaneously. Macroeconomic conditions usually affect earnings changes (Brown and Ball, 1967; Gonedes, 1973), and investors may fail to incorporate the implications of macroeconomic conditions on earnings changes. For instance, PEAD is strongly associated with macroeconomic conditions such as inflation and currency fluctuations (Chordia and Shivakumar, 2005; Basu et al., 2010; Li and Lytvynenko, 2021). Macro-level conditions may also relate to regulatory uncertainty (Bloom, 2009). As a result, we control for macroeconomic conditions to alleviate the concern that they might confound the relation between banks' PEAD and financial regulation uncertainty. Specifically, we control for macroeconomic conditions with the general macroeconomic variables, including durable, non-durable, consumer services spending, industrial production, employment payroll, and consumer price index, and with the monetary policy variables particularly relevant to financial regulation uncertainty, including the federal funds rate, the change in federal funds rate, and the change in monetary supply M2.

To reduce the effect of multicollinearity, we first regress each of the macroeconomic and monetary policy variables on the financial regulation uncertainty index (*FinU*) and extract the residuals as alternative measures of each macroeconomic (*Macro*) and monetary policy variable (*MPY*) orthogonal to *FinU*. Therefore, *Macro* (*MPY*) captures variation in the corresponding macroeconomic (monetary policy) variable that is independent of the effect of *FinU*. Next, we construct the indicator variable *HiMacro* (*HiMPY*), which equals one if *Macro* (*MPY*) is higher than the sample median and zero otherwise. We then re-estimate Equation (4) after replacing *HiXPU* with *HiMacro* and *HiMPY*, separately, to examine whether macroeconomic conditions subsume the effect of financial regulation uncertainty on banks' PEAD.

In Table 11, Panels A and B present the results for financial regulation uncertainty's influence on the mispricing of bank earnings after controlling for macroeconomic variables and monetary policy variables, respectively. In both panels, the coefficient on *HiFinU*×*QSUE* is consistently positive after controlling for *HiMacro*×*QSUE* and *HiMPY*×*QSUE*. Generally, the pattern in Table 11 supports hypothesis H1a, i.e., the positive effect of financial regulation uncertainty on PEAD among banks persists after controlling for macroeconomic and monetary policy conditions.

[Insert Table 11 here]

5. Conclusion

In this study, we examine whether and how financial regulation uncertainty affects the way investors process earnings information in the banking sector by examining PEAD. First, our PEAD test reveals greater mispricing of bank earnings or larger delays in investors' reactions to earnings surprises among banks following periods of greater financial regulation uncertainty. This evidence suggests that market information efficiency deteriorates in the banking sector as regulatory uncertainty increases. It also implies the dominance of the opinion divergence effect over the rational attention effect among bank investors confronted with such uncertainty. Second, we show that financial regulation uncertainty's positive effect on PEAD is more pronounced among banks that are more sensitive to regulatory interventions, such as banks with lower capital adequacy, universal banks, and banks with stock returns more negatively affected by financial regulation uncertainty. Based on this cumulative evidence, we confirm that financial regulations play a unique role in driving changes in market information efficiency among banks.

Third, our tests using different proxies of investor opinion divergence, namely analyst forecast error, forecast dispersion, and idiosyncratic return volatility, find that financial regulation uncertainty indeed increases disagreement between bank investors. The findings are consistent with our inferences based on the PEAD tests. Lastly, we show that our main findings are not driven by other confounding effects by employing instrumental variables estimation, controlling for other categorical policy uncertainty indices constructed by Baker et al. (2016), and controlling for macroeconomic and monetary policy variables.

To the best of our knowledge, this is the first study to examine the effect of financial regulation uncertainty on market information efficiency in the banking sector. Our findings suggest that regulatory uncertainty can adversely influence the corporate information environment by increasing investor opinion divergence, which in turn induces greater mispricing of bank earnings. In this regard, we also contribute to the large, growing literature on the impact of policy uncertainty by showing that it can influence not only corporate investment decisions and asset prices, but also the capital market’s information efficiency. Future studies could examine whether and how policy uncertainty affects the information-processing behaviours of different agents in the capital market, such as analysts, auditors, and credit ratings agencies.

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TABLE 1
Variable Definition

Variables	Definitions
AFE	Analyst forecast error, measured as the absolute value of *SUE* for quarter t+1, multiplied by 100
AnCov	Analyst coverage, measured as the logarithm of 1 plus the number of analysts following the bank for quarter t.
Bm	Book-to-market ratio, calculated as book value of equity over market value of equity at the end of quarter t.
Beta	Market beta, estimated by regressing the daily stock return on the daily value-weighted market return over the 250 trading days before the earnings announcement date for quarter t.
DLLP	Discretionary loan loss provision, measured as the residuals from the following regression according to Beatty and Liao (2015), multiplied by 100: $LLP_t = \alpha_0 + \alpha_1 DNPL_{t+1} + \alpha_2 DNPL_t + \alpha_3 DNPL_{t-1} + \alpha_4 DNPL_{t-2} + \alpha_5 Tier1_t + \alpha_6 EBP_t + \varepsilon_t$ Where *LLP* is loan loss provision; *DNPL* is change in non-performing loans; *Tier*1 is Tier 1 risk-adjusted capital ratio; *EBP* is earnings before loan loss provision. *LLP*, *NPL* and *EBP* are scaled by lagged total assets.
DisEPS	Analyst forecast dispersion, measured as the standard deviation of analyst forecasts over the three months after the earnings announcement for quarter t scaled by the stock price at the end of the earnings announcement quarter, multiplied by 100.
ExRet	Market-adjusted cumulative abnormal return from day 2 to day 61 after the earnings announcement date for quarter t. Market return is the value-weighted market return obtained from CRSP.
FinU	Financial regulation uncertainty, measured as the average of monthly Baker et al. (2016) financial regulation uncertainty index over the three months before the earnings announcement for quarter t.
FinUBeta	Stock return beta to financial regulation uncertainty, which measures the association between banks' stock returns and financial regulation uncertainty. For each stock, we regress monthly stock returns on the lagged financial regulation uncertainty over the past 36 months, controlling for Fama and French (1992)'s three factors and the momentum factor. *FinUBeta* is the coefficient on financial regulation uncertainty.
HiFinU	An indicator for high financial regulation uncertainty, which equals one if *FinU* is higher than the sample median, and zero otherwise.
NegFinUBeta	An indicator for the extremely negative *FinUBeta*, which equals one if *FinUBeta* is in the bottom quintile, and zero otherwise.
HiPolar_S	An indicator for high *Polar_S*, which equals one if *Polar_S* is higher than the sample median, and zero otherwise.
HiPolar_H	An indicator for high *Polar_H*, which equals one if *Polar_H* is higher than the sample median, and zero otherwise.
IVOL	Idiosyncratic return volatility, calculated as the standard deviation of daily abnormal stock returns over 60 days after the earnings announcement date for quarter t, multiplied by 100. Abnormal daily return is the difference between raw return and the expected return based on the Carhart (1997) four-factor model.
LoTier1	An indicator for low Tier 1 capital, which equals one if Tier1 capital ratio for quarter t is lower than the sample median, and zero otherwise.
Polar_H	Political polarization at the House level, based on the DW-NOMINATE scores of McCarty et al. (1997). It is calculated as the average of these scores for the Republican party members in the House minus that for the Democratic party members in the House.
Polar_S	Political polarization at the Senate level, based on the DW-NOMINATE scores of McCarty et al. (1997). It is calculated as the average of these scores for the Republican party members in the Senate minus that for the Democratic party members in the Senate.

(Continued)

TABLE 1-Continued

Variables	Definitions
Q4	An indicator that equals one if quarter *t* is the fourth fiscal quarter, and zero otherwise.
QSUE	Scaled quintile rank of *SUE* ranging from 0 to 1, calculated as (n−1)/4, where n is the *SUE* quintile group from 1 to 5.
Ret3m	Past return, which is measured as the market-adjusted cumulative abnormal return over the three months before the earnings announcement for quarter *t*. Market return is the value-weighted market return obtained from CRSP.
Size	Firm size, measured as the logarithm of market value of equity at the end of quarter *t*.
SUE	Standardised unexpected earnings for quarter *t*, measured as actual earnings per share minus analyst forecast earnings per share for the quarter, scaled by stock price at the end of the quarter. Analyst forecast earnings per share is the median of forecasts in the 90 days prior to quarterly earnings announcement.
Tier1	Tier 1 capital ratio for quarter *t*.
Universal	An indicator that equals one for universal banks, and zero for commercial banks. We use the FDIC code in Bank Regulatory database and the universal bank list reported by Neuhann and Saidi (2018) to identify universal banks.
VIX	Chicago Board of Options and Exchange VIX index of 30-day option-implied volatility on the S&P500 index before the earnings announcement for quarter *t*.

TABLE 2
Summary Statistics

Variable	N	Mean	Median	Std	P1	P99
ExRet	22,934	0.010	0.004	0.131	−0.408	0.434
FinU	22,934	98.539	62.675	95.345	13.128	428.678
SUE	22,934	−0.005	0.000	0.072	−0.127	0.025
Size	22,934	6.291	6.109	1.677	3.087	11.247
Bm	22,934	0.793	0.700	0.439	0.242	3.088
Beta	22,934	0.785	0.812	0.419	−0.177	1.730
Ret3m	22,934	0.015	0.014	0.189	−0.493	0.548
DLLP	22,934	−0.001	0.000	0.042	−0.188	0.174
AnCov	22,934	1.350	1.099	0.651	0.693	3.091
VIX	22,934	19.163	17.326	6.748	10.576	43.970
Q4	22,934	0.218	0.000	0.413	0.000	1.000
AFE	19,152	0.547	0.109	1.843	0.000	14.835
DisEPS	22,821	0.064	0.012	0.123	−0.011	0.713
IVOL	22,934	1.782	1.464	1.120	0.584	6.977
Tier1	20,171	11.749	11.400	3.599	5.590	21.950
Universal	19,636	0.459	0.000	0.498	0.000	1.000
FinUBeta	21,858	0.001	0.001	0.035	−0.097	0.120

This table reports the summary statistics of the variables used in our main tests of hypotheses H1a and H1b, and additional tests. Table 1 provides detailed definitions of all variables.

TABLE 3
Correlation Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
ExRet (1)	1																
FinU (2)	**−0.048**	1															
SUE (3)	**0.016**	**−0.106**	1														
AFE (4)	**−0.120**	**0.274**	**−0.291**	1													
DisEPS (5)	**−0.013**	**−0.025**	**−0.028**	0.012	1												
IVol (6)	**0.039**	**0.296**	**−0.245**	**0.496**	**−0.086**	1											
Size (7)	**−0.045**	**−0.084**	**0.078**	**−0.200**	**0.031**	**−0.386**	1										
Bm (8)	**0.056**	**0.405**	**−0.231**	**0.505**	**0.130**	**0.455**	**−0.344**	1									
Beta (9)	**−0.016**	**0.041**	0.002	**−0.028**	**0.074**	**−0.141**	**0.576**	**−0.088**	1								
Ret3m (10)	0.004	−0.006	0.009	−0.007	**−0.016**	−0.008	−0.002	**−0.018**	−0.002	1							
DLLP (11)	**−0.016**	**0.086**	**−0.039**	**0.092**	**−0.074**	**0.125**	**−0.048**	**0.093**	**−0.028**	−0.005	1						
AnCov (12)	**−0.035**	**0.073**	**0.013**	**−0.047**	0.001	**−0.211**	**0.712**	**−0.082**	**0.464**	0.003	**−0.019**	1					
VIX (13)	0.000	**0.599**	**−0.097**	**0.222**	**−0.227**	**0.422**	**−0.149**	**0.254**	**−0.066**	−0.003	**0.119**	**−0.029**	1				
*Q*4 *(14)*	0.006	**0.044**	−0.008	**−0.016**	**0.027**	**0.023**	**0.038**	**−0.015**	**0.021**	0.002	−0.009	**−0.045**	**0.047**	1			
*Tier*1 *(15)*	**−0.017**	**0.094**	**0.058**	**−0.057**	**0.128**	**−0.095**	**−0.051**	**0.037**	**0.022**	−0.011	**−0.044**	**−0.080**	**−0.069**	−0.002	1		
Universal (16)	0.000	0.004	−0.005	0.008	**−0.033**	**−0.020**	**0.129**	−0.001	**0.076**	−0.001	0.008	**0.110**	0.001	−0.003	**−0.056**	1	
FinUBeta (17)	**0.054**	−0.006	0.004	**−0.014**	0.003	**−0.021**	−0.001	0.001	0.005	−0.007	**0.011**	0.001	0.011	**0.029**	**−0.038**	**−0.022**	1

This table presents the Pearson correlation between the variables used in our main tests of hypotheses H1a and H1b, and additional tests. Table 1 provides detailed definitions of all variables. The numbers in bold are significant at 5 percent level.

TABLE 4
Financial Regulation Uncertainty and PEAD

	(1)	(2)	(3)
Dep. Var. = ExRet	*HiFinU* = 0	*HiFinU* = 1	Whole sample
QSUE	0.018***	0.039***	0.017***
	(5.76)	(9.31)	(5.59)
HiFinU			−0.034***
			(−9.91)
HiFinU×QSUE			0.024***
			(4.81)
Size	−0.025***	−0.039***	−0.029***
	(−7.22)	(−7.84)	(−10.10)
Bm	0.060***	0.065***	0.054***
	(5.90)	(9.33)	(10.31)
Beta	0.002	0.007	0.003
	(0.33)	(1.03)	(0.85)
Ret3m	−0.000	−0.004	−0.003
	(−0.00)	(−0.51)	(−0.63)
DLLP	−0.074**	−0.057**	−0.058***
	(−2.18)	(−2.05)	(−2.73)
AnCov	−0.006**	0.008**	0.001
	(−2.07)	(2.20)	(0.31)
VIX	−0.004***	−0.004***	−0.003***
	(−7.83)	(−9.69)	(−10.21)
Q4	0.011***	0.005	0.004**
	(4.12)	(1.41)	(1.99)
Year & Bank FEs	Yes	Yes	Yes
Observations	11,723	10,972	22,852
Adj. R^2	0.228	0.152	0.161
Diff. on *QSUE* between (1) and (2)	F= 23.17***		

This table presents main tests of hypotheses H1a and H1b to examine the effect of financial regulation uncertainty on the mispricing of bank earnings based on PEAD effect. Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 5
Heterogeneity Effects based on Tier1 Capital Adequacy

	(1)	(2)	(3)
Dep. Var. = ExRet	*LoTier1* = 0	*LoTier1* = 1	Whole sample
QSUE	0.016***	0.015*	0.016***
	(2.88)	(1.97)	(2.82)
HiFinU	−0.039*	−0.031	−0.028
	(−2.05)	(−1.48)	(−1.42)
HiFinU×QSUE	0.009	0.038***	0.010
	(1.24)	(3.24)	(1.35)
LoTier1			−0.009*
			(−1.90)
LoTier1×HiFinU			−0.019*
			(−2.00)
LoTier1×QSUE			−0.000
			(−0.03)
LoTier1×HiFinU×QSUE			0.030**
			(2.57)
Size	−0.032***	−0.030***	−0.027***
	(−4.78)	(−5.93)	(−5.64)
Bm	0.068***	0.070***	0.059***
	(2.81)	(5.78)	(4.26)
Beta	−0.000	0.006	0.002
	(−0.03)	(1.28)	(0.40)
Ret3m	0.002	−0.009	−0.003
	(0.20)	(−1.30)	(−0.54)
DLLP	−0.058	−0.022	−0.053*
	(−0.84)	(−0.93)	(−1.78)
AnCov	−0.002	0.003	−0.000
	(−0.27)	(0.51)	(−0.09)
VIX	−0.005**	−0.003*	−0.003**
	(−2.67)	(−1.74)	(−2.13)
Q4	0.009	−0.009	−0.000
	(0.57)	(−0.63)	(−0.02)
Year & Bank FEs	Yes	Yes	Yes
Observations	10,048	9,939	20,084
Adj. R^2	0.178	0.158	0.166
Diff. on *QSUE* between (1) and (2)	F=7.35***		

This table presents our additional tests on the heterogeneity of financial regulation uncertainty's influence on the mispricing of bank earnings based on banks' Tier1 capital adequacy. *LoTier1* equals one if Tier 1 capital ratio is lower than the sample median, and zero otherwise. Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 6
Heterogeneity Effects based on Bank Business Types

	(1)	(2)	(3)
Dep. Var. = ExRet	*Universal* = 0	*Universal* = 1	Whole sample
QSUE	0.020***	0.013*	0.021***
	(3.07)	(1.76)	(3.15)
HiFinU	−0.033*	−0.039**	−0.032*
	(−1.76)	(−2.26)	(−1.75)
HiFinU×QSUE	0.016	0.033***	0.016
	(1.63)	(4.20)	(1.62)
Universal			0.000
			(0.00)
Universal×HiFinU			−0.009*
			(−1.84)
Universal×QSUE			−0.008
			(−1.40)
Universal×HiFinU×QSUE			0.018**
			(2.42)
Size	−0.026***	−0.028***	−0.026***
	(−4.18)	(−5.16)	(−5.25)
Bm	0.065***	0.049***	0.056***
	(5.58)	(3.44)	(4.54)
Beta	−0.001	0.006	0.002
	(−0.09)	(0.91)	(0.52)
Ret3m	−0.003	−0.001	−0.002
	(−0.60)	(−0.09)	(−0.46)
DLLP	−0.067**	−0.044	−0.056
	(−2.60)	(−0.78)	(−1.56)
AnCov	−0.001	−0.002	−0.001
	(−0.17)	(−0.29)	(−0.28)
VIX	−0.003**	−0.002	−0.003*
	(−2.21)	(−1.63)	(−1.96)
Q4	−0.001	0.009	0.004
	(−0.04)	(0.65)	(0.28)
Year & Bank FEs	Yes	Yes	Yes
Observations	10,586	8,991	19,577
Adj. R^2	0.177	0.153	0.165
Diff. on *QSUE* between (1) and (2)	F= 5.84**		

This table presents our additional tests on the heterogeneity of financial regulation uncertainty's influence on the mispricing of bank earnings based on bank business types. *Universal* equals one for universal banks, and zero for commercial banks. Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 7
Heterogeneity Effects based on the Association between Banks' Stock Returns and Financial Regulation Uncertainty

Dep. Var. = ExRet	(1) *NegFinUBeta* = 0	(2) *NegFinUBeta* = 1	(3) Whole sample
QSUE	0.017^{***}	0.018^{***}	0.018^{***}
	(4.42)	(2.25)	(4.30)
HiFinU	-0.029^{***}	-0.030^{***}	-0.028^{***}
	(−8.29)	(−3.51)	(−7.85)
HiFinU×QSUE	0.021^{***}	0.046^{***}	0.020^{***}
	(3.61)	(3.67)	(3.52)
NegFinUBeta			-0.011^{**}
			(−2.23)
NegFinUBeta×HiFinU			−0.004
			(−0.52)
NegFinUBeta×QSUE			0.000
			(0.04)
NegFinUBeta×HiFinU×QSUE			0.027^{**}
			(2.24)
Size	-0.003^{***}	0.004^{*}	-0.002^{*}
	(−2.80)	(1.70)	(−1.77)
Bm	0.021^{***}	0.029^{***}	0.022^{***}
	(7.96)	(5.15)	(9.16)
Beta	0.002	0.009	0.004
	(0.77)	(1.37)	(1.54)
Ret3m	0.002	−0.000	0.001
	(0.48)	(−0.03)	(0.29)
DLLP	-0.049^{**}	−0.102**	-0.061^{***}
	(−2.16)	(−2.07)	(−2.94)
AnCov	−0.001	-0.011^{**}	−0.003
	(−0.57)	(−2.03)	(−1.48)
VIX	0.000	-0.001^{**}	−0.000
	(1.26)	(−2.56)	(−0.12)
Q4	0.003	0.009^{*}	0.004^{*}
	(1.20)	(1.67)	(1.84)
Year & Bank FEs	Yes	Yes	Yes
Observations	17,374	4,240	21,779
Adj. R^2	0.164	0.164	0.163
Diff. on *QSUE* between (1) and (2)	$F= 5.03^{**}$		

This table presents our additional tests on the heterogeneity of financial regulation uncertainty's influence on the mispricing of bank earnings based on the association between banks' stock returns and financial regulation uncertainty. *NegFinUBeta* equals one for banks with extremely negative *FinUBeta* (i.e., in the bottom quintile), and zero otherwise. Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 8
Analyst Forecast Error, Dispersion, and Idiosyncratic Return Volatility

	(1)	(2)	(3)
Dep. Var. =	*AFE*	*DisEPS*	*IVOL*
HiFinU	0.052***	0.003**	0.032***
	(2.68)	(2.05)	(2.81)
Size	−0.145**	−0.030***	−0.223***
	(−2.45)	(−12.70)	(−9.57)
Bm	2.227***	0.014***	0.834***
	(15.57)	(4.72)	(22.78)
Beta	0.127**	0.000	0.037
	(2.06)	(0.13)	(1.59)
*Ret*3m	0.059	0.001	−0.013
	(0.82)	(0.45)	(−0.47)
DLLP	0.688*	−0.065***	0.266**
	(1.70)	(−4.04)	(2.06)
AnCov	−0.038	−0.009***	−0.022*
	(−1.29)	(−5.78)	(−1.72)
VIX	−0.001	−0.001***	0.004***
	(−0.19)	(−10.54)	(2.70)
Q4	−0.009	0.015***	0.065***
	(−0.37)	(13.80)	(5.17)
Year & Bank FEs	Yes	Yes	Yes
Observations	19,113	22,812	23,065
Adj. R^2	0.406	0.637	0.632

This table presents the additional tests of the impact of financial regulation uncertainty on analyst forecast error (*AFE*), analyst forecast dispersion (*DisEPS*), and idiosyncratic return volatility (*IVOL*). Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-values are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 9
Instrumental Variables/2SLS Approach

	First stage		Second stage	
	Dep. Var. = HiFinU		*Dep. Var. = Exret*	
	(1)	(2)	(3)	(4)
HiPolar_S	0.353***			
	(44.00)			
HiPolar_S×QSUE	0.204***			
	(7.89)			
HiPolar_H		0.147***		
		(21.68)		
HiPolar_H×QSUE		0.454***		
		(15.41)		
Fitted HiFinU_S			−0.087*	
			(−1.88)	
Fitted HiFinU_S×QSUE			0.039***	
			(4.30)	
Fitted HiFinU_H				0.272*
				(1.87)
Fitted HiFinU_H×QSUE				0.032**
				(2.00)
QSUE	−0.097***	−0.221***	0.009*	0.014*
	(−6.39)	(−12.85)	(1.84)	(1.66)
Size	−0.002	0.000	−0.030***	−0.022***
	(−0.74)	(0.05)	(−10.48)	(−4.93)
Bm	0.153***	0.233***	0.053***	0.064***
	(19.68)	(26.90)	(13.08)	(9.72)
Beta	0.045***	0.059***	0.004	−0.002
	(5.47)	(6.80)	(1.08)	(−0.30)
Ret3m	−0.016	−0.016	−0.004	0.001
	(−1.08)	(−1.05)	(−0.86)	(0.21)
DLLP	−0.017	−0.043	−0.059***	−0.056**
	(−0.26)	(−0.61)	(−2.89)	(−2.17)
AnCov	0.023***	0.040***	0.001	−0.003
	(3.66)	(5.87)	(0.51)	(−0.84)
VIX	0.016***	0.014***	−0.002***	−0.007***
	(32.43)	(26.54)	(−3.99)	(−3.83)
Q4	−0.033***	−0.021***	0.003	0.015***
	(−4.93)	(−2.87)	(1.00)	(2.69)
Year & Bank FEs	Yes	Yes	Yes	Yes
Observations	22,912	22,912	22,852	22,852
Adj. R^2	0.299	0.208	0.007	0.001

This table presents the robustness tests that employ polarization index at the Senate level (*HiPolar_S*) and the House level (*HiPolar_H*) as instrumental variables in a 2SLS regression approach. *Fitted HiFinU_S* (*Fitted HiFinU_H*) is the fitted value from the first stage regression in Column (1) (Column (2)). Since the endogenous variable *HiFinU* is in the interaction term, following Wooldridge (2002), we use *HiPolar_S* or *HiPolar_H* and their interactions with *QSUE* along with other control variables to estimate the fitted values of *HiFinU×QSUE* (i.e., *Fitted HiFinU_S×QSUE* and *Fitted HiFinU_H×QSUE*). Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all variables. The *t*-values are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 10
Financial Regulation Uncertainty and PEAD Controlling for Other Categorical Policy Uncertainty Indices

Dep. Var. = ExRet	*MonU* (1)	*TaxU* (2)	*SovU* (3)	*GovU* (4)	*TradeU* (5)
QSUE	0.017***	0.021***	0.026***	0.022***	0.021***
	(4.36)	(5.42)	(6.94)	(5.55)	(5.71)
HiFinU	−0.034***	−0.032***	−0.034***	−0.033***	−0.036***
	(−9.74)	(−9.29)	(−9.95)	(−9.83)	(−10.38)
HiFinU×QSUE	0.024***	0.023***	0.024***	0.024***	0.026***
	(4.81)	(4.65)	(4.79)	(4.80)	(5.17)
HiXPU	−0.000	0.037***	0.015***	0.009***	0.022***
	(−0.05)	(9.44)	(4.45)	(2.72)	(5.55)
HiXPU×QSUE	0.000	−0.007	−0.017***	−0.011**	−0.010*
	(0.03)	(−1.49)	(−3.43)	(−2.13)	(−1.89)
Size	−0.029***	−0.028***	−0.029***	−0.029***	−0.029***
	(−10.09)	(−10.01)	(−10.16)	(−10.06)	(−10.15)
Bm	0.054***	0.054***	0.054***	0.054***	0.055***
	(10.30)	(10.33)	(10.38)	(10.35)	(10.44)
Beta	0.003	0.003	0.004	0.004	0.003
	(0.85)	(0.85)	(0.86)	(0.90)	(0.85)
Ret3m	−0.003	−0.003	−0.003	−0.003	−0.003
	(−0.63)	(−0.65)	(−0.61)	(−0.65)	(−0.65)
DLLP	−0.058***	−0.061***	−0.057***	−0.058***	−0.060***
	(−2.73)	(−2.86)	(−2.70)	(−2.74)	(−2.81)
AnCov	0.001	−0.001	0.001	0.001	0.001
	(0.31)	(−0.33)	(0.36)	(0.26)	(0.29)
VIX	−0.003***	−0.003***	−0.003***	−0.003***	−0.003***
	(−10.12)	(−9.28)	(−9.88)	(−10.13)	(−11.70)
Q4	0.004**	−0.002	0.005**	0.004*	0.002
	(1.97)	(−0.82)	(2.36)	(1.77)	(0.86)
Year & Bank FEs	Yes	Yes	Yes	Yes	Yes
Observations	22,852	22,852	22,852	22,852	22,852
Adj. R^2	0.161	0.168	0.162	0.161	0.163

This table presents the robustness tests of financial regulation uncertainty's influence on banks' PEAD, controlling for other categorical policy uncertainty indices, relating to monetary policy (*MonU*), tax policy (*TaxU*), sovereign debt (*SovU*), government spending (*GovU*), and trade policy (*TradeU*). Table 1 provides detailed definitions of all other variables. Observations with singleton fixed effects are dropped in all regressions. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.

TABLE 11

Financial Regulation Uncertainty and PEAD Controlling for Macroeconomic Conditions

Panel A: Controlling for macroeconomic variables

Y = ExRet	*DurG*	*NDur*	*Serv*	*IndP*	*PayR*	*CPI*
QSUE	0.016***	0.015***	0.018***	0.022***	0.016***	0.016***
	(3.58)	(3.44)	(4.16)	(4.67)	(3.61)	(3.58)
HiFinU	−0.033***	−0.040***	−0.036***	−0.033***	−0.034***	−0.041***
	(−9.69)	(−11.68)	(−10.44)	(−9.54)	(−9.94)	(−11.72)
HiFinU×QSUE	0.024***	0.024***	0.025***	0.024***	0.024***	0.025***
	(4.66)	(4.91)	(5.00)	(4.87)	(4.81)	(5.00)
HiMacro	−0.003	−0.078***	−0.034***	0.012*	−0.004	−0.075***
	(−0.38)	(−8.95)	(−3.89)	(1.85)	(−0.45)	(−8.37)
HiMacro×QSUE	0.002	0.003	−0.002	−0.008	0.002	0.002
	(0.36)	(0.55)	(−0.37)	(−1.51)	(0.31)	(0.31)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Bank FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,510	21,510	21,510	21,510	21,510	21,510
Adj. R^2	0.114	0.115	0.117	0.114	0.121	0.114

Panel B: Controlling for monetary policy variables

Y = ExRet	*Fundrate*	*Fundratech*	*M2ch*
QSUE	0.008***	0.019***	0.019***
	(1.70)	(4.38)	(5.37)
HiFinU	−0.036***	−0.033***	−0.039***
	(−9.62)	(−9.71)	(−10.60)
HiFinU×QSUE	0.029***	0.023***	0.028***
	(5.00)	(4.65)	(4.98)
HiMPY	0.001	−0.009***	0.031***
	(0.09)	(−2.68)	(6.53)
HiMPY×QSUE	0.012**	−0.003	−0.001*
	(2.04)	(0.65)	(−1.77)
Controls	Yes	Yes	Yes
Year & Bank FEs	Yes	Yes	Yes
Observations	22,852	22,852	22,792
Adj. *R2*	0.161	0.162	0.164

This table presents the robustness tests of financial regulation uncertainty's influence on banks' PEAD, controlling for macroeconomic variables in Panel A and monetary policy variables in Panel B. Macroeconomic variables include durable spending (*DurG*), non-durable spending (*NDur*), consumer service spending (*Serv*), industrial production (*IndP*), employment payroll (*PayR*) and consumer price index (*CPI*). Monetary policy uncertainty variables include the federal funds rate (*Fundrate*), the change in federal funds rate (*Fundratech*), and the change in monetary supply M2 (*M2ch*). *Controls* in both panels include the same set of control variables as those in Equation (2). Observations with singleton fixed effects are dropped in all regressions. Table 1 provides detailed definitions of all other variables. The *t*-value are in parentheses and clustered at the bank-year level. *, **, and *** indicate significance at 10, 5, and 1 percent level respectively.