경영학석사학위논문

Banks' Information Acquisition and Value-relevance of Fair Value Hierarchy

은행의 정보 획득 및 공정가치 체계의 가치관련성

2019년 2월

서울대학교 대학원
경영학과 회계학 전공
이 상 목

Banks' Information Acquisition and Value-relevance of Fair Value Hierarchy

Sangmok Lee

College of Business Administration

Seoul National University

Abstract

Effective from the beginning of 2008, SFAS No. 157 *Fair Value Measurements* mandates that firms disclose estimations of fair value assets and liabilities in a three-level hierarchy based on observability of their inputs. Prior studies that examine consequences of the statement document discounted value-relevance of opaque components of the fair value hierarchy. Using US banks data and EDGAR log file data from Q4 2009 to Q3 2014, I present evidence that (i) banks that hold larger amount of opaque components of the fair value hierarchy acquire more information on equities; and that (ii) the discounted value-relevance of these opaque components documented in prior studies is attenuated when a bank acquire more *up-to-date* information on equities than do peers. These results remain robust to alternative sample periods and constructions.

Keywords: *fair value hierarchy, value-relevance, information acquisition, EDGAR log file*

Student Number : 2010-20502

Table of Contents

List of Tables

I. INTRODUCTION

The Financial Accounting Standards Board (FASB) released in September 2006 Statement of Financial Accounting Standards (SFAS) No. 157 *Fair Value Measurements*, which provides a consistent definition of fair value[1] and the framework for measuring fair value components in financial reporting. Fair value assets and liabilities are categorized into three levels hinging on the availability of relevant market price and observability of inputs used in the measurement. Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date; Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly; Level 3 inputs are unobservable inputs for the asset or liability. (FASB, 2006)

Despite its aims to enhance the relevance of fair value measurements,[2] SFAS No. 157 has been subject to concerns that fair value measurements, particularly Level 3 components based on unobservable inputs, lack credibility (e.g., Benston 2006; Landsman 2007; Laux and Leuz 2009), aggravate adverse market conditions in general (e.g. Allen and Carletti 2008; Plantin et al. 2008), or even contributed to the global financial crisis of 2008 (e.g. Magnan 2009). Empirical research examining implications of SFAS No. 157 finds that Level 3 assets are opaque and expose firms to higher information risk (Riedl and

[1] Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. (FASB 2006)

[2] On page 13, the statement claims: "Valuation techniques used to measure fair value shall maximize the use of relevant observable inputs (that is, Level 1 and Level 2 inputs that do not require significant adjustment) and minimize the use of unobservable inputs." (FASB 2006)

Serafeim 2011), and that the opaque components experience discounts in their value-relevance (Song et al. 2010; Goh et al. 2015; Chung et al. 2017; Fiechter and Novotny-Farkas 2017).

In this paper, I hypothesize and test that a firm's holdings of opaque components of fair value assets are associated with its acquisition of equities' accounting information. Inputs for Level 2 (Level 3) components are not directly from readily available market prices and hence demand some (significant) efforts in information acquisition. Whereas fair values of Level 1 (Level 2) assets can be readily determined (estimated with reasonable credibility), fair values of Level 3 assets typically have to be estimated using assumptions and mathematical models (i.e. mark-to-model) that require raw inputs. Accounting information for many firms is publicly available and offers marked comparability across firms and industries. Holders of fair value assets can use accounting figures (e.g. earnings, financial multiples) in constructing assumptions and models for Level 3 fair value assets. To the extent that they seek information to be used as inputs for fair value measurements, firms that hold equities whose fair values are not readily determined have reasons to acquire accounting information. In addition, firms are also incentivized to improve accuracy of their fair value measurements. Firms exposed to greater holdings of opaque components of the fair value hierarchy are subject to greater information risk and higher costs of capital (Riedl and Serafeim 2011). Given that Level 3 assets are more opaque than Level 1 assets, with Level 2 assets falling somewhere midway, I expect that firms with greater holdings of more opaque components of the fair value hierarchy strive to tackle the information risk by acquiring incremental information on equities and thereby render their fair value measurements more accurate and credible. Firms that acquire accounting

information and hence improve accuracy of their fair value measurements in turn can disclose further details of the measurement criteria and process in their financial reports (Chung et al. 2017)[3] and ultimately, expect to reduce the costs of capital. (Riedl and Serafeim 2011)

Second, I attempt to show economic significance of acquiring accounting information on equities. Level 3 and to an extent, Level 2 assets of the fair value hierarchy are subject to discounted pricing in the equity market due to investors' concern about reliability of opaque fair value measurements (Song et al. 2010; Goh et al. 2015) or due to heterogeneous capacity to process information incurred by institutional differences in information environments. (Fiechter and Novotny-Farkas 2017) I posit that when firms acquire more information on equities than do peers, the previously documented discounts in value-relevance of opaque components of the fair value hierarchy are attenuated. Firms that actively acquire information on equities based on the motivations discussed above are incentivized to disseminate the fact that that they actively acquire accounting information. In a semi-strong efficient equity market where all publicly available information is reflected in the market price, investors are likely to quickly impound the information that these firms acquire information on equities and as a result, provide more accurate fair value measurements. Investors' concerns about credibility of the Level 3 measurements are in part relieved, as they learn (e.g. disclosures, analysts, etc.) that the firms have exerted efforts to acquire accounting information.

[3] Chung et al. (2017) also show that voluntarily disclosing details of fair value measurements beyond what is mandated by SFAS No. 157 leads to lower information risk of the firm.

I exhibit associations between components of the fair value hierarchy and a firm's acquisition of information on equities. Using quarterly data of US banks and EDGAR log file data from Q4 2009 to Q3 2014, I present empirical evidence that the proportion of Level 3 fair value assets out of total assets is associated with a firm's information acquisition on equities. The association holds only weakly between a firm's information acquisition and its Level 2 asset holdings; no significant association is found between a firm's information acquisition and Level 1 asset holdings. These results are consistent with the prior studies and the idea that more opaque component of the fair value hierarchy lead firms to acquire information on equities more actively. For an additional test, I show that this result is generally robust to including Q1 2008 to Q3 2009 in the sample period, which overlaps with the global financial crisis.

Second, I present empirical evidence that a firm's acquisition of accounting information affects value-relevance of its Level 3 assets holdings. A univariate analysis between subsamples of firms partitioned by the median values of information acquisition variables exhibits significant differences in fair value assets and liabilities holdings between the two subsamples. In a regression that follows, I examine value-relevance of each component of the fair value hierarchy, extending empirical models employed in prior studies. The results show that while the discount in pricing of Level 3 assets as documented in prior studies holds in general, the discount is attenuated for firms that acquire more *up-to-date* (i.e. no more than 90 days old) information on equities compared to peers. This result does not hold for firms that acquire total information (i.e. filed for any fiscal year) than peers do. These results together suggest that a firm's acquisition of up-to-date information on equities in particular leads investors to adjust their pricing of the bank's

equity price upwardly, possibly due to reduced concerns in reliability of more opaque measurements of the bank's fair value hierarchy. Most of these results hold in a series of robustness checks using multiple subsamples (large versus small banks; and banks with high capital ratio versus banks with low capital ratio) and alternative sample period (Q1 2008 to Q3 2014).

This study contributes to the literature in two ways. Primarily, this paper extends prior studies on fair value hierarchy and its value-relevance. Extant papers show that each level of fair value assets is priced differently in the equity— hence heterogeneous value-relevance. Employing the model specification used in Song et al. (2010), this paper examines the differing value-relevance between banks that render different levels of efforts to acquire accounting information. This paper sheds further light on this stream of research by also documenting conditions that abate discounted value-relevance that Level 3 fair value assets face in the equity market. This study also attempts to mitigate confounding effects that may arise from the global financial crisis of 2008 by excluding 2008 and the first three quarters of 2009 from the sample construction. This treatment helps ascertain the generalizability of this paper.

This study is, to my best knowledge, the first work to scrutinize download counts on EDGAR webpage made specifically by banks. In the past few years, accounting and finance literatures have been witnessing a rapid growth in studies employing EDGAR log file data (e.g. Drake and Roulstone 2015; Lee et al. 2015; Drake et al. 2016; Loughran and McDonald 2017). SEC EDGAR webpage has made log files between January 2003 and June 2017 public, allowing researchers to use the download counts on the server as a proxy

for investor attention in or information acquisition on equities. Many works in this line of research highlight firms whose reports are viewed on the webpage. Works that study viewers of the accounting information on EDGAR (e.g. Bozanic et al. 2017; Drake et al. 2017) did not become available prior to 2017 and are in developing stages. This study is among the early efforts to analyze the EDGAR log file from the viewer's perspective and thus contributes to the pioneering development of the literature using the novel dataset.

The remainder of this paper proceeds as follows: Section II discusses the background of SFAS No. 157 and introduces prior studies on fair value hierarchy and studies using EDGAR log file data; Section III delineates sample selection process and the research design; Section IV presents descriptive statistics and regression results; Section V provides results of additional tests; Section VI concludes.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

SFAS No. 157 and fair value hierarchy

In September 2006, FASB released SFAS No. 157 *Fair Value Measurements*, which provides a guideline to distinguish and define each component of fair value hierarchy. Financial statements filed for fiscal years beginning after November 15, 2007 are required to disclose fair values of assets and liabilities following the three-level hierarchy based on inputs of the elements. The concept of fair value long predates SFAS No. 157, but the statement expanded firms' disclosure requirements into a clearer definition of fair value and its hierarchy coupled with a framework for measurement. FASB asserts that the aim

of this statement is to enhance comparability and consistency in fair value measurements.

> Prior to this Statement, there were different definitions of fair value and limited guidance for applying those definitions in GAAP … a single definition of fair value, together with a framework for measuring fair value, should result in increased consistency and comparability in fair value measurements. The expanded disclosures about the use of fair value to measure assets and liabilities should provide users of financial statements with better information about the extent to which fair value is used to measure recognized assets and liabilities.

Notwithstanding the claimed benefits in offering more detailed, consistent information to financial statement users, fair value is not without shortcomings. The process of determining hypothetical exit values of assets can be costly and daunting (Benston, 2008). FASB directs that fundamental characteristics of useful accounting information be relevance and faithful representation, further describing that "to be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral, and free from error." (FASB 2006) Researchers have questioned whether the information contained in fair value hierarchy faithfully represents accounting substances. Allen and Carletti (2008) argue that fair value (or mark-to-market) accounting may contain distortions and contagion that trigger unnecessary liquidation of banks, especially during crises when markets are illiquid. Using an analytical model, Plantin et al. (2008) show that assets that have long durations, trade in a very illiquid market, or feature

an important downside risk— the majority of assets held by financial institutions— are vulnerable to "artificial risk" injected by the mark-to-market measurement regime. In particular, inputs for Level 3 assets and liabilities are unobservable by definition and can pose threats to the credibility. Measuring Level 3 components hence requires significant managerial discretion.

In the wake of the global financial crisis of 2008-09, the literature has debated about the role of fair value accounting in the crisis. Some papers report evidence that the fair value accounting amplified adversity of the global financial crisis in 2008 (e.g. Ryan 2008; Magnan 2009; Bhat et al. 2011; Bowen and Khan 2014); others argue that the framework was a messenger heralding the crisis. (e.g. Laux and Leuz 2009, 2010) Following academic debates about the consequences of SFAS No. 157, FASB subsequently released Accounting Standards Update (ASU) No. 2010-06 *Improving Disclosures about Fair Value Measurements* in January 2010 to further detail provisions of SFAS No. 157 and in part as a response to calls that hold fair value accounting responsible for the financial crisis.[4]

Fair value as determinants of information acquisition on equities

I posit that a financial firm with rational expectations would acquire information on equities and consume other firms' 10-K reports. First, investors have incentives to conduct

[4] For instance, ASU 2010-06 mandates that reporting entities disclose significant transfers in Level 1 and Level 2 measurements and present separate information about purchases, sales, issuance, and settlements of Level 3 measurements.

fundamental analyses in accounting information. Canonical accounting research argues that a firm's fundamental signals are associated with the firm's contemporaneous earnings (Lev and Thiagarajan 1993), future earnings (Abarbanell and Bushee 1997), and abnormal equity returns (Abarbanell and Bushee 1998). Incremental information learned from fundamental analyses should add benefits when information on the analyzed equity is scarce elsewhere. For instance, pricing private equities is complex and often requires models based on subjective assumptions. For extremely illiquid equities, earnings figures and financial ratios that can be obtained from accounting information in 10-K reports is a vital, if not the only, source of fair value measurements. As mandated in SFAS No. 157, firms are required to classify assets with indirect (unobservable) price inputs into Level 2 (Level 3) fair value assets and liabilities. Despite the discretion assumed in this conceptual framework, firms need some inputs to base their assessments on. Given that inputs for Level 2 (Level 3) components are limited (unobservable) by nature, firms can expect to acquire information by acquiring and processing accounting information.

Second, investors' concerns about reliability of fair value measurements can also supply motivations for firms to acquire information on equities. Accounting papers that attempt to foresee consequences of SFAS No. 157 raise concerns about reliability of the information contained in fair value measurements. (e.g. Benston 2006; Landsman 2007) In particular, measuring Level 3 assets and liabilities poses additional reliability concerns as their inputs are unobservable and require significant discretion on the firm's side. Using a sample of financial institutions from 2Q 2007 to 2Q 2008, Riedl and Serafeim (2011) present evidence that firms with greater exposure to Level 3 assets are more opaque and are subject to greater information risk, facing higher costs of capital. Acquiring

information on equities and hence rendering their fair value measurements more accurate, firms can attempt to reduce the costs of capital or more directly, provide detailed disclosures of the criteria and process used in measuring fair value components. (Chung et al. 2017). Firms are therefore motivated to expose themselves to lower information risk by mitigating opaqueness of Level 3 estimates, given that participants of a semi-strong efficient market successfully process the information signaled by more accurate measurements of Level 3 assets.

Level 2 assets, inputs for whose prices are observable but are not directly from quoted market-prices, can also motivate firms to acquire additional information on equities. Economic theories suggest that while prices reveal some information about assets, agents have reasons to exert incremental efforts to acquire costly information.[5] Verrecchia (1982) employs an analytical model to show information acquisition in a competitive market. Traders themselves, firms learn from the market price and private enquiry to adjust their information acquisition activity. More recent analytical work by Mele and Sangiorgi (2015) argues that in asset markets with Knightian uncertainty, ambiguity-averse agents are incentivized to acquire more information to correctly interpret information contained in the asset price.

To the extent that firms are motivated to acquire information on and improve measurements of their fair value assets, I expect that firms that hold higher proportions of fair value assets out of their total assets acquire more information on equities by consuming

[5] Reports on EDGAR server are free of charge, but it takes labor and computational efforts to acquire and process the accounting information and make decisions about fair value inputs.

other firms' 10-K reports. H1 is stated as follows, in alternative form:

H1: A firm's proportions of Level 1, Level 2, and Level 3 fair value assets out of its total assets are positively associated with its information acquisition on equities.

Value-relevance of the fair value hierarchy

Accounting elements that have association with the market value of equity are deemed value-relevant. Prior to the SFAS No. 157, researchers have reported value-relevance of the fair value of banks' investment securities (Barth 1994) and firms' revalued assets (Barth and Clinch 1998). As participants of the equity market may be concerned with the reliability of information contained in fair value measurement, its value-relevance is central to implications of the fair value framework. The cornerstone study by Song et al. (2010) introduces an empirical model examining value-relevance of fair value assets decomposed into the three-level hierarchy. Using Compustat Bank data in the first three quarters of 2008, they show that while a dollar-per-share increase in Level 1 or 2 fair value asset elevates the firm's share price by 0.97 dollars, the same increase in Level 3 fair value asset increases the equity price by only 0.68. Level 3 fair value assets based on unobservable inputs are deemed less value-relevant by the market, compared to the same amount of fair value assets categorized as Level 1 or 2. Goh et al. (2015) extend this research by showing that despite the low value-relevance in 2008, the discount in value-relevance of Level 3 assets is attenuated in later years. These authors also present empirical evidence that pricing of Level 1 or 2 asset is lower for banks whose capital adequacy, proxied by tier 1 capital divided by total adjusted assets, is below the peer median. Fiechter

and Novotny-Farkas (2017) employ a similar research design and a global sample to argue that the discount in value-relevance results not from measurement error or bias, but from investors' heterogeneous abilities to process information regarding fair value measurements.

Having acquired accounting information, firms have incentives to disseminate information about their information acquisition efforts. Diamond and Verrecchia (1981) argue that firm policies that reduce information asymmetry increase market liquidity, thereby resulting in lower cost of capital. More recently, Chung et al. (2017) examine the likelihood that a bank voluntarily discloses details of fair value measurements in their annual reports beyond what is mandated by SFAS No. 157. They find that firms with larger proportions of Level 2 and 3 assets out of total assets are more likely to provide voluntary disclosures about controls and process of the fair value assets. They further show that a bank's information risk as defined in Riedl and Serafeim (2011) is lower for firms with such disclosure. In a semi-strong efficient market where all publicly available information is impounded in prices, equity market participants that gather sufficient information about banks are capable of discovering banks' information acquisition on inputs constituting fair value measurements. In particular, when market participants learn that firms acquire information to improve inputs for the opaque mark-to-model measurement (i.e. Level 3 assets), the concern for its reliability may be attenuated. To the extent that a firm's information acquisition attenuates opaqueness of Level 3 assets it holds, it is reasonable to expect market participants to adjust pricing of Level 3 assets upwardly. Specifically, I expect the discount in value-relevance of more opaque fair value assets to be mitigated among firms that acquire more information than do peers. I state the second hypothesis in

alternative form:

H2: Firms that acquire more information on equities than do peers have higher value-relevance for Level 3 fair value assets.

Use of SEC EDGAR log file data

An increasing number of recent empirical works use SEC's EDGAR log file data. In addition to firms' SEC filings, the EDGAR webpage offers daily search traffic overviews in the form of log files. Information contained in the publicly available log files includes the first three octets of the viewer's IP address, time zone, and internet browser of the viewer, date and time of the page view, identification code of the company whose report is downloaded, and the type of report downloaded. (e.g. 10-K, 10-Q, 8-K, etc.) The raw dataset is extensive and of prohibitively large-volume, with the average size of a daily log file amounting to two to three gigabyte. Reverse-engineering the log files provides detailed, accurate information about who accessed which information with timestamps.

Downloads on EDGAR server is not the only channel of acquiring accounting information and hence cannot represent all of a viewer's fundamental analysis efforts. However, the EDGAR log file does offer notable advantages compared with more direct information channels (e.g. a firm's investor relations webpage) and third-party services that provide similar services (e.g. Yahoo! Finance, Bloomberg terminal, Google search) Some firms' websites and investor relations pages contain hyperlinks to respective report pages on EDGAR. In such cases, EDGAR webpage does serve as a direct online channel

where information users can acquire accounting information. For similar third-party services, some elements of financial statements are condensed into templates mandated by the service provider and appear as if the items are blank. (Loughran and McDonald 2017)[6]

Many extant research works using EDGAR log file aggregate the download counts from the *viewee*'s side (e.g. Drake and Roulstone 2015; Lee et al. 2015; Drake et al. 2016; Loughran and McDonald 2017); that is, the number of times firm's report is viewed/downloaded on EDGAR server. As identities of the viewers often remain anonymous, these studies are limited in further narrowing the data into a subset of firms whose reports are viewed by specific users. Drake and Roulstone (2015) find that a firm's search volume on EDGAR is positively associated with firm events (e.g. announcements for earnings, acquisition, etc.), poor stock performance, and the strength of the firm's information environment (e.g. firm size, number of analysts following, institutional ownership). Li and Sun (2017) show that firms whose reports are frequently downloaded on EDGAR webpage demonstrate higher subsequent returns, arguing that investors' high expectations are reflected in the search volume. Loughran and McDonald (2017) provide descriptive evidence that based on the small number of download requests on EDGAR webpage, not many investors are conducting fundamental analyses.

More recently, some works are examining the same dataset from the *viewer*'s side— the number of times a user downloads a 10-K prepared by any other firm— and report

[6] Loughran and McDonald (2017) report an example that depicts this anecdote: "As an example, technology firm Amazon over the last 3 years … increasingly devoted resources to the research and development of its web services division … Yet, Yahoo! Finance reports in the same period that Amazon had no R&D expenditures … Amazon refers to its R&D as the line item called "Technology and Content" and thus Yahoo's data parser simply fails to itemize the line."

evidence of who downloads what. Examples include request for reports made by the public in general (Drake et al. 2017), auditors (Drake et al. 2018; Hallman et al. 2018), analysts (Gibbons et al. 2018), and policy setters (Bozanic et al. 2017; Holzman et al. 2018). In their study of geographical distribution of viewers of reports on EDGAR webpage in US, Drake et al. (2017) show that download requests are made more frequently in major cities with higher education level that have more accounting and finance jobs and top 100 business schools. This study joins the latter line of research, examining the download counts from the viewer's side and hence providing empirical evidence of viewers' behavior and possible motivations.

III. RESEARCH DESIGN

Sample selection

The sample used in this study consists of US banks from Q4 2009 to Q3 2014 obtained from Compustat bank fundamental quarterly data. I focus on banks for two important reasons. The fair value hierarchy applies mostly to financial vehicles, which in turn constitute a large portion of a bank's balance sheet. Managing these vehicles is critical to key operations of banks, a point that adds relevance to this study. Second, using a sample of a homogeneous industry eliminates potential influences of industry-specific effects and helps avoid confounding effects that the use of different industries may pose. Although SFAS No. 157 went into effect from the beginning of 2008, sample period for the main test starts in Q4 2009 to minimize results that could be driven by the financial crisis in

2008.[7] To the extent that a bank's information acquisition on equities hinges on macroeconomic conditions, a global recession temporarily affected banks' willingness and capacity to conduct research on equities. In addition, some scholars suspect that fair value measurement was the culprit that worsened the financial crisis.

All accounting variables except equity variables (i.e. price and shares outstanding) come from Compustat bank fundamentals quarterly data, where Levels 1 through 3 fair value assets are represented by AQPL1Q, AOL2Q, and AUL3Q, respectively. Equity variables come from CRSP. CBOE S&P 500 Volatility Index (VIX) comes from CBOE Indexes, and historical data of the spread between LIBOR and return on US Government T-bill (TED Spread) is downloaded from Federal Reserve Bank of St. Louis website. All continuous variables are winsorized at 1% and 99% levels.

To proxy for banks' information acquisition on equities, I employ daily log files publicly available on SEC's EDGAR webpage. The initial sample comprises the total of 66,346,949 requests for 10-K reports filed by any company on the EDGAR universe between Oct 1, 2009 and Sep 30, 2014. I then use a second-hand proprietary dataset that matches all of the viewers' IP addresses to their identities. Although the EDGAR log files anonymize the last octet of viewers' IP addresses, it is generally feasible to identify the owner of IP addresses based only on the articulated parts of addresses. Institutions can choose to own a web server and have unique IP addresses or alternatively, contract service

[7] According to NBER, a recession started in December 2007 and ended in June 2009 (http://www.nber.org/cycles/cyclesmain.html). I further remove Q3 2009 so each quarter is included for five years in the sample.

providers that run servers. As a result, a set of IP addresses that share the first three octets can represent a single institution that exclusively uses the address or a service provider that allocates its IP addresses to multiple institutions. Further identifying IP addresses of service providers poses technical difficulties and noises, so I remove IP addresses that match with multiple firm identities, arriving at 10,975 one-to-one matches between IP address and a unique firm identity. This way, non-identifiable viewers of 10-K reports available on EDGAR webpage are leached out, and the remaining dataset allows me to track each request for 10-K report to a specific institutional viewer.

Table 1 describes the sample construction process. From the total of 28,164 bank-quarter observations from Q4 2009 to Q3 2014 obtained from Compustat Bank, 728 overlap in CRSP and the EDGAR log file data set. I remove observations whose value for tier 1 (CAPR1Q) or tier 2 capital ratio (CAPR2Q) is missing; and require banks to have total assets (ATQ) greater than 1 billion and to have no missing values among AQPL1Q, AOL2Q, and AUL3Q. Consistent with Song et al. (2010), I run Equation (1) and eliminate observations whose studentized residuals are greater than 2. The final sample used in the test of H1 comprises 445 bank-quarter observations represented by 34 unique banks. For the test of H2, I additionally eliminate observations with price or shares outstanding missing. Eliminating outliers whose studentized residuals exceed 2, I arrive at 394 observations.

<Table 1 here>

Empirical models

To test whether components of fair value hierarchy are associated with a firm's information acquisition on equities, I employ the following regression.

$$Info\ acquisition\ (total)\ [up-to-date]_{i,t} = \beta_0 + \beta_1 L1\ FVA_{i,t} + \beta_2 L2\ FVA_{i,t} + \beta_3 L3\ FVA_{i,t} + \Sigma\beta_k Control\ variables_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *Info_acquisition (total)*$_{i,t}$ [*Info_acquisition (up-to-date)*$_{i,t}$] is defined as the natural logarithm of number of times bank *i* downloads a 10-K filed for any fiscal year [filed in the last 90 days] on SEC EDGAR server during quarter *t*. Each independent variable is relevant to my research question as *Info_acquisition (total)* directly captures a bank's efforts in acquiring information on equities for any time period, and *Info_acquisition (up-to-date)* refers to download counts of 10-K reports filed no more than 90 days prior to the download date. This variable limits the scope of the analysis to a bank's acquisition of an equity's most recent financial statement available on EDGAR server. As information about more opaque inputs for the fair value hierarchy may be time-sensitive, this measure further highlights a firm acquiring the most up-to-date accounting information. Consistent with prior works examining the fair value hierarchy, *L1 FVA*$_{i,t}$ (*L2 FVA*$_{i,t}$, *L3 FVA*$_{i,t}$) refers to bank *i*'s Level 1 (Level 2, Level 3) fair value assets scaled by its total assets at the end of quarter *t*; in other words, these variables represent the proportion of each level of the fair value hierarchy out of bank *i*'s total assets. Although fair value components are reported every quarter-end, it is reasonable to assume that firms decide how much fair value assets to hold in its balance sheet during the quarter and acquire information on equities

accordingly.

For firm-characteristic control variables, I include *Size*, defined as the natural logarithm of total assets (Compustat item ATQ) and *CapRatio* (Compustat item CAPR3Q), combined capital ratio comprising tier 1 and tier 2 capital, and *Listed_dummy*, an indicator variable equal to 1 if the firm is listed on NYSE, NASDAQ, or AMEX and equal to 0 otherwise. Banks of larger size typically have more resources and hence greater capacity to acquire information on equitiess. A bank whose capital ratio is lowest among peers is likely to be financially distressed and may have different motivations, if at all, for acquiring information on equity market.[8] Motivations to smooth earnings and manage capital ratio, among others, can alter the magnitude, means, and priorities of a bank's information acquisition in the equity market. Controlling for capital ratio helps attenuate banks' potential research motivations arising from reasons other than opaque components of fair value hierarchy. Firms listed in an exchange face additional disclosure requirements and information demand, and I expect listed firms to differ from OTC-traded firms in the extent and frequency of information acquisition. I also include two macro-economic variables in the regression model, suspecting that macroeconomic conditions may serve as factors of a bank's research capacity and/or willingness. For example, in an adverse economy, a bank may be less motivated to conduct research in equities if it expects the market to yield fairly homogeneous low returns. Alternatively, under high uncertainty in the market, a bank may be motivated to reduce risk and seek less volatile equities. *VIX* is CBOE S&P 500 Volatility

[8] For example, Barth et al. (2017) show that banks in the lowest decile of capital ratio smooth earnings with realized gain/loss for available-for-sale (AFS) securities to a larger degree vis-à-vis banks outside the lowest capital ratio decile.

Index and represents overall uncertainty in the equity market. *Tedrate* is the difference between LIBOR and return on 3-month US Government T-bill and typically refers to the perceived credit risk among banks. I expect that banks with more fair value assets on their balance sheets acquire more information on equities: that is, regression coefficients $\beta_1, \beta_2,$ and β_3 are all positive.

The second hypothesis of this paper tests whether a bank's information acquisition on equities affects the value-relevance of its components in and outside the fair value hierarchy. I assign *More_info*$_{i,t}$, an indicator variable equal to 1 if the firm's *Info_acquisition (total)*$_{i,t}$ [*Info_acquisition (up-to-date)*$_{i,t}$] is above the peer median throughout the sample period and equal to 0 otherwise. The regression model to test H2 comprises components of fair value hierarchy interacted with *More_info*. The interaction variables allow me to analyze the value-relevance of each component of the fair value hierarchy when banks acquire more information compared to peers. Following the conventions of extant research on value-relevance, I construct the modified Ohlson (1995) model for each subsample:

$$Price_{i,t} = \alpha_0 + \alpha_1 L1\ FVA_{i,t} + \alpha_2 L2\ FVA_{i,t} + \alpha_3 L3\ FVA_{i,t} + \alpha_4 More\ info_{i,t} + \alpha_5 More\ info * L1\ FVA_{i,t} + \alpha_6 More\ info * L2\ FVA_{i,t} + \alpha_7 More\ info * L3\ FVA_{i,t} + \alpha_8 NFVA_{i,t} + \alpha_9 L12\ FVL_{i,t} + \alpha_{10} L3\ FVL_{i,t} + \alpha_{11} NFVL_{i,t} + \beta_1 EPS_{i,t} + \varepsilon_{i,t} \quad (2)$$

where *L1 FVA*$_{i,t}$ (*L2 FVA*$_{i,t}$, *L3 FVA*$_{i,t}$) is as defined above, but this time on a dollar-per-share basis; *More_info*$_{i,t}$, is as defined above; *NFVA*$_{i,t}$ (*NFVL*$_{i,t}$) refers to non-fair value assets (liabilities) bank *i* holds in quarter *t*; *L12 FVL*$_{i,t}$ refers to Level 1 and 2 fair value

liabilities combined, and $L3\ FVA_{i,t}$ represents Level 3 fair value liabilities.[9] $EPS_{i,t}$ is earnings per share defined as the income before extraordinary items (Compustat IBQ) divided by the number of shares outstanding at the end of quarter *t*. The dependent variable, $Price_{i,t}$ is the closing per-share price on the last day of the month in which firm *i*'s earnings announcement for quarter *t* is released. Scaled by the number of shares outstanding, all of these variables are on per-share basis.

The prediction in H2 is that banks that acquire more information on equities than do peers experience less discount in the value-relevance of Level 3 fair value assets. In other words, the regression coefficient α_7 would be positive. Acquiring information regarding less opaque components (i.e. Level 1 and Level 2 assets) whose prices are more readily observable may or may not add incremental informativeness to investors' pricing of these assets. Signs of the coefficients α_1 and α_2 are therefore unclear ex ante.

It is important to note that residuals from Equation (1) and (2) may be correlated across quarters and/or firms. I correct both the cross-sectional and time-series dependence and estimate standard errors robust to two-way cluster. (Peterson 2009; Gow et al. 2010; Cameron and Miller 2015)

[9] I combine Level 1 and Level 2 fair value liabilities following prior studies' concern that the frequency that a bank often omits these components of the fair value hierarchy in financial statements.

IV. RESULTS

Descriptive statistics

Table 2, Panel A presents summary statistics on the dependent variables used to test determinants of a bank's information acquisition on equities. *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] is the primary measure capturing such efforts and is as defined above.[10] The statistics reveal a striking variance in the number that banks download 10-K reports on EDGAR server. Throughout the entire sample period, the lower quartile of *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] is 23 [2], suggesting that some banks hardly download any 10-K reports on the server. On the other hand, the upper quartile of *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] is 587 [132], implying that at the end of the spectrum, some banks are regular users of accounting information available on EDGAR. A bank that downloads more 10-K reports on EDGAR than do 75% of its peers downloads roughly 6.5 reports, 1.5 of which is filed no more than 90 days ago, on an average day.

Table 2, Panel B provides descriptive statistics on firm characteristics, macroeconomic variables, and relative sizes of fair value assets and liabilities variables used to examine a bank's information acquisition on equities. The mean proportion of fair value assets (liabilities) out of total assets (total liabilities) is 31.99% and 9.29%, respectively. Mean values of Level 1, 2, and 3 fair value assets (Level 1, 2, and 3 liabilities)

[10] Equation (1) uses natural logarithms of $Info\_acquisition\ (total)_{i,t}$ and $Info\_acquisition\ (up\text{-}to\text{-}date)_{i,t}$ due to the highly skewed nature of these variables, but I present their raw values in Table 2, Panel A to offer a more intuitive overview of the variables.

out of total assets (total liabilities) are 3.42%, 26.57%, and 1.96% (1.12%, 7.76%, 0.16%), respectively. Existing research reports similar values (Song et al. 2010; Goh et al. 2015; Chung et al. 2017): and the proportion of Level 2 fair value assets displays a significant peak compared to that of Level 1 and 3 assets.

Table 2, Panel C reports descriptive statistics on the dollar-per-share basis of fair value assets and liabilities variables utilized to analyze value-relevance of each component of the fair value hierarchy. An average bank in my sample holds far more fair value assets per share than it holds fair value liabilities. The mean Level 1, 2, and 3 fair value assets (Level 1, 2, 3 fair value liabilities) per share is 12.79, 107.92, and 4.97 (3.33, 46.58, 0.67) dollars, respectively. The mean equity price and earnings per share (*EPS*) are 31.07 and 0.47, respectively. These numbers are notably greater than those reported in Song et al. 2010 [Goh et al. 2015], likely due to the changes in sample period from 2008 [2008 – 2011] to post-crisis years.

Table 2, Panel D displays the correlation matrix among variables used in Equation (1). Both *Info_acquisition (total)* and *Info_acquisition (up-to-date)* have strong positive correlations with components of fair value hierarchy and *Size*. *Info_acquisition (up-to-date)* is weakly positively (negatively) correlated to *VIX* (*Tedrate*), suggesting that more active information acquisition is associated with higher volatility in the equity market and lower perceived credit risk among banks.

<Table 2 here>

Determinants of information acquisition on equities

Table 3 reports the analysis results of Equation (1) and tests whether *Info_acquisition (total)* (a) and *Info_acquisition (up-to-date)* (b) can be attributed to its proportion of fair value assets holdings out of total assets. I first present the results of Equation (1) with coefficients for the three levels of fair value assets aggregated into that for total fair value assets (*TotalFVA*) to facilitate comparison between influence of the total fair value assets combined and influence of each component of the fair value hierarchy. Although *TotalFVA* displays statistically significant associations with both *Info_acquisition (total)* and *Info_acquisition (up-to-date)*, not all components of the fair value assets are responsible for this association. The regression coefficients reveal that after controlling for firm characteristics and macroeconomic variables, Level 3 fair value asset holdings increase a firm's information acquisition on equities. Specifically, a 1%-point increase in *L3 FVA* increase *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] by 0.06 [0.04]. These numbers are equivalent to increase of 6.35% [4.48%] in raw download counts. *L2 FVA* is weakly associated with *Info_acquisition (up-to-date)* but does not display statistically significant association with *Info_acquisition (total)*. Consistent with the notion that inputs for Level 1 fair value assets are readily available and do not require incremental information acquisition, coefficient for *L1 FVA* for either dependent variable is insignificant. This result is consistent with the previous reasoning that the opaqueness inherent in Level 3 assets prompts banks to acquire additional accounting information, while the association is insignificant to weak between less opaque components of the fair

value hierarchy and the bank's information acquisition.

Coefficient for *Size* is positive and statistically significant in all of the four specifications. This result is consistent with the prediction that larger firms that have more resources available acquire more information on equities. *Listed_dummy* is also significantly significant across all specifications, implying that being listed on NYSE, NASDAQ, or AMEX is one of drivers of a bank's information acquisition on equities. *Tedrate* [*VIX*] is negatively (positively) associated with *Info_acquisition (total)* [*Info_acquisition (up-to-date)*], suggesting that a bank's information acquisition on equities increases in volatility in the equity market and decreases in perceived overall credit risk.

<Table 3 here>

<Table 4 here>

Joint value-relevance of fair value components and more information acquisition

To test whether a firm's information acquisition on equities affects value-relevance of components in the fair value hierarchy, I first dichotomize the sample based on *Info_acquisition (total)* [*Info_acquisition (up-to-date)*], with the peer median of the respective variable partitioning the two subsamples. First, results of the univariate test are reported in Table 4. Firms whose *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] is above the peer median ("high" bracket) demonstrate distinct exposure to fair value

holdings, compared to firms whose information acquisition variable is below the median. ("low" bracket) Firms in the high bracket report significantly larger holdings of fair value assets and liabilities per share, compared to those in the low research bracket. However, the comparison shows narrower gap in terms of non-fair value assets and liabilities. While firms in the higher bracket of *Info_acquisition (total)* hold larger amounts of *NFVL* than do their counterparts in the lower bracket of *Info_acquisition (total)*, two brackets split by *Info_acquisition (up-to-date)* do not show such differences at the 5% confidence level. No statistically significant differences are observed for *EPS* and *Price* between the brackets.

<Table 5 here>

Table 5 shows the results of Equation (2), which tests whether firms that acquire more information on equities experience less discount in the value-relevance of Level 3 fair value assets. That is, firms that actively acquire information on equities have more accurate inputs in measuring Level 3 assets and is priced more upwardly in an efficient equity market. I first report the results of replicating Song et al. (2010) in Column (1) to ascertain that the sample firms used in this study do not demonstrate drastic differences from those used in the prior study. Coefficients that are statistically significant are in general similar to those documented in the literature. The differences are likely attributed to the different sample period, sample composition process, etc.

Consistent with the ex ante predictions, the coefficient for *L3 FVA* in explaining

Info_acquisition (up-to-date) is positive and significant. (t = 2.58) This results corroborates the prior belief that acquiring information on equities more actively leads to a higher value-relevance of the firm's Level 3 assets. However, it is interesting to note that the coefficient for *L3 FVA* in the regression of *Info_acquisition (total)* is insignificant. Expressed more intuitively, when Level 3 assets of a firm that acquires more information on equities than do peers rise by 1 dollar-per-share, pricing of the firm's equity price increases by approximately 45 cents; an increase of the same amount in the Level 3 assets of a firm that acquires less information than do peers does not lead to statistically significant rises in the firm's equity price. Taken together, these two coefficients suggest that a firm's information acquisition on equities involving only up-to-date information, but not total information available, is relevant to the higher value-relevance of its Level 3 assets. Coefficients for *L1 FVA* and *L2 FVA* are positive and significant without interactions with *More_info* but insignificant with the interaction. This result suggests that while Level 1 and 2 assets are value relevant in general, more active information acquisition on equities is not associated with value-relevance of Level 1 and 2 assets. As the results of Equation (1) reveal that *L1 FVA (L2 FVA*) is not significantly associated (weakly significantly associated) with a firm's information acquisition on equities, this result fortifies the insignificant (weak) association between the less opaque components of the fair value hierarchy and a firm's information acquisition on equities. In alternative specifications (untabulated) that interact *L3 FVA* with an indicator variable equal to 1 when the firm belongs to the top tercile or quintile of peers in terms of *Info_acquisition (total)* and *Info_acquisition (up-to-date)*, the statistical significance of the coefficient for *L3 FVA* grows stronger, likely implying that firms in the top bracket of information acquisition on equities are driving this association.

V. ADDITIONAL TESTS

I conduct additional analyses to ascertain the credibility of empirical results discussed in Section IV. First, I run Equations (1) and (2) for an alternative sample period *including* the quarters affected by the global financial crisis of 2008. Table 6 shows results of testing Equation (1) using samples from Q1 2008 to Q3 2014 (n = 561). The positive and significant associations between *L3 FVA* [*L2 FVA*] and *Info_acquisition (total)* and *Info_acquisition (up-to-date)*, [*Info_acquisition (up-to-date)* only] are similarly valid with this alternative sample. However, it is worth noting that there now are positive and significant associations between *L1 FVA* and *Info_acquisition (total)* and *Info_acquisition (up-to-date)*. A potential interpretation of this result is that during the financial crisis, even the least opaque *L1 FVA* incurs credibility concerns and lead banks to acquire information on the volatile equity market, and that such a trend was strong enough to influence the empirical results throughout the sample period. Signs and statistical significance of control variables remain mostly unchanged with the alternative sample. Table 7 offers results of Equation (2) using the alternative sample period. I find that while signs and significance of most coefficients for fair value components remain generally unaltered, *More_info * L2 FVA* now exhibits a negative and significant coefficient. The rationale behind this result is likely multifold and is difficult to pinpoint, but one possible interpretation is that during the global crisis of 2008, investors did not find banks' information acquisition on equities value-relevant. Given that equity market condition was extremely adverse during the crisis, this results could also be driven by temporarily volatility in the equity market.

<Table 6 here>

<Table 7 here>

Second, I partition samples into subsamples based on the two variables that depict firm characteristics: *Size* and *T1CapRatio*. Banks' information acquisition on equities may be driven by firm characteristics, given that firm size directly affects resources available to firms and capital ratio can alter a bank's priorities, possibly encouraging banks to acquire information on equities based on motivations other than fair value measurements. I present results of the subsample analyses in Table 8, where the sample is dichotomized into low and high capital ratio banks (Panel A) or large and small banks (Panel B). Banks whose *Size* (*T1CapRatio*) is above the peer median is labeled large (high tier 1 capital ratio), and those whose *Size* (*T1CapRatio*) is below the peer median small (low tier 1 capital ratio).

Panel A presents the result of Equation (2) with sample partitioned into subsamples of banks with high tier 1 capital ratio (Columns 1-2) and low tier 1 capital ratio (Columns 3-4). A notable difference vis-à-vis the main empirical test presented in Section IV is that there now is a positive and significant association between *More_info * L3 FVA* and *Price* in the subsample of banks with low tier 1 capital ratio. This result implies that for banks with lower tier 1 capital ratio, information acquisition on equities helps mitigate the discount previously found in the pricing of Level 3 assets. However, it is critical to mention that for banks with higher tier 1 capital ratio, a negative and significant association is

observed between *More_info * L2 FVA* and *Price*. This result may signal that for financially healthier banks, investors do not find information acquisition on equities incrementally helpful. Panel B shows result of a similar analysis, this time using subsamples of large banks (Columns 1-2) and small banks (Columns 3-4). All signs and statistical significance of coefficients for fair value components remain unchanged from those reported in Table 5, except for the coefficient for *More_info * L3 FVA* and *Price,* which is more significant in the subsample of small banks than in the main test.

<Table 8 here>

VI. CONCLUSION

The literature has long questioned the reliability (faithful representation) of fair value accounting. SFAS No. 157 that came into effect in the beginning of 2008 extended firm's disclosure requirements into the three-level hierarchy, based on inputs used to measure the fair value of assets and liabilities. The framework has since been attacked for lacking reliability (Landsman 2007; Laux and Leuz 2009) or exacerbating the global financial crisis of 2008; in particular, Level 3 assets and liabilities using mark-to-model measurement scheme have been subject to academic interests for their opaqueness (Riedl and Serafeim 2011).

In the first part of this study, I show an association between a firm's information acquisition on equities, as measured by the number of 10-K reports it downloads from

SEC's EDGAR server, and components of its fair value holdings. Using US banks from Q4 2009 to Q3 2014 and a proprietary dataset that identifies owners of IP addresses recorded in EDGAR log files, I show that after controlling for firm characteristics and macroeconomic conditions, a bank's information acquisition on equities increases in the proportion of its Level 3 asset holdings out of total assets. This association holds weakly (does not hold) for Level 2 (Level 1) fair value assets, suggesting that banks that hold larger proportions of Level 3 assets on their balance sheets acquire information on equities and strive to reduce the opaqueness more actively vis-à-vis their peers.

The latter part of this study examines value-relevance of components of fair value assets interacted with firms' information acquisition. Prior literature shows that Level 3 assets are subject to significant discount in value-relevance. That is, Level 3 assets are weaker in predicting the equity's market price, likely due to their opaque nature. Using a two-way cluster standard error robust regression, this study presents empirical evidence that while the findings of prior studies hold in general, firms acquiring more information on equities than do peers experience less discounts in the value-relevance of Level 3 assets. In particular, value-relevance of Level 3 assets is elevated only when the firm acquires more information on up-to-date accounting information (i.e. no more than 90 days old). This result suggests that in a semi-strong efficient equity market, participants quickly impound information concerning bank's information acquisition and adjust their pricing of Level 3 fair value assets upward, as they deem that the opaqueness of the mark-to-model Level 3 assets is in part attenuated.

This study contributes to prior studies examining consequences of the fair value

hierarchy as defined in SFAS No. 157, particularly with regard to value-relevance of fair value measurements. Given the opaqueness inherent in mark-to-model measurements of fair value, this study provides evidence that greater information acquisition on equities can help attenuate the discounts in value-relevance of the opaque fair value components. In addition, excluding 2008 and the first three quarters of 2009 from the sample helps mitigate confounding effects that arise from the financial crisis. Robustness to the use of an alternative sample period renders the results of this study more generalizable. This study also contributes to the stream of research utilizing EDGAR log file data. Whereas the majority of extant papers examine the dataset from the *viewee's* side— downloads of a specific firm's 10-K or other reports filed on EDGAR server, more recent works have begun to examine the dataset from the *viewer's* side—the number of times a specific institution views reports filed by any other firms on the EDGAR universe. This study joins the latter line of research and is the first attempt to specifically accentuate downloads made by banks.

This study is subject to obvious caveats. The number of downloads on EDGAR server is at best a noisy measure of a firm's information acquisition in the equity market. To the extent that measuring fair value with accuracy and acquiring relevant information are of critical value to firms, firms have multiple means of doing so that do not necessarily involve EDGAR server. It is natural to believe that the download records on EDGAR server captures a part of, not all, aspects of a firm's overall information acquisition. The sample firms analyzed in this study are limited to those in the banking industry, so whether and to what extent proportions of components of fair value assets affect firms' information acquisition in general remain unsolved. While the prior literature suggests that firms have

incentives to acquire information in the equity market, ultimate motivations for refining mark-to-model measurements may vary among firms. Some firms and their managers could be motivated to take advantage of the managerial discretion required in determining Level 3 inputs. When such information is retained inside firm, participants of a semi-strong efficient market may not be able to interpret the information conveyed by the firm's efforts to acquire information on equities. Future research can attempt to shed light on the motivations hunkering behind mark-to-model measurements. This study can also benefit from future extensions that examine channels through which market participants impound information pertaining to banks' information acquisition on equities.

References

Abarbanell, J. S., and B. J. Bushee. 1997. Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research* 35 (1):1-24.

Abarbanell, J. S., and B. J. Bushee. 1998. Abnormal returns to a fundamental analysis strategy. *Accounting Review*:19-45.

Allen, F., and E. Carletti. 2008. Mark-to-market accounting and liquidity pricing. *Journal of accounting and economics* 45 (2-3):358-378.

Barth, M. E. 1994. Fair value accounting: Evidence from investment securities and the market valuation of banks. *Accounting Review*:1-25.

Barth, M. E., and G. Clinch. 1998. Revalued financial, tangible, and intangible assets: Associations with share prices and non-market-based value estimates. *Journal of Accounting Research* 36:199-233.

Barth, M. E., J. Gomez-Biscarri, R. Kasznik, and G. López-Espinosa. 2017. Bank earnings and regulatory capital management using available for sale securities. *Review of Accounting Studies* 22 (4):1761-1792.

Benston, G. J. 2006. Fair-value accounting: A cautionary tale from Enron. *Journal of Accounting and Public Policy* 25 (4):465-484.

———. 2008. The shortcomings of fair-value accounting described in SFAS 157. *Journal of Accounting and Public Policy* 27 (2):101-114.

Bhat, G., R. Frankel, and X. Martin. 2011. Panacea, Pandora's box, or placebo: Feedback in bank mortgage-backed security holdings and fair value accounting. *Journal of accounting and economics* 52 (2-3):153-173.

Bowen, R. M., and U. Khan. 2014. Market reactions to policy deliberations on fair value accounting and impairment rules during the financial crisis of 2008–2009. *Journal of Accounting and Public Policy* 33 (3):233-259.

Bozanic, Z., J. L. Hoopes, J. R. Thornock, and B. M. Williams. 2017. IRS attention. *Journal of Accounting Research* 55 (1):79-114.

Cameron, A. C., and D. L. Miller. 2015. A practitioner's guide to cluster-robust inference. *Journal of Human Resources* 50 (2):317-372.

Chung, S. G., B. W. Goh, J. Ng, and K. O. Yong. 2017. Voluntary fair value disclosures beyond SFAS 157's three-level estimates. *Review of Accounting Studies* 22 (1):430-468.

Diamond, D. W., and R. E. Verrecchia. 1981. Information aggregation in a noisy rational expectations economy. *Journal of Financial Economics* 9 (3):221-235.

Drake, M. S., P. T. Lamoreaux, P. J. Quinn, and J. R. Thornock. 2018. Auditor Disclosure

Benchmarking. *Working paper*.

Drake, M. S., P. J. Quinn, and J. R. Thornock. 2017. Who uses financial statements? a demographic analysis of financial statement downloads from edgar. *Accounting Horizons* 31 (3):55-68.

Drake, M. S., D. T. Roulstone, and J. R. Thornock. 2015. The determinants and consequences of information acquisition via EDGAR. *Contemporary Accounting Research* 32 (3):1128-1161.

———. 2016. The usefulness of historical accounting reports. *Journal of accounting and economics* 61 (2-3):448-464.

Fiechter, P., and Z. Novotny-Farkas. 2017. The impact of the institutional environment on the value relevance of fair values. *Review of Accounting Studies* 22 (1):392-429.

Financial Accounting Standards Board (FASB). 2006. *Fair Value Measurements*. Statement of Financial Accounting Standards No. 157. Norwalk, CT: FASB.

———. 2010. *Improving Disclosures about Fair Value Measurements.* Accounting Standards Update No. 2010-06. Norwalk, CT: FASB.

Gibbons, B., P. Iliev, and J. Kalodimos. 2018. Analyst Information Acquisition via EDGAR.

Goh, B. W., D. Li, J. Ng, and K. O. Yong. 2015. Market pricing of banks' fair value assets reported under SFAS 157 since the 2008 financial crisis. *Journal of Accounting and Public Policy* 34 (2):129-145.

Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The accounting review* 85 (2):483-512.

Hallman, N., A. Kartapanis, and J. J. Schmidt. 2018. Using Sec Edgar Views to Measure

Competition Among Big 4 Auditors. *Working paper*.

Holzman, E., N. T. Marshall, and B. Schmidt. 2018. Who's on the Hot Seat for an SEC Investigation and How Do They Respond? *Working paper*.

Landsman, W. R. 2007. Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and business research* 37 (sup1):19-30.

Laux, C., and C. Leuz. 2009. The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, organizations and society* 34 (6-7):826-834.

———. 2010. Did fair-value accounting contribute to the financial crisis? *Journal of economic perspectives* 24 (1):93-118.

Lee, C. M., P. Ma, and C. C. Wang. 2015. Search-based peer firms: Aggregating investor perceptions through internet co-searches. *Journal of Financial Economics* 116 (2):410-431.

Lev, B., and S. R. Thiagarajan. 1993. Fundamental information analysis. *Journal of Accounting Research*:190-215.

Li, F. W., and C. Sun. 2018. Information acquisition and expected returns: Evidence from EDGAR search traffic. *Working paper*.

Loughran, T., and B. McDonald. 2017. The use of EDGAR filings by investors. *Journal of Behavioral Finance* 18 (2):231-248.

Magnan, M. L. 2009. Fair value accounting and the financial crisis: messenger or contributor? *Accounting perspectives* 8 (3):189-213.

Mele, A., and F. Sangiorgi. 2015. Uncertainty, information acquisition, and price swings in asset markets. *The Review of Economic Studies* 82 (4):1533-1567.

Ohlson, J. A. 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research* 11 (2):661-687.

Petersen, M. A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies* 22 (1):435-480.

Plantin, G., H. Sapra, and H. S. Shin. 2008. Marking-to-market: Panacea or Pandora's box? *Journal of Accounting Research* 46 (2):435-460.

Riedl, E. J., and G. Serafeim. 2011. Information risk and fair values: An examination of equity betas. *Journal of Accounting Research* 49 (4):1083-1122.

Ryan, S. G. 2008. Accounting in and for the subprime crisis. *The accounting review* 83 (6):1605-1638.

Song, C. J., W. B. Thomas, and H. Yi. 2010. Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *The accounting review* 85 (4):1375-1410.

Verrecchia, R. E. 1982. Information acquisition in a noisy rational expectations economy. *Econometrica: Journal of the Econometric Society*:1415-1430.

TABLE 1. Sample selection

Process	No. of observations
Total observations on the Compustat Bank Fundamental data (Q4 2009 to Q3 2014)	28,164
Observations available in Compustat, CRSP, and EDGAR	728
(Less) Firms whose tier 1 or tier 2 capital ratio is missing	(131)
(Less) Firms whose Levels 1 -3 fair value assets are missing	(120)
(Less) Firms whose total assets is below 1 billion	(29)
(Less) Outliers whose studentized residuals from Equation (1) is greater than 2	(3)
Sample for the test of H1 (Table 3)	**445**
(Less) Firms whose price information is missing in CRSP data	(31)
(Less) Outliers whose studentized residuals from Equation (2) is greater than 2	(20)
Sample for the test of H2 (Table 5)	**394**

This table describes the sample construction process. From the total of 28,164 bank-quarter observations from Q4 2009 to Q3 2014 obtained from Compustat Bank, 728 overlap in CRSP and the EDGAR log file data set. I remove observations whose value for tier 1 (CAPR1Q) or tier 2 capital ratio (CAPR2Q) is missing; and require banks to have total assets (ATQ) greater than 1 billion and to have AQPL1Q, AOL2Q, and AUL3Q all. Consistent with Song et al. (2010), I run Equation (1) and eliminate observations whose studentized residuals are greater than 2. The final sample used in the test of H1 comprises 445 bank-quarter observations represented by 34 unique banks. For the test of H2, I additionally eliminate observations with price or shares outstanding missing. Eliminating outliers whose studentized residuals exceed 2 gives me 394 observations.

TABLE 2. Descriptive statistics

Panel A. Trend of information acquisition variables by year

		Info_acquisition (total)					*Info_acquisition (up-to-date)*				
Year	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**
2009 [Q4]	23	1,257	4,952	5	54	503	108	437	0	5	31
2010	80	1,891	7,155	17	184	525	589	2,782	3	24	151
2011	77	3,524	13,758	53	280	577	951	4,190	5	29	167
2012	90	2,056	8,493	11	161	532	545	2,976	2	23	77
2013	97	2,178	8,370	19	188	805	604	2,948	3	35	174
2014 [Q1 – Q3]	78	2,374	10,012	39	171	571	802	4,011	2	37	199
Total	445	2,518	10,918	23	185	587	796	4,571	2	24	132

Panel B. Summary statistics of variables used in Equation (1) (n = 445)

Variable	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
L1 FVA / ATQ	0.0342	0.0517	0.0000	0.0003	0.0057	0.0478	0.2238
L2 FVA / ATQ	0.2657	0.1855	0.0076	0.1295	0.2243	0.3816	0.9395
L3 FVA / ATQ	0.0196	0.0770	0.0000	0.0001	0.0020	0.0105	0.5099
Total FVA / ATQ	0.3199	0.2274	0.0099	0.1537	0.2586	0.4411	1.0332
L1 FVL / LTQ	0.0112	0.0372	0.0000	0.0000	0.0000	0.0007	0.2498
L2 FVL / LTQ	0.0776	0.1976	0.0000	0.0004	0.0021	0.0142	0.8668
L3 FVL / LTQ	0.0016	0.0079	0.0000	0.0000	0.0000	0.0001	0.0733
Total FVL / LTQ	0.0929	0.2329	0.0000	0.0007	0.0030	0.0142	0.9980
Size	9.78	2.17	6.97	7.92	9.46	10.92	14.85
Listed_dummy	0.94	0.24	0.00	1.00	1.00	1.00	1.00
CapRatio	15.81	4.88	3.00	13.85	15.36	16.46	40.05
VIX	18.13	5.22	12.87	14.68	16.52	19.26	34.48
Tedrate	0.25	0.09	0.15	0.20	0.22	0.27	0.46

Panel C. Summary statistics of variables used in Equation (2) (n = 394)

Variable	Mean	Std Dev	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
L1 FVA	12.79	36.73	0.00	0.08	0.98	5.99	208.59
L2 FVA	107.92	246.19	1.51	16.24	38.95	95.26	1547.69

L3 FVA	4.97	11.25	0.00	0.02	0.23	3.00	61.31
NFVA	192.52	207.53	-6.65	68.56	148.47	221.66	1200.24
NFVL	241.16	269.12	0.14	75.17	172.33	305.16	1589.75
L1 FVL	3.33	13.28	0.00	0.00	0.00	0.11	80.08
L2 FVL	46.58	197.18	0.00	0.05	0.30	1.59	1246.33
L3 FVL	0.67	2.75	0.00	0.00	0.00	0.01	17.18
EPS	0.47	0.56	-1.28	0.08	0.42	0.81	2.04
Price	31.07	24.15	1.25	10.56	23.94	46.72	111.51

Panel D. Correlation matrix for variables used in Equation (1) (n = 445)

		(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
(1)	*Info_acquisition (total)*		0.8959	0.1012	0.4604	0.2044	0.4890	0.2578	-0.0238	0.0186	-0.0425
			(0.0000)	(0.0328)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.6173)	(0.6958)	(0.3712)
(2)	*Info_acquisition (up-to-date)*	0.8693		0.0745	0.4485	0.1477	0.4344	0.2495	-0.0245	0.1233	-0.0647
		(0.0000)		(0.1168)	(0.0000)	(0.0018)	(0.0000)	(0.0000)	(0.6070)	(0.0092)	(0.1731)
(3)	*L1 FVA*	0.2248	0.1532		0.1928	0.0769	0.3235	-0.4773	-0.1304	0.0675	-0.0401
		(0.0000)	(0.0012)		(0.0000)	(0.1055)	(0.0000)	(0.0000)	(0.0059)	(0.1553)	(0.3983)
(4)	*L2 FVA*	0.3448	0.2992	0.3732		0.1422	0.5221	-0.0127	0.2252	-0.0312	0.1000
		(0.0000)	(0.0000)	(0.0000)		(0.0026)	(0.0000)	(0.7890)	(0.0000)	(0.5115)	(0.0350)

(5)	*L3 FVA*	0.4641	0.3574	0.2320	0.2797		-0.1147	0.0623	-0.0853	-0.0784	0.0182
		(0.0000)	(0.0000)	(0.0000)	(0.0000)		(0.0155)	(0.1899)	(0.0721)	(0.0988)	(0.7025)
(6)	*Size*	0.4078	0.3132	0.4401	0.3460	0.4699		-0.2981	0.0215	-0.0180	-0.0118
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		(0.0000)	(0.6509)	(0.7044)	(0.8045)
(7)	*Listed_dummy*	0.2679	0.2642	-0.3367	-0.0425	0.1231	-0.3020		0.0520	0.0396	0.0695
		(0.0000)	(0.0000)	(0.0000)	(0.3710)	(0.0093)	(0.0000)		(0.2733)	(0.4046)	(0.1434)
(8)	*CapRatio*	0.1444	0.1146	0.0377	0.2436	0.1142	0.2002	0.1144		-0.1276	0.0146
		(0.0023)	(0.0156)	(0.4271)	(0.0000)	(0.0160)	(0.0000)	(0.0157)		(0.0071)	(0.7595)
(9)	*VIX*	-0.0190	0.0441	0.0803	-0.0481	0.0865	-0.0252	0.0513	-0.0527		-0.0619
		(0.6892)	(0.3534)	(0.0907)	(0.3111)	(0.0685)	(0.5967)	(0.2807)	(0.2674)		(0.1928)
(10)	*Tedrate*	-0.0656	-0.1333	-0.0197	0.0908	0.0091	-0.0260	0.0691	0.0423	0.0946	
		(0.1671)	(0.0048)	(0.6786)	(0.0556)	(0.8483)	(0.5841)	(0.1458)	(0.3731)	(0.0462)	

Panel E. Correlation matrix for variables used in Equation (2) (n = 394)

		(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
(1)	*L1 FVA*		0.9154	0.7389	0.7868	0.9010	0.9200	0.9207	0.8413	0.1474	0.2059
			(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0026)	(0.0000)
(2)	*L2 FVA*	0.4786		0.8143	0.8228	0.9335	0.9720	0.9598	0.8926	0.2015	0.2379
		(0.0000)		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
(3)	*L3 FVA*	0.3395	0.3179		0.6555	0.8521	0.8031	0.8034	0.7148	0.1611	0.1560
		(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0010)	(0.0015)

(4)	*NFVA*	0.0769	0.3589	0.2039		0.7535	0.7883	0.7931	0.9756	0.4227	0.5459
		(0.1182)	(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
(5)	*L1 FVL*	0.5057	0.3632	0.5150	0.1245		0.9656	0.9728	0.7903	0.0728	0.0596
		(0.0000)	(0.0000)	(0.0000)	(0.0112)		(0.0000)	(0.0000)	(0.0000)	(0.1391)	(0.2266)
(6)	*L2 FVL*	0.4254	0.4193	0.6627	0.1940	0.6081		0.9776	0.8263	0.0744	0.0861
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.1308)	(0.0803)
(7)	*L3 FVL*	0.4343	0.4991	0.4377	0.2469	0.6051	0.3711		0.8343	0.0899	0.1061
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		(0.0000)	(0.0677)	(0.0309)
(8)	*NFVL*	0.1911	0.5659	0.2323	0.9515	0.1264	0.2174	0.3131		0.4333	0.5487
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0101)	(0.0000)	(0.0000)		(0.0000)	(0.0000)
(9)	*EPS*	0.1643	0.5181	0.1976	0.6758	0.0155	0.2570	0.1762	0.7411		0.7837
		(0.0008)	(0.0000)	(0.0000)	(0.0000)	(0.7526)	(0.0000)	(0.0003)	(0.0000)		(0.0000)
(10)	*Price*	0.1898	0.5937	0.1757	0.8447	0.0783	0.2248	0.2772	0.8936	0.8311	
		(0.0001)	(0.0000)	(0.0003)	(0.0000)	(0.1118)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	

Panel A presents the trend of information acquisition variables by year. *Info_acquisition (total)*$_{i,t}$ [*Info_acquisition (up-to-date)*$_{i,t}$] is defined as the natural logarithm of number of times bank *i* downloads a 10-K filed for any fiscal year [filed in the last 90 days] on SEC EDGAR server during quarter *t*.

Panel B provides descriptive statistics on firm characteristics, macroeconomic variables, and relative sizes of fair value assets and liabilities variables used to examine a bank's information acquisition on equities. Fair value assets are reported in terms of proportion out of the firm's total assets; fair value liabilities are reported in terms of proportion out of the firm's total liabilities. The number of observations in 445.

Panel C reports descriptive statistics on the per-share basis of fair value assets and liabilities variables utilized to analyze value relevance of each component of the fair value hierarchy. The number of observations is 391.

Panel D [Panel E] displays the correlation matrix for variables used in Equation (1) [Equation (2)]. The upper diagonal reports Pearson correlation coefficients,

and the lower diagonal Spearman correlation coefficients. Figures in parentheses denote p-value of the correlation coefficient.

TABLE 3. Determinants of information acquisition

	(a) DV = *Info_acquisition (total)*						**(b) DV = *Info_acquisition (up-to-date)***					
	(1)			**(2)**			**(3)**			**(4)**		
Variables	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Intercept	-3.60	-1.78	0.092	-4.32	-1.91	0.071	-5.50	-2.90	0.009	-5.77	-2.63	0.017
Total FVA	3.10	2.65	0.016				3.11	3.31	0.004			
L1 FVA				2.73	0.69	0.497				2.30	0.65	0.527
L2 FVA				2.08	1.25	0.228				2.85	1.78	0.091
L3 FVA				6.15	4.24	0.000				4.38	3.74	0.001
Size	0.50	3.16	0.005	0.56	3.24	0.004	0.46	3.24	0.004	0.48	2.91	0.009
Listed_dummy	4.03	4.82	0.000	4.06	4.30	0.000	3.85	5.14	0.000	3.95	5.21	0.000
CapRatio	-0.04	-1.28	0.217	-0.03	-0.90	0.377	-0.04	-1.34	0.195	-0.03	-1.09	0.289
VIX	0.00	0.23	0.817	0.01	0.87	0.393	0.05	1.84	0.082	0.05	2.01	0.058
Tedrate	-2.14	-10.31	0.000	-1.94	-7.51	0.000	-2.56	-1.59	0.129	-2.84	-1.62	0.122
N	445											
Adj. R^2	0.50			0.49			0.43			0.43		

This table reports the analysis results of Equation (1) and tests whether *Info_acquisition (total)* (a) and *Info_acquisition (up-to-date)* (b) can be attributed to its proportion of fair value assets holdings out of total assets. *Info_acquisition (total)*$_{i,t}$ [*Info_acquisition (up-to-date)*$_{i,t}$] is defined as the natural logarithm of number of times bank *i* downloads a 10-K filed for any fiscal year [filed in the last 90 days] on SEC EDGAR server during quarter *t*. T-stat in each column tests whether coeff in the respective column is unequal to 0. Standard errors are robust to two-dimensional clusters (firms and quarters).

TABLE 4. Test of differences between high information acquisition group and low information acquisition group

Partitioned by:	(a) *Info_acquisition (total)*					(b) *Info_acquisition (up-to-date)*				
Variable	**Mean (low)**	**Mean (high)**	**Mean Diff.**	**t-stat**	**p-value**	**Mean (low)**	**Mean (high)**	**Mean Diff.**	**t-stat**	**p-value**
Info_acquisition (total)	3.15	6.69	-3.54	-24.53	0.000	3.36	6.52	-3.16	-19.14	0.000
Info_acquisition (up-to-date)	1.61	4.96	-3.35	-20.29	0.000	1.36	5.17	-3.81	-27.85	0.000
L1 FVA	3.54	18.06	-14.52	-4.76	0.000	5.77	16.20	-10.43	-3.34	0.001
L2 FVA	40.72	151.10	-110.38	-5.38	0.000	54.04	140.00	-85.96	-4.12	0.000
L3 FVA	1.53	7.13	-5.60	-5.86	0.000	2.12	6.63	-4.51	-4.62	0.000
NFVA	163.84	200.29	-36.45	-1.93	0.055	174.92	191.06	-16.14	-0.85	0.395
L1 FVL	0.01	5.19	-5.18	-4.75	0.000	0.24	4.99	-4.75	-4.32	0.000
L2 FVL	0.33	74.21	-73.88	-4.49	0.000	4.10	71.07	-66.98	-4.03	0.000
L3 FVL	0.03	1.00	-0.97	-4.3	0.000	0.11	0.94	-0.84	-3.68	0.000
NFVL	187.17	267.26	-80.09	-3.35	0.002	208.21	249.75	-41.54	-1.72	0.086
EPS	0.43	0.50	-0.07	-1.21	0.225	0.45	0.47	-0.02	-0.36	0.717
Price	29.70	30.12	-0.41	-0.17	0.865	31.65	28.50	3.15	1.33	0.186

This table reports results of the univariate test. Firms are partitioned into two groups depending on *Info_acquisition (total)* [*Info_acquisition (up-to-date)*]. Firms whose *Info_acquisition (total)* [*Info_acquisition (up-to-date)*] is above the peer median is labeled "high"; firms whose *Info_acquisition (total)*

[*Info_acquisition (up-to-date)*] is below the peer median is labeled “low”. Mean (low) [Mean (high)] describes the mean of each variable in the “low” [“high”] group. T-stat in each column tests whether the mean differences are different from 0.

TABLE 5. Value-relevance of the fair value hierarchy interacted with information acquisition variables

DV = *Price*		(1)			(2)			(3)		
	Variable	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
	Intercept	-0.11	-0.10	0.925	1.67	1.28	0.216	1.11	0.91	0.373
	L1 FVA	0.79	5.75	0.000	0.88	8.91	0.000	0.82	6.04	0.000
	L2 FVA	0.69	8.35	0.000	0.76	8.11	0.000	0.74	8.84	0.000
	L3 FVA	0.48	2.40	0.027	0.29	1.12	0.277	0.20	1.03	0.314
[a]	*More_info (total)*				-4.97	-2.22	0.039			
	*[a] * L1 FVA*				0.00	0.04	0.971			
	*[a] * L2 FVA*				0.01	0.30	0.771			
	*[a] * L3 FVA*				0.37	1.15	0.265			
[b]	*More_info (up-to-date)*							-3.07	-2.05	0.055
	*[b] * L1 FVA*							0.02	0.41	0.689
	*[b] * L2 FVA*							-0.01	-0.58	0.572
	*[b] * L3 FVA*							0.45	2.58	0.019
	NFVA	0.66	7.15	0.000	0.72	7.60	0.000	0.70	7.63	0.000
	FVL12	-0.73	-7.57	0.000	-0.81	-7.53	0.000	-0.77	-7.80	0.000
	FVL3	-4.22	-1.61	0.123	-4.96	-1.70	0.105	-4.81	-1.84	0.081
	NFVL	-0.63	-6.48	0.000	-0.69	-6.86	0.000	-0.67	-6.87	0.000

EPS	13.33	6.95	0.000	12.21	6.14	0.000	12.65	6.64	0.000
N	394								
Adj. R^2	0.90			0.91			0.91		

This table tests whether firms exerting greater efforts to acquire information on equities experience less discount in the value relevance of Level 3 fair value assets. *More_info (total) [More_info (up-to-date)*] is an indicator variable equal to 1 if the firm's *Info_acquisition (total) [Info_acquisition (up-to-date)*] is above the peer median and 0 otherwise. Column (1) reports results of replicating Song et al. (2010). Column (2) [Column (3)] reports results of Equation (2) using fair value components and their interactions with *More_info (total) [More_info (up-to-date)*]. T-stat in each column tests whether coeff in the respective column is unequal to 0. Standard errors are robust to two-dimensional clusters (firms and quarters).

TABLE 6. Determinants of information acquisition (alternative sample period: Q1 2008 to Q3 2014)

	(a) DV = Info_acquisition (total)						*(b) DV = Info_acquisition (up-to-date)*					
	(1)			**(2)**			**(3)**			**(4)**		
Variables	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Intercept	-4.55	-2.12	0.044	-5.78	-2.47	0.021	-5.67	-3.04	0.005	-6.32	-2.88	0.008
Total FVA	3.15	2.91	0.007				3.11	3.68	0.001			
L1 FVA				7.26	1.84	0.077				6.01	1.56	0.130
L2 FVA				1.77	1.18	0.248				2.47	1.73	0.095
L3 FVA				6.10	4.30	0.000				4.06	3.54	0.002
Size	0.52	3.19	0.004	0.59	3.40	0.002	0.48	3.41	0.002	0.51	3.13	0.004
Listed_dummy	4.29	5.89	0.000	4.80	5.77	0.000	4.20	6.96	0.000	4.53	6.05	0.000
CapRatio	-0.05	-1.34	0.193	-0.03	-0.82	0.417	-0.06	-1.85	0.075	-0.05	-1.40	0.174
VIX	0.01	2.98	0.006	0.01	2.74	0.011	0.02	0.93	0.363	0.02	0.89	0.383
Tedrate	-0.42	-7.85	0.000	-0.43	-5.45	0.000	-0.60	-1.70	0.102	-0.59	-1.67	0.107
N	561											
Adj. R^2	0.49			0.51			0.42			0.42		

This table reports the analysis results of Equation (1) and tests, using an alternative sample period of Q1 2008 to Q3 2014, whether *Info_acquisition (total)* (a) and *Info_acquisition (up-to-date)* (b) can be attributed to its proportion of fair value assets holdings out of total assets. *Info_acquisition (total)*$_{i,t}$ [*Info_acquisition (up-to-date)*$_{i,t}$] is defined as the natural logarithm of number of times bank *i* downloads a 10-K filed for any fiscal year [filed in the last 90

days] on SEC EDGAR server during quarter *t*. T-stat in each column tests whether coeff in the respective column is unequal to 0. Standard errors are robust to two-dimensional clusters (firms and quarters).

TABLE 7. Value-relevance of the fair value hierarchy interacted with information acquisition variables (alternative sample period: Q1 2008 to Q3 2014)

DV = *Price*		(1)			(2)			(3)		
	Variable	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
	Intercept	1.31	1.01	0.320	3.41	2.61	0.015	2.34	2.06	0.050
	L1 FVA	0.79	5.04	0.000	0.88	7.25	0.000	0.80	5.03	0.000
	L2 FVA	0.70	6.90	0.000	0.78	6.04	0.000	0.77	6.43	0.000
	L3 FVA	0.46	2.60	0.015	0.23	1.02	0.316	0.08	0.55	0.587
[a]	*More_info (total)*				-5.41	-2.37	0.026			
	*[a] * L1 FVA*				0.00	-0.04	0.972			
	*[a] * L2 FVA*				0.00	0.12	0.909			
	*[a] * L3 FVA*				0.43	1.36	0.185			
[b]	*More_info (up-to-date)*							-2.80	-1.64	0.113
	*[b] * L1 FVA*							0.06	0.83	0.414
	*[b] * L2 FVA*							-0.02	-2.23	0.035
	*[b] * L3 FVA*							0.61	4.20	0.000
	NFVA	0.65	6.01	0.000	0.70	5.53	0.000	0.69	5.70	0.000
	FVL12	-0.76	-6.81	0.000	-0.83	-6.01	0.000	-0.67	-5.12	0.000

FVL3	-2.87	-1.72	0.097	-3.36	-1.86	0.075	-0.80	-6.21	0.000
NFVL	-0.63	-5.41	0.000	-0.69	-4.99	0.000	-3.20	-2.01	0.055
EPS	13.73	8.39	0.000	12.69	7.22	0.000	12.87	7.89	0.000
N	507								
Adj. R^2	0.87			0.88			0.87		

This table tests, with an alternative sample period of Q1 2008 to Q3 2014, whether firms exerting greater efforts to acquire information on equities experience less discount in the value relevance of Level 3 fair value assets. *More_info (total) [More_info (up-to-date)*] is an indicator variable equal to 1 if the firm's *Info_acquisition (total) [Info_acquisition (up-to-date)*] is above the peer median and 0 otherwise. Column (1) reports results of replicating Song et al. (2010). Column (2) [Column (3)] reports results of Equation (2) using fair value components and their interactions with *More_info (total) [More_info (up-to-date)*]. T-stat in each column tests whether coeff in the respective column is unequal to 0. Standard errors are robust to two-dimensional clusters (firms and quarters).

TABLE 8. Subsample tests: value-relevance of the fair value hierarchy interacted with information acquisition variables

Panel A. Subsample test of Equation (2) (High *T1CapRatio* vs low *T1CapRatio*)

		High *T1CapRatio*						**Low *T1CapRatio***					
		(1)			(2)			(3)			(4)		
	Variable	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
	Intercept	1.14	0.67	0.510	1.00	0.55	0.584	5.72	4.04	0.000	2.82	2.18	0.039
	L1 FVA	0.47	3.33	0.003	0.46	2.70	0.012	1.29	3.63	0.001	0.84	6.69	0.000
	L2 FVA	0.50	3.79	0.001	0.46	3.99	0.001	0.88	12.04	0.000	0.85	9.65	0.000
	L3 FVA	-1.08	-1.94	0.064	-0.87	-2.40	0.024	0.42	1.51	0.143	0.34	2.18	0.038
[a]	*More_info (total)*	-0.44	-0.13	0.896				-9.46	-4.81	0.000			
	*[a] * L1 FVA*	0.07	0.67	0.512				-0.33	-1.04	0.307			
	*[a] * L2 FVA*	-0.05	-1.13	0.267				0.04	1.27	0.217			

	*[a] * L3 FVA*	0.88	1.65	0.112				0.62	1.80	0.083				
[b]	*More_info (up-to-date)*				0.83	0.41	0.682				-4.19	-2.14	0.042	
	*[b] * L1 FVA*				0.07	0.94	0.356				0.03	0.24	0.815	
	*[b] * L2 FVA*				-0.05	-1.86	0.075				-0.01	-0.68	0.505	
	*[b] * L3 FVA*				0.72	2.53	0.018				0.63	3.81	0.001	
	NFVA	0.36	2.39	0.025	0.35	2.57	0.017	0.81	12.74	0.000	0.78	9.75	0.000	
	FVL12	-0.50	-3.36	0.003	-0.48	-3.65	0.001	-0.99	-14.18	0.000	-0.91	-10.70	0.000	
	FVL3	-3.30	-1.11	0.276	-2.95	-1.17	0.252	-2.01	-1.71	0.099	-1.76	-1.18	0.249	
	NFVL	-0.30	-1.80	0.085	-0.28	-1.90	0.069	-0.81	-11.70	0.000	-0.77	-8.79	0.000	
	EPS	10.75	2.67	0.013	11.08	2.87	0.008	11.63	6.45	0.000	12.16	7.26	0.000	
	N	197						197						
	Adj R^2	0.91			0.91			0.93			0.93			

Panel B. Subsample test of Equation (2) (Large firms vs small firms)

		Large firms						Small firms					
		(1)			(2)			(4)			(3)		
	Variable	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
	Intercept	4.58	1.27	0.215	2.49	0.78	0.440	0.72	0.65	0.524	1.05	1.20	0.242
	L1 FVA	0.73	3.99	0.001	0.68	3.07	0.005	1.33	4.89	0.000	1.08	6.89	0.000
	L2 FVA	0.64	3.62	0.001	0.68	3.96	0.001	1.05	10.49	0.000	0.94	6.52	0.000
	L3 FVA	0.01	0.03	0.978	-0.14	-0.53	0.602	1.18	1.38	0.179	1.01	1.28	0.213
[a]	*More_info (total)*	-3.29	-0.76	0.455				-8.32	-4.59	0.000			
	*[a] * L1 FVA*	-0.10	-0.61	0.546				0.07	0.30	0.765			
	*[a] * L2 FVA*	0.00	-0.02	0.984				0.01	0.34	0.740			
	*[a] * L3 FVA*	0.08	0.22	0.827				0.04	0.03	0.977			
[b]	*More_info (up-to-date)*				-0.79	-0.35	0.730				-4.03	-1.97	0.059
	*[b] * L1 FVA*				0.02	0.27	0.787				0.14	2.09	0.046
	*[b] * L2 FVA*				-0.02	-0.90	0.379				-0.06	-1.63	0.115

*[b] * L3 FVA*				0.35	1.06	0.300				0.50	4.48	0.000
NFVA	0.56	3.19	0.004	0.59	3.56	0.002	1.10	10.49	0.000	0.99	6.84	0.000
FVL12	-0.69	-3.56	0.001	-0.71	-3.97	0.001	-1.11	-2.00	0.056	-1.24	-2.80	0.010
FVL3	-1.57	-1.03	0.310	-2.32	-1.45	0.158	-5.62	-2.71	0.012	-0.69	-0.27	0.792
NFVL	-0.53	-2.78	0.010	-0.56	-3.13	0.004	-1.08	-10.11	0.000	-0.97	-6.40	0.000
EPS	12.99	5.41	0.000	12.57	5.34	0.000	8.59	3.73	0.001	10.52	3.91	0.001
N	197						197					
Adj R^2	0.90			0.90			0.93			0.91		

This table tests whether firms exerting greater efforts to acquire information on equities experience less discount in the value relevance of Level 3 fair value assets. In Panel A [Panel B], firms are partitioned into subsamples depending on whether its tier 1 capital ratio [*Size*] is above the peer median. Columns (1) and (2) [Columns (3) and (4)] report results of Equation (2) in the high *T1CapRatio* and low *T1CapRatio* [large firms and small firms] subsamples, respectively.

More_info (total) [More_info (up-to-date)] is an indicator variable equal to 1 if the firm's *Info_acquisition (total) [Info_acquisition (up-to-date)*] is above the peer median and 0 otherwise. Columns (1) and (3) [Columns (2) and (4)] reports results of Equation (2) using fair value components and their interactions with *More_info (total) [More_info (up-to-date)*]. T-stat in each column tests whether coeff in the respective column is unequal to 0. Standard errors are robust to two-dimensional clusters (firms and quarters).

국문초록

2007 년 11 월 15 일 이후 공시되는 재무제표는 SFAS No. 157 Fair Value Measurements 기준에 따라 기업이 보유한 자산 및 부채에 대한 공정가치를 추산하여 추산 기준의 관찰 가능성에 따라 3 단계로 구성된 공정가치 체계에 맞추어 공시해야 한다. 본 기준의 경제적 영향을 분석하는 선행 연구를 통해 공정가치 체계를 구성하는 불투명 요소는 할인된 가치관련성을 갖는 것으로 보고된 바 있다. 본 연구는 2009 년 4 사분기부터 2014 년 3 사분기까지 미국의 은행 데이터 및 EDGAR log file 데이터를 사용하여 (i) 공정가치 체계 중 불투명한 부분을 많이 보유한 기업은 주식에 대한 정보를 더 많이 수집하며, (ii) 기업이 주식에 대한 최신 정보를 동일 산업군 내 타기업 대비 더 많이 수집하는 경우 선행 연구에서 보고된 가치관련성의 할인이 완화됨을 보인다. 표본 기간 및 구성을 다르게 한 경우에도 본 결과는 강건한 것으로 나타난다.

주요어: 공정가치 체계, 가치관련성, 정보 수집, EDGAR log file

학번: 2010-20502