

## Fair Value Accounting: Current Practice and Perspectives for Future Research\*

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## 1. Introduction

In this paper, we contribute to the ongoing dialogue about the use and usefulness of fair value measurements in financial reporting. We begin by outlining the evolution of fair value accounting. The concepts of fair value accounting in the academic literature can be traced to the 1930s with the discussions of W.A. Paton and A.C. Littleton, among others. However, the concept of an exit price for fair value has been attributed to Chambers' work starting in the 1950s. Chambers viewed the accounting discipline as going beyond the concepts of simply recording. He wrote extensively on measurement in accounting, which he viewed to be different from the concept of valuation.

After outlining the origins of fair value in the academic literature, we discuss the development of fair value by regulators and standard setters. We provide an overview of how the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) (and their predecessors) define fair value and the associated accounting standards that prescribe the use of fair value measurements. Fair value accounting, in the form of current replacement cost, was initially introduced by both boards to deal with hyperinflationary environments of the 1970s. However, the accounting for financial instruments is where the most extensive use of fair value can be found. Initially, the standards required the disclosure of items but recognition in the financial statements has followed.

We discuss and document the extent to which firms across different industries and countries incorporate in their financial reports assets and liabilities measured at fair value. At a minimum, this information is important to understand when making research design choices, but given the differences we document, there may be opportunities for further research to deepen our understanding of fair value measurement.

After delineating the institutional landscape of fair value accounting around the globe, we review research related to the usefulness of fair value measurements and fair value-related disclosures in terms of their valuation and risk relevance. Our goal is not to highlight every paper that has investigated various aspects of fair value measurements. Instead, we aim to identify important aspects of the fair value measurement “black box” for which additional research insights are needed. While we understand many things, we are left with many more questions. For example, we know little about the process for determining whether a measurement is level 2 or level 3 fair value; we have only started to scratch the surface of the technologies used and the impact these technologies may have on financial reporting.

## **2. Institutional Background**

### *2.1 Evolution of fair value accounting*

One of the central purposes of accounting is to measure the transactions entered into by the firm. The seemingly simple activity has been the subject of significant debate since the very early days of the accounting profession and continues in both academic and regulatory circles today. From the very earliest debates about measurement, there have been two very strongly held views about which measurement basis to use, either historical cost accounting or fair value. In the UK, concerns about measurement uncertainty led to the Joint Stock Company Legislation in the late 1800s (Maltby 1998). In the US, the Revenue Acts of the early 1900s leading to the establishment of a corporate income tax created an incentive for corporations to push for historical cost accounting to minimize their taxes (Markarian 2014). However, among academics, the measurement debate really takes off with the work of A.C. Littleton, W. A. Paton, and G.O. May.

Littleton and Paton both agreed that the purpose of measuring income was to determine an enterprise's earning power (Paton and Littleton 1940). However, they differed greatly on how this measurement should be achieved. Paton earned a PhD in economics and his training likely heavily influenced his thinking. He thought income should be measured as the change in the economic value of the entity from one period to the next, a Hicksian view of income. Littleton took a vastly different view of income measurement, perceiving the purpose of accounting as record keeping and to provide disclosures, but not for valuation. For Littleton, historical cost was the appropriate measurement basis for income (Bedford and Ziegler 1975).

The concepts of value discussed in these debates did not delve deeply into how value might be defined other than as a market based concept. The Merriam Webster dictionary defines value as “the monetary worth of something” and “a numerical quantity that is assigned or is determined by calculation or measurement.” However, these definitions do not provide much guidance on how to actually measure value. There are several possible refinements to this definition but these refinements could produce different values for the same asset or liability. For example, what is the value of a share that is actively traded in a deep and liquid exchange? Should the value be the bid price, the ask price, the high or low traded price for the day? Clearly, the answer will depend on many factors including what the information will be used for.<sup>1</sup> Accounting typically uses three definitions, exit price, entry price and value in use. An exit price is the price that an investor would receive for the sale of the asset or would pay to transfer the liability, i.e., it is the price to exit the market. An entry price is the price that an investor would pay to purchase an asset or would receive to assume a

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<sup>1</sup> International Valuation Standards identifies numerous bases of value (IVS 104, 2017) including market value, investment value and liquidation value. The standards describe the bases of value as the “fundamental premises on which the reported values will be based” (IVS 104, paragraph 10.1). The basis of value may dictate “the methods inputs and assumptions” used to determine the amount (IVS 104, paragraph 10.1).

liability. In essence, the bid and ask price for a share are equivalent to an entry and exit price. As the name suggests, value in use is the value placed on an asset currently in use by the entity and is defined by the FASB as “The amount determined by discounting the future cash flows (including the ultimate proceeds of disposal) expected to be derived from the *use* of an asset at an appropriate rate that allows for the risk of the activities concerned” (FASB Codification Glossary).

In addition to how to measure something, the accounting regulations must also consider when to measure something, i.e., an accounting system must consider both measurement and remeasurement. Clearly, at recognition in the accounting system an item must be initially measured, typically at entry price. However, the accounting regulations include guidance on how to measure an item subsequent to initial recognition. While there is significant discussion about how to initially measure an item in the financial statements, e.g., should loans for a bank be measured at fair value at initial measurement, it is remeasurement that causes the greatest debates, e.g., should loans for a bank be maintained at fair value. When an asset or liability initially measured at exit price is remeasured to exit price at the end of a reporting period, the change in value needs to be recorded in the financial statements. There are three choices--in particular, record the change in value as a component of net income, a component of comprehensive income or directly into equity. When remeasurement changes are recorded directly into net income the volatility of net income may increase. Many constituents argue that this increase in volatility is out of the control of management and including it in net income presents an inaccurate picture of the performance of the firm.

Hyperinflationary environments pose significant issues for accounting systems where significant numbers of transactions are measured (and remeasured) at something other than a current price. For example, assume the accounting system records inventory costs and sales at invoice price without any consideration of inflation, for a given quantity of output, nominal sales will

increase at the same rate as inflation, while, actual taxable profits and after-tax accounting profits will increase at a rate exceeding the actual rate of inflation. The inventory costs are recorded at an earlier and lower price that does not reflect the price to replace. High inflation after the breakup of the Bretton Woods system and the OPEC oil embargo, lead to the introduction of some form of current cost accounting (CCA) in a number of countries, including the USA, UK and Australia.<sup>2</sup> Of course the idea of CCA was not new to the accounting profession. Edwards and Bell (1961), Solomons (1966) and Baxter (1975) among others argued that a form of current cost accounting provides useful information for evaluating performance, while, the notion of “deprival value” that served as the basis for the development of CCA can be traced back at least as far as Bonbright (1937).

Whether current price can be estimated simply by adjusting historical cost numbers using an inflation index or not has stirred important debate. Predominant was the contribution of Chambers (1966) who had been advocating for an accounting system that would value the assets at the price that could be sold for at the date of the balance sheet. Chambers argued that if accounting did not measure something it was not clear of what value it was. Key to any measurement system was the ability to combine units measured on the same basis (Chambers 1965). Chambers referred to this system of measurement as Continuously Contemporary Accounting. Many trace the exit price measurement to Chambers’ concepts about measurement.

Value in use is less frequently debated but is discussed in Baxter (1971). Baxter (1971) discusses reasons why the change in value and depreciation charge should be distinguished within an accounting system including when there is an unpredicted value loss and in certain budgetary

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<sup>2</sup> Annual inflation peaked at 24% in the UK during 1975. Annual inflation reached over 15% in Australia in 1974 and the USA hit close to 13.5% in 1980. High or hyperinflationary periods are not limited to end of the Bretton Woods system and the OPEC embargo, Argentina’s annual inflation rate hit 50.7% in February 2019.

discussions. A value change is calculated by “comparing the present values of all perpetuities for all the future payments” (Baxter 1971, page 162).

As academics debated measurement, regulators and standard setters also grappled with the appropriate measurement basis to use for accounting transactions. Historically, accounting across just about all jurisdictions has been based on historical cost accounting, an entry price measurement system with remeasurement encompassing depreciation, amortization and impairment charges.<sup>3</sup> At first, standard setters considered the impact of high inflation, but in time standard setters moved into more general settings. In the UK, the Statement of Standard Accounting practice (SSAP) 16 issued in 1977 employed a “value to business” model, where current cost was defined as the lower of replacement cost and recoverable amount. Recoverable amount was the higher of the present value of the asset and its net realizable value. In the US, Statement of Financial Accounting Standards (SFAS) No. 33, *Financial Reporting and Changing Prices*, which was issued in 1979, required supplementary disclosures on the effect of general inflation and income from continuing operations on a current cost basis. For current cost income, expenses were measured at current cost or lower recoverable amount.

Both SSAP 16 and SFAS 33 were suspended after the inflation declined, and, while historical cost accounting served again as the basis for financial reporting, there were some exceptions. For example, in the UK companies were permitted to disclose the fair value of real estate if the book value of these assets was very different to the current value (Companies Act 1985). There was also

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<sup>3</sup> In the US, from its founding in 1934 until 1972, the Securities and Exchange Commission (SEC) maintained a strong opposition to upward revaluations or general price-level restatements of fixed assets. This policy position can be attributed to Robert Healy, one of the founding SEC commissioners. Prior to his appointment at the SEC, he was chief counsel to the Federal Trade Commission overseeing the FTCs investigations into the market manipulations, including accounting manipulations, by public utility companies during the 1920s (Zeff 2007).

the option to recognize the fair value of real estate assets in the financial statement if this would better represent the true and fair view, with revaluation increments recognized in equity reserve. Asset revaluation was also permitted in Australia (AASB 1010 1999). Market value was also used to modify historical cost accounting in some circumstances. A good example is the valuation of inventories at the lower of cost or market value.

The US savings and loans crisis in the late 1980's highlighted the limitations of the historical cost accounting for financial instruments. Because many banks used short-term deposits to fund long-term fixed-rate mortgage loans, they were exposed to interest rate risk arising from the duration mismatch. Under US GAAP at the time, both loans and deposits were accounted for at amortized historical cost with no disclosure of exit prices, i.e., fair value. Growth in the interest rates meant that cash flows received on the assets side was not able to cover what was needed to pay on the liabilities. However, this exposure to the yield curve was not reflected in a timely manner in financial statement, and many banks had to file for bankruptcy before the market received warning signals. The accounting was argued to have obscured the negative impact of the growth in interest rates over time on the banks' financial performance, allowing troubled institutions to go undetected (Linsmeier 2011). More challenges on the use of historical cost accounting for financial instruments were posed with the development of financial engineering in general, and derivatives in particular. Derivatives are instruments that are highly levered and their value can change very quickly. For example, a forward contract has no value at inception and therefore, will not be recorded in the financial



statements prepared under historical cost accounting. But the forward contract can become very quickly an asset or a liability to the firm.<sup>4</sup>

In an attempt to deal with these issues, the FASB issued SFAS No. 107, *Disclosures about Fair Value of Financial Instruments*, in 1991 (FASB 1991). The standard requires disclosure of fair values for financial instruments, both assets and liabilities, for which it is practicable to estimate fair value. The entities are also required to disclose the methods and significant assumptions used in estimating fair values. SFAS 115, *Accounting for Certain Investments in Debt and Equity Securities* (FASB 1993), introduces fair value measurement for marketable securities. Trading securities are reported at fair value with unrealized gains and losses included in earnings, while available for sale securities are reported at fair value with unrealized gains and losses excluded from earnings and reported in equity. Disclosure of the fair value of all derivatives becomes mandatory with SFAS 119 (FASB 1994), in order to provide a better picture of the risk exposure of the entity. Fair value measurement of derivatives follows with the introduction of SFAS 133, *Accounting for Derivative Instruments and Hedging activities* (FASB 1998). The standard also provides the basic rules for hedge accounting treatment that determines the accounting for changes in the fair value of these instruments. Recognizing the need to provide a more coherent framework for applying fair value measurement, to improve associated disclosures, and emphasize the responsibility of management in this process, FASB released SFAS 157, *Fair Value Measurement* in 2006 (FASB 2006). In 2007, SFAS 159 introduces the fair value option for financial assets and liabilities (FASB 2007). The aim is to reduce the volatility arising from the mixed attribute accounting model, simplifying the use of hedge accounting. The fair value option stirred

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<sup>4</sup> Barings Bank, one of the oldest merchant banks in Britain founded in 1762, collapsed in 1995 after the fraudulent future contracts trading of an employee. These positions would not have been recorded in Barings financial statements before the loss was of £827million, or twice the bank's available trading capital, was recognized.

important debate, as it allows some financial instrument to be measured differently by two different entities.

While there are some differences in the time of the issuance and adoption date of the standards, fair value accounting under IFRS is very similar to US GAAP. The predecessor body of IASB, the International Accounting Standards Committee, has issued IAS 32, Financial Instruments: Presentation (IASC 2003a) and IAS 39, Financial Instruments: Recognition and Measurement (IASC 2003b) that has been adopted by the IASB. IAS 32 is largely a disclosure standard, and it is similar to the FASB standards SFAS 107 and 109. The disclosure provisions of IAS 32 were replaced by IFRS 7, *Financial Instruments: Disclosures* in 2005 (IASB 2005). IFRS 7 requires disclosure of information for recognised financial instruments, including the fair value, information on the valuation process, the significance of these instruments to the entity and the risks arising from them. IAS 39, provides the requirements for the recognition and measurement of particular financial instruments and introduces the option to designate eligible financial assets and liabilities at fair value. IAS 39 has been amended a number of times, and in 2009 its classification and measurement provisions were replaced by IFRS 9, Financial Instruments (IASB 2009). Share-based payment transactions are recognised at fair value, similar to SFAS 123, with the introduction of IFRS 2, *Accounting for Share-based Payments* (IASB 2004). In line with the objectives of SFAS 157, IASB has issued IFRS 13, Fair Value Measurement in 2011 (IASB 2011).

Whereas the above standards are specific to financial instruments and therefore have small impact on industries that make little use of such instruments, fair value accounting is also use as a measurement basis for some classes of non-financial assets. Following the introduction of IFRS, the property industry applies IAS 40, Investment Property (IASB 2003). The standard allows the firms to choose between a fair value model and a cost model for their investment property. The chosen model

should be used for all investment properties, with some restrictive exceptions. Even if the entity adopts the cost model, it is required to disclose the fair value of their investment property in the footnotes of the annual reports. Under US GAAP, investment property firms report assets at historical cost, and rarely disclose fair values voluntarily (Müller et al. 2015). Biological assets is another class of non-financial assets for which fair value measurement is applicable under IFRS. IAS 41, Agriculture (IASB 2000) requires biological assets (living plants and animals), with the exception of bearer plants, to be measured at fair value less estimated cost to sell. Entities are required to recognize changes in the fair value over the reporting period in the income. If the fair value cannot be reliably determined, then historical cost can be used. Fair value is also the required measurement base in a business combination for all separately identifiable assets and liabilities under both IFRS 3, Business Combinations (IASB 2008) and topic ASC 805 Business Combinations in US GAAP. The use of fair value measurement appear throughout the guidance. For example, goodwill impairments are based on a notion of implied fair value and inventory valuations are typically written as the lower of cost or market value.

## *2.2 Current definition of fair value and fair value measurement hierarchy*

As noted above, given how pervasive the use of fair value is throughout the accounting standards literature, it is perhaps surprising that the definition was not standardized until the late 2000s by both the FASB and IASB. Both boards define fair value as “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” (ASC 820 10 20; IFRS 13, paragraph 8). Therefore, fair value is defined as an exit value in a hypothetical transaction in an active market.

The definition hinges on two critical factors: (1) an orderly transaction and (2) market participants. During the credit crisis of 2008, what determined an orderly transaction drew considerable attention. Ultimately, the FASB clarified that the market conditions during the crisis may not be considered an orderly transaction. In particular, an orderly transaction is not a forced transaction but a transaction that “assumes exposure to the market for a period before the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets and liabilities” (ASC 820 10 20). The second critical part of the definition is the meaning of market participant. The definition requires that market participants are independent, i.e., the measurement is based on the information an independent buyer or seller would use. This is significant as it makes the definition of fair value an exit price.

As the definition allows for hypothetical transactions, a fair value measurement can be estimated and it is not required to be from a recent transaction in an active market. The exchange price from a hypothetical transaction can be estimated from a model or determined by adjusting a price from a comparable asset. When a model is used, the assumptions used in the model, or inputs into the model, may or may not be observable. All these will potentially impact the reliability of the fair value measure. Therefore, the guidance requires disclosure that buckets the items measured at fair value into three distinct categories, Level 1 through 3. Level 1 prices are from active markets and are considered the most reliable measures. Level 2 prices are based on quoted market prices for similar assets or liabilities and observable inputs other than quoted prices, as for example interest rates and yield curves. Level 3 estimates are based on unobservable entity-supplied inputs for the asset or liability and should be only used when Level 1 or 2 estimates are not available.

While the complexity of the implementation of the standard and the information asymmetry between preparers and users of financial reports seems to be quite low for Level 1 fair values, this is

not the case with Level 2 and 3 fair values. The use of discretion and the complexity of financial models increases as we move down the fair value measurement hierarchy. Discretion can lead auditors to increase their efforts to verify fair value estimates and the complexity of valuation methods may increase auditors' reliance on external specialists to clarify the measurement process. Reporting complexity is also likely to increase information processing cost. To address this, accounting standards require the provision of associated disclosure that enable the financial statement users to better assess the reliability of reported fair values. For Level 2 and 3 fair values, entities are required to describe the valuation technique and the inputs used in the fair value measurement. Entities are also required to provide quantitative information about significant unobservable inputs used for assets or liabilities categorized within Level 3.

### *2.3 The extent of fair value use in practice*

The use of fair value accounting varies between industries and across countries. As financial institutions are the main users of financial instruments, it is expected that bigger fractions of their assets and liabilities are recognized at fair value. However, there are other industries in which fair value measurement is expected to be significant, due to the nature of the activities. For example, in the Energy industry, companies use extensively derivatives for commodity price hedging. The extent of fair value measurement and the similarities and/or differences across markets and industries can have important implications for the research design and implementation of the studies that look at the effect of fair value accounting. In this subsection, we investigate fair value data availability and provide descriptive statistics on fair value measurement across financial and non-financial institutions for entities reporting under US GAAP and IFRS.

Data availability is an important constraint for studies that investigate the implications of fair value accounting in non-financial institutions, as detailed information on the use of fair value

measurement for different classes of assets and liabilities have to be hand-collected. Although the expectation is that corporations make little use of fair values, this varies considerably between industries. In Table 1, we present data on the extent of fair value measurements for financial and non-financial entities in 2017. We limit our sample to US firms, as data on fair value measurement are readily available in Compustat.<sup>5</sup> The database provides information on the total amount of assets (liabilities) measured at fair value (items TFVA and TFVL), as well as on the amount of assets (liabilities) measured at Level 1, 2 and 3 (items AQPL1, AOL2, AUL3 and LQPL1, LOL2, LUL3). The total amount of assets (liabilities) measured at fair value considers netting for offsetting positions in financial instruments. Panel A (Panel B) provides information for non-financial (financial) institutions, while, Panel C provides mean values by industry.

From Panel A, we can see that the mean value of assets for non-financial firms measured at fair to total assets (FVA/TA) is 19%, while the median value is 3% highlighting the skewed underlying distribution. The mean value of liabilities measured at fair value to total liabilities (FVL/TL) is lower, at 5%, indicating that on average, fair value measurement is used more for assets.  $\text{AssetsL1/FVA}$  ( $\text{AssetsL2/FVA}$ ) is the ratio of assets measured at fair value Level 1 (Level 2) to the sum of assets measured at fair value Level 1, 2 and 3. The number of observations decreases to 1,974 because some companies have zero total assets measured at fair value. On average, 51% (44%) of assets measured at fair value are reported at Level 1 (Level 2), while, only 4% of the assets are reported at Level 3 ( $\text{AssetsL3/FVA}$ ). This suggests that reliability issues associated with Level 3 estimates are not economically meaningful for non-financial companies. 1,436 companies report liabilities at fair value. Of these, 49% are measured at fair value Level 2, while 43% is measured at fair value Level 3. It is not surprising that the percentage of liabilities measured at Level 1 is quite low (8%), as not many

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<sup>5</sup> Data for firms outside the US are only available if they are cross-listed in the US stock market.

companies have their liabilities traded in active markets. From Panel B, we can see that on average, financial institutions measure 27% of their assets at fair value, with most of these assets measured at fair value Level 2. Surprisingly, financial institutions measure a smaller percentage of their liabilities at fair value (3%) than non-financial institutions (5%). 66% of the liabilities are measured at fair value Level 2, while 25% are measured at fair value Level 3.

In Panel C, we provide the mean value of the variables by industry, using the Fama-French 12-industry classification. The mean value of FVA/TA is highest in Healthcare, Finance and Business equipment industries, all three mean exceeding 20%. In Healthcare and Business equipment most of the assets are reported at fair value Level 1, while, in Finance only 15% of the assets are reported at fair value Level 1. Healthcare is also the industry with the higher proportion of liabilities reported at fair value (9%), with most of these liabilities reported at fair value Level 3 (83%). The Energy industry has the second highest percentage of liabilities reported at fair value (5%), with most of them reported at fair value Level 2. Chemicals and Utilities are the two industries with the highest percentage of liabilities reported at Level 1.

Table 1 provides interesting insight into the use of fair value measurement between industries in the US. Typically, prior research has examined financial firms as the incidence of fair value measurement is high but Business Equipment and Healthcare appear to make extensive use of fair value measurement for assets. Due to data limitations, we are not able to examine the use of fair value across different industries internationally. However, data is available for financials to allow us compare across countries.

Table 2 provides mean values for the key assets (liabilities) weighted by total assets (total liabilities) for banks reporting under US GAAP and IFRS in 2017. The table also reports information on fair value Level for assets and liabilities that are measured at fair value. We obtain data from SNL

database, and after we delete observations with missing values, we are left with 480 banks that report under US GAAP and 362 banks that report under IFRS. We classify banks into large and smaller bank using the \$50 billion size threshold for stress test in 2017. While the percent of total financial assets and liabilities is similar between banks reporting under US GAAP and IFRS, the break down across asset (liabilities) is different. US banks have higher amounts of loans and deposits compared to their international counterparts. Depending on the research question, these differences in business model could be important to consider.

Cash and cash equivalents includes cash and due from banks as well as federal funds sold and securities purchased under the agreements to resell. Although those positions are mainly recorded at historic cost, they have values very close to fair value because they are typically short term. The next category, trading assets, included securities that are held primarily for the purpose of selling them in the near term. Both under US GAAP and IFRS, trading assets are measured at fair value, with resulting changes recognized in the income. Trading assets are more significant for large banks (6% of the bank assets for IFRS banks and 3% of the bank assets for US GAAP banks).

Other securities include those available-for-sale and securities held-to-maturity. Other securities are a substantial part of the assets (18% for US GAAP banks and 12% of IFRS banks). Securities classified as available-for-sale are measured at fair value, with resulting unrealized gains and losses recognized in other comprehensive income if they are viewed as temporary. Securities are in the held-to-maturity category, if the bank intends to hold them until they mature. Held-to-maturity securities are measured at amortized cost.

The most important assets for banks are the loans. For many banks, origination of loans and the related fees is the principal source of income. Loans account for more than half of the total assets. Smaller banks in the US have the highest loan to total assets ratio (71%), while large and smaller IFRS



banks have very similar ratios. Under US GAAP the loans are classified as either “held for sale” or “held for investment. “Held for investment” loans are measured at amortized cost subject to impairment testing, while, “held for sale” are measured at lower of cost or fair value. Under IFRS, loans are measured at amortized cost subject to impairment testing. Both under IFRS and US GAAP, banks can adopt the fair value option for specific loans or other financial instrument. This option allows the firm to reduce accounting mismatches and the related earning’s volatility that arise from the measurement of other instruments at fair value. SNL does not provide data for all banks in our sample on loans or other financial assets measured at fair value under the fair value option, but the fraction of loans in this category is typically very small.

For banks that report under US GAAP (IFRS), more than 20% (22%) of assets are reported at or close to fair value. This percentage is higher for large than for smaller US banks, whereas, for large and smaller IFRS banks is very similar. SNL also provides information on the amount of assets/liabilities reported under different the three fair value Levels. Note that the database reports the amount before any nettings for derivatives and hedges. It is clear that there is a difference between US GAAP banks and IFRS banks with how they classify fair value measurement into each Level. Of the total assets measured at fair value, 5% are reported at fair value Level 1 by US banks. This is very different in IFRS banks, that report almost half of their assets measured at fair value at Level 1. The percentage of assets measure at Level 1 is higher for large US GAAP banks than for smaller. This is not the case with IFRS banks; smaller IFRS banks report 51% of their fair valued assets at Level 1, while large IFRS banks report 47% of their fair valued assets at Level 1. The percentage of fair valued assets reported at Level 3 is quite small, for both US GAAP and IFRS banks. This is a puzzling difference between the two groups of banks. It is not clear ex ante why IFRS banks would have significantly larger proportion of assets in activity-traded markets compared to the US banks. The US

would be expected to have the most active and liquid markets. It could be the type of assets held by each bank type differ significantly but ex-ante, it is not clear what would drive this. The proportion of assets in different fair value Level categories, as well as the differences between US and IFRS banks should be considered in the design of the studies that look at the informativeness, value and risk relevance of fair value Levels.

The proportion of trading liabilities to total liabilities is small in our sample, ranging from 5% for large IFRS banks to less than 1% for smaller US banks. Trading liabilities are measured at fair value, with resulting changes recognized in the income. Deposits are the most important liability class for banks. Smaller banks have higher proportion of deposits to total liabilities than large banks. Deposits are measured at amortized cost, except for those cases for which the fair value option is elected. This is also the case for debt. Again, we do not have information for all banks in our sample on the proportion of deposit/debt for which the fair value option is elected, however, this is typically small. Most of the liabilities measured at fair value are reported at Level 2, and there are not big differences between IFRS and US banks. As expected, large banks have more liabilities at fair value Level 1, while smaller US GAAP banks report on average 13% of their fair valued liabilities at Level 3. The percentage of Level 3 liabilities is lower for banks in the other groups. Finally, financial instruments account for more than 90% of the assets and liabilities of the banks. As entities need to disclose the aggregate fair value of all financial instruments in the notes of the financial statements, investors have fair value information for a very high proportion of assets and liabilities for both US and IFRS banks.

The most detailed source of holdings of assets and liabilities held at fair value is for US bank holding companies (BHC) that file FR Y-9C (Table 3). For these banks, we can get detailed information from SNL database on the use of fair value measurement and fair value Levels by asset/liability category. We include all BHC in 2017. After we delete observations with missing data, the sample

includes 322 BHC. Almost 5% of the assets on BHC is cash and cash equivalent. This includes 0.35% in federal funds sold and securities purchased under the agreements to resell. Of these, a small percentage is measured at fair value. However, even those recorded technically at historic cost, they have values very close to fair value because, as we discussed above, they are typically short term.

Trading assets account for less than 1% of the assets in BHC. Of these, 77% is measured at fair value Level 2, while only 6% is measured at Level 3. 18% of the assets is in the category other securities, with 3% held-to-maturity and therefore, measured at historic cost. Available-for-sale assets are predominately measured at fair value Level 2 (92%).

Loan and leases is the most important asset category for BHC, with 69% of the loans held-for-investment. Most of these loans are measured at historic cost, with the BHC adopting the fair value option for a very small percentage. These loans, are mainly measured at Level 3. Less than 1% of the assets consists of loans held-for-sale, and approximately half of these are measured at fair value. *Other Assets at Fair Value* includes assets that are not in the other categories and that are measured at fair value. On average, 16% of total assets in BHC are measured at fair value, with most of them (91%) kept in the Level 2 category. Financial assets, for which fair values are disclosed in the notes, account for 93% percent of total assets in BHC.

Fair value measurement is used much less on the liability side for BHC. From table 3, we can see that less than 1% of the liabilities are measured at fair value, with 80% of these liabilities reported at fair value Level 2. Most of the fair valued liabilities come from deposits for which a bank adopts the fair value option, with 94% of these deposits measured at Level 2. Trading liabilities consist only 0.13% of bank liabilities, while some banks adopt the fair value option for a portion of their debt. As financial liabilities account for more than 98% percent of banks' total liabilities, their fair value is disclosed in the notes of the financial statements.

Given the differences between the US banks and IFRS banks reported in Table 2, it is not clear if the breakdowns reported by the bank holding companies would be similar for IFRS banks. Unfortunately, there is not a consistent reporting for these banks beyond the data captured in SNL. Researchers either interested in understanding or controlling for the differences between US Banks and IFRS bank holdings business models should carefully consider what is underlying the differences we report.

### **3. Are fair values useful to investors?**

In this section, we discuss the current state of accounting research aimed at documenting the decision usefulness of both recognized and disclosed fair value information. Our goal is not to include every paper written on the topic of fair value measurement. Rather, we aim to offer insights into areas of the literature for which our understanding of fair value measurements remains limited and, thus, future research can generate important insights. In Sections 3.1 and 3.2 below, we focus on the value relevance and risk relevance of assets and liabilities measured at fair value. We then discuss the properties and usefulness of fair value-related disclosures in Section 3.3..

#### *3.1 Valuation of fair value measurements*

In tests of the value relevance of fair value information, researchers commonly examine statistical associations in regressions of fair value measurements on equity prices.<sup>6</sup> Under relatively strong assumptions, the regression coefficients corresponding to the fair values of assets and liabilities are expected to be one and negative one, respectively. However, empirical research generally finds that investors often price fair value estimates at a discount. In particular, the

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<sup>6</sup> For insightful discussions of value relevance studies, we refer readers to Barth et al. (2001), Holthausen and Watts (2001), Landsman (2007), Hodder et al. (2014).

association between fair value measurements and equity prices is attenuated in the context of unverifiable fair value estimates that are sensitive to managerial discretion over valuation inputs, measurement error, or both. The main issues we explore in the discussion that follows are (i) the valuation differences between assets and liabilities measured at fair value, and (ii) the characteristics and usefulness of Level 2 fair value measurements.

### *3.1.1 Assets versus liabilities measured at fair value*

Although the value relevance of assets measured at fair value has been well studied in the literature, considerably less is known about the value relevance of liabilities measured at fair value. One reason for the limited supply of research examining the value relevance of liabilities measured at fair value is that, relatively few companies measure liabilities at fair value (see, e.g., Song et al. (2010) Song, Thomas, and Yi 2010, as well as our Section 2.3 and Tables 1-3). In theory and, absent any informational or measurement frictions, assets and liabilities measured at fair value should be treated similarly by investors. A \$1 increase in the fair value of a firm's assets should correspond to a \$1 increase in the market value of the firm's equity; a \$1 increase in the fair value of a firm's liabilities should correspond to a \$1 decrease in the market value of the firm's equity. Existing studies, however, indicate that investors' perceptions and beliefs about the relevance and reliability of fair value estimates may be impacted by whether an instrument measured at fair value is an asset or liability.

For instance, Koonce et al. (2011) conduct experiments to assess whether investors consider fair value measurements to be less relevant for financial liabilities than for financial assets, even after holding constant the underlying economics of the financial instrument. The authors find evidence in support of the notion that investors do, in fact, consider fair value information to be more useful for assets than for liabilities. However, investors in their experiments find fair value measurements for liabilities to be more useful for liabilities that are expected to be settled over short durations than for

liabilities that are held to maturity. These results are consistent with arguments made by Lipe (2002) against the use of fair value measurement for liabilities. In contrast to the above results, Chung et al. (2017b) and Cedergren et al. (2019) find some evidence in support of measuring liabilities at fair value, providing evidence that changes in the value of liabilities measured at fair value are value relevant to investors. Regardless, neither of these studies considers whether and how investors or analysts view assets measured at fair value differently than liabilities measured at fair value.

Future research can help by developing a better understanding of why investors may view fair value measurements for liabilities as relatively less decision useful than asset fair values and whether investors' perceptions of fair value measurements for liabilities influences firms' adoption of the fair value option for liabilities. In addition, academics can advance both the scholarly literature and current practice by evaluating financial reporting and disclosure alternatives that may help facilitate the use of fair value information by investors (as in, for example, Gaynor et al. (2011)). Although these are challenging questions to address, particularly given that the use of fair value accounting for liabilities remains limited, we believe that investigating these questions may yield important insights to the accounting profession.

### *3.1.2 Level 2 fair value measurements*

In this subsection, we review the process for determining the fair value of an asset or liability, as prescribed by the fair value measurement hierarchy established in IFRS 13 and SFAS 157 (now codified ASC 820, *Fair Value Measurement*). In this context, we discuss research that explores value relevance of fair values estimates derived from inputs corresponding to different levels in the fair value measurement hierarchy.

As discussed in Section 2.2, the fair value measurement hierarchies of the FASB and IASB require that firms measure assets and liabilities at fair value using a hierarchy of inputs. Level 1 fair

value measurements are derived from observable valuation inputs based on quoted prices of *identical* assets and liabilities, while Level 2 fair values are based on quoted prices of *similar* assets and liabilities. In contrast, Level 3 fair value estimates are based on unobservable valuation model assumptions that are subject to managerial discretion and estimation error. Firms use the highest level in the hierarchy based on available information—e.g., a firm should use Level 1 inputs if such inputs are available.

Song et al. (2010) provide early evidence on the relevance of fair value estimates under SFAS 157 using a sample of banks' 2008 quarterly financial reports (see also Kolev (2019)). They find that the value relevance of Level 1 and Level 2 fair value estimates is greater than the value relevance of Level 3 fair value estimates. In addition, the authors find that the value relevance of Level 1 and Level 2 fair values are not statistically different.<sup>7</sup> Similarly, Goh et al. (2015) find that Level 3 fair value estimates are priced at a deeper discount than Level 2 fair value measurements, which are both priced at discount to Level 1 fair value estimates. Level 1 fair value estimates for assets are priced at their theoretical value of 1, while Level fair value estimates for liabilities are priced a slight discount to -1. The findings of Goh et al. (2015) study, however, suggest that the pricing discounts begin to diminish following the 2007-2009 financial crisis period.

In contrast to these findings, the results of Lawrence et al. (2016) indicate that there are only small differences in value relevance across the fair value hierarchy. The authors attribute their conflicting evidence to problems with the research designs used in earlier studies, as conclusions are drawn from samples where only a small proportion of assets are measured at fair value. If the value of assets measured at fair value is correlated with changes in the value of assets recognized at

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<sup>7</sup> Note that for assessing the value relevance of liabilities measured at fair value, the authors combine Level 1 and Level 2 fair value estimates into a single category.

amortized cost and/or are recorded off-balance sheet, this causes a correlated omitted variables problem (Ahmed and Takeda 1995; Carroll et al. 2003). For example, in the Song et al. (2010) sample, on-balance sheet assets measured at fair value average approximately 15% of total assets, with most of these assets being Level 2 (13.31% of total assets). Lawrence et al. (2016) argue that the proportion of Level 3 assets was likely higher in banks focusing on the origination and sale of non-agency loans. It is therefore unclear whether the results of Song et al. (2010) are driven by reliability issues associated with Level 3 estimates or by the decline in value of the underlying lending businesses during the 2008 sample period. This example highlights the importance of identifying a setting that is reasonably free of correlated omitted variables when evaluating the usefulness of valuation inputs associated with the different levels of the fair value measurement hierarchy.

Currently, there is much discussion in the literature about the value relevance of Level 3 fair values, with respect to pricing discounts relative to theoretical values and Level 1 estimates. Although the evidence is mixed—for instance, some studies report that assets measured at fair value using Level 3 inputs are traded at a discount due to measurement concerns, while other studies indicate that no such discount exists and that Level 3 fair values are useful in providing investors with information—the general consensus is that Level 1 and 2 fair values are considered more relevant and reliable than Level 3 fair values. Level 2 fair value estimates, however, are sometimes treated as equivalent to Level 1 fair values, especially when researchers consider the value relevance of liabilities measured at fair value. A notable exception is Altamuro and Zhang (2013) who study the value relevance of Level 2 and Level 3 fair value measurements corresponding to mortgage servicing rights. They find that Level 3 fair value measurements are more relevant than Level 2 estimates. The evidence presented by Altamuro and Zhang (2013), which was critiqued in a discussion by Hendricks



and Shakespeare (2013), suggests that managerial discretion over valuation model inputs can generate fair value measurements that are more informative than fair values based on Level 2 inputs.

The accounting rules classify fair value measurements into three classifications that are perceived to be distinct; in reality, these classifications exist on a continuum. We currently know little about how firms measure assets and liabilities at fair value using Level 2 inputs—e.g., how do firms select an asset and a liability that is *similar* to the asset or liability being measured at fair value? At what point do managers switch from using a Level 1 input to a Level 2 input or from a Level 2 input to a Level 3 input, and what role does managements' incentives play? Do investors perceive Level 1 and Level 2 fair value measurements differently in terms of information content and measurement reliability? If so, when are these differences the largest or smallest? What can firms and their auditors do to improve the usefulness of their fair value measurements, regardless of the source of valuation input? These questions are particularly relevant when the differences in Levels categories across US and IFRS banks highlighted in Table 2 are considered.

### *3.2 Fair value measurements and risk*

In this section, we present the findings of key studies exploring the risk relevance of fair values. We focus on the relationship between historical cost and fair value and the effect of risk management and fair value measurement capabilities of the entity.

At the heart of the American Bankers Association (ABA) comments on fair value is the idea that fair values do not fairly represent a bank's business model (ABA 2009). They argue that non-traded financial instruments should not be maintained at fair value if a bank intends to hold the instrument until collection/payment because fair values are transitory and, therefore, will reverse before the instrument is fully collected at maturity. Measuring these instruments at fair value may lead investors to believe that the financial instruments may be settled at prevailing market values,

thus overstating their assessment of the riskiness of a bank's business model. Given these concerns, the obvious question concerns the relationship between fair value and risk.

Hodder et al. (2006) use a sample of commercial banks in the US to investigate how the volatilities of various income measures compare, and how the volatilities of these measures are associated with market-based risk measures. They use three measures of bank performance in their tests—specifically, (i) net income, (ii) comprehensive income that includes some unrealized fair value gains and losses, and (iii) a full-fair-value income measure. Full fair value income is constructed using fair value changes of all financial instruments disclosed in the notes of banks' annual reports. It is not clear a priori whether full fair value income will be more volatile, as banks often have some natural hedge between the asset and liability sides of their balance sheet. The study finds that full-fair-value income volatility is significantly greater than net-income volatility for 90% of the sample banks, and significantly greater than comprehensive-income volatility for 77% of the sample banks. For the majority of banks, the fair-value adjustments recognized in comprehensive income do not covary significantly negatively with the fair value adjustments that would have been recognized in fair value income, providing no evidence of a hedge.

The volatilities of all three income measures exhibit varying degrees of a positive correlation with market-based and disclosed risk measures. Net income volatility exhibits the most consistent and robust correlations across the risk factors, while the volatility of full fair value income correlates positively with the standard deviation in stock returns and banks' exposure to derivatives. The incremental volatility in full fair value income (beyond volatility in net income and comprehensive income) is positively associated with market based risk measures. The study also finds that the incremental volatility in full fair value income negatively moderates the capitalization of abnormal earnings in bank share prices and that the expected returns on bank equity are increasing in the

incremental volatility in full fair value income. This is in line with volatility of incremental full fair value income capturing elements of bank risk that the capital markets price.

The study of Blankespoor et al. (2013) assesses the extent to which leverage ratios including financial instruments based on (1) fair value, (2) US GAAP measurement, and (3) Tier 1 regulatory capital values are associated with credit risk, captured by bond yield spreads and future bank failure. They find that leverage ratios based on fair values explain more variation in credit risk than the other leverage ratios. The results of the study hold for both complex banks and banks with more traditional books of business, primarily loans and deposits, and within both the expansionary and recessionary phases in the test period. Interestingly, the study shows that the leverage ratio based on Tier 1 regulatory capital values generally is least descriptive of credit risk and, in some instances, even has a negative relationship with credit risk and that the ability of the Tier 1 ratio to reflect credit risk improves if loans and deposit are included at fair value.

### *3.2.1 Historical cost versus fair value*

The empirical evidence shows that fair values correlate more with various measures of risk and that fair value numbers are value relevant to investors. However, analysts commonly ask for amortized cost numbers, e.g., analysts looked for more detail on historical cost numbers than fair value information during the recent deliberations around the accounting for loans losses. During the recent credit losses project undertaken by the FASB, one model proposed was to fair value the loans at each reporting period with changes going through the income statement. Not surprisingly, the preparer community was opposed to this model. However, the user community also asked to retain much of the current information presented under an amortized cost model. Several explanations could be possible for the information requested by users. First, users may not want to reveal any information advantage they perceive themselves to have and therefore are not forthcoming in their

explanations. Alternatively, amortized historical cost numbers and fair values provide complimentary information.

Future research could consider if the two measurement systems are substitutes or compliments and whether this relationship varies in time and type of entity. In doing so, we need to better understand if there is information in historical cost numbers that is lost if fair values are used, as well as the differences in the research designs of academics and analysts. Both measurement systems use different underlying assumptions to determine the numbers recognized in the financial statements. Both measurement systems may vary in the disclosures and the precision of the disclosures made. All of these could impact the usefulness or the perceived usefulness of the disclosures.

### *3.2.2 Risk management and fair value measurement capabilities*

A number of studies have tried to explore sources of variation in the reliability of fair value measurement. For instance, Bhat and Ryan (2015) explore whether risk management technologies affect the relationship between stock returns and unrealized fair value gains and losses on financial instruments. Rather than the fair value measurement hierarchy, the study uses the place that unrealized gains and losses are recorded as a proxy for fair value measurement reliability. The results indicate that bank's risk management technologies can improve the usefulness of fair value gains and losses suffering from reliability concerns (fair value gains and losses on less liquid instruments, typically disclosed in the notes rather than recorded in net income or other comprehensive income).

Future research in this area should seek to better understand the fair value estimation process, especially for Level 3 fair value estimates and try to further explore what causes variation in the reliability of these estimates. This may include firm specific factors like management's incentives to bias fair value estimates, firm's capabilities and technologies in the estimation of fair values as well

as institutional factors. The challenge is to identify settings where you can disentangle the role of these factors and unobservable fair value estimation capabilities to the reliability of fair value measurements. For example, in the study of Bhat and Ryan (2015), we cannot rule out the possibility that the increased reliability in the fair value measurement is driven by unobservable fair value estimation capabilities that are correlated with the disclosure of risk management technology.

### *3.2.3 Fair value for liabilities and own credit risk*

The introduction of fair value option (FVO) (FASB 2007; IASC 2005), enables entities to use fair value measurement for financial liabilities. If an entity adopts the FVO for liabilities, the component of any change in the fair value of liabilities that arises from changes in the own credit risk of the entity must be separately recognized and disclosed in the financial statements. Therefore, an entity reporting a gain (loss) when the entity's own credit risk deteriorates (improves). This has been criticized as counterintuitive to the way in which gains and losses are typically viewed; liabilities diminish (increase) as the firm's underlying financial condition deteriorates (improves), and the results have been argued to be difficult to explain to investors (Lipe 2002; Chasteen and Ransom 2007; Reilly 2007). Also, a significant practical concern is whether the change of the fair value of liabilities due to changes in own credit risk (debt valuation adjustments (DVAs)) can be measured reliably.

The counter-argument has been that the DVAs recognition is consistent with the wealth transfer from debt holders to equity holders that occurs whenever own credit risk changes (Merton 1974). Equity holders and debt holders represent two different classes of claims on the entity's value. Equity holders own the firm, owe interest and principal to debt holders and have a put option on the firm with an exercise price equal to the face value of the debt. Debt holders are owed interest and principal and have sold a put option on the firm to equity holders. The value of the two sets of claims

is equal to the entity's assets. This means that when the value of the entity's assets decreases, the value of the put option increases, and this increase is more significant if the option is in or near the money. As a consequence, a negative shock in the value of the entity's assets results in a reduction in the fair value of its liabilities (a gain), with this reduction being greater for more risky debt. An analogous reasoning applies for positive shocks to the asset value. Barth et al. (2008) show that the presence of debt attenuates the effect of changes in own credit risk on equity returns, and argue that DVAs should be candidates for inclusion in accounting income if the objective is the faithful representation of the firm's liabilities and economic performance. The study is implemented before the FVOL was introduced, and therefore, DVAs had to be estimated.

Whether the recognition of DVAs makes accounting numbers more informative is a very interesting question. The study of Gaynor et al. (2011) provide evidence that disclosures about own credit risk changes and DVAs mandated by the SFAS No. 159 are not sufficient to avoid misleading interpretations. The participants in the study (Certified Public Accountants) were unable to associate a gain (loss) arising from changes in the fair value of liabilities to an increase (decrease) in credit risk. Lipe (2002) uses a financial statement analysis of a firm that experienced a severe financial distress to show that financial ratios computed using net income adjusted by positive DVAs did not faithfully depict the firm's negative performance. The net income of the firm was overstated in the presence of gain recognition, mainly because management did not account for the losses associated with the business downturn.

Studies that use samples of entities that recognize DVAs focus on financial institutions, as they are the main users of financial instruments and are expected to be more frequent adopters of the FVO for liabilities. For a sample of European IFRS banks, Schneider and Tran (2015) provide evidence that recognizers of DVAs exhibit lower bid-ask spread compared to non-recognizers non-

adopters of the FVO for liabilities. Investigating the value relevance of DVAs Chung et al. (2012) report a positive relationship between DVAs and stock return, while, Cedergren et al. (2019) finds insignificant results. However, when Cedergren et al. (2019) consider the amount of unrecognized intangibles assets, they find that DVAs are positively related to equity returns when the level of unrecognized intangibles assets is low. Fontes et al. (2018) find that fair value measurement of assets is associated with noticeably lower information asymmetry and that this reduction is larger when banks also recognize DVAs. This finding is consistent with DVAs providing investors with important information on how gains and losses are shared between equityholders and debtholders (Merton 1974).

The above studies assume that changes in the fair value of liabilities are reliably measured. However, as we mentioned above, this was one of the main practical concerns when the FVO for liabilities was introduced, and this issue has been addressed very little by the current literature. Although the absence of active markets is an obvious problem for non-financial assets, the problem is also significant for financial instruments and especially those with embedded options (Landsman 2007). Structural models are widely used in practice to value financial liabilities when active markets do not exist. Structural models employ the contingent claims approach to value the default put option that is embedded in the equity of a limited liability organization. Despite their frequent use, literature largely suggests that structural models of credit risk do not accurately price corporate debt. The study of Barth et al. (1998) concludes that estimates of bond value from binomial model may lack reliability, especially when market information from other instruments of the same company is not available to be used as model inputs. More recent studies, that use flexible models that allow for coupons, stochastic interest rates and default before maturity, also report poor performance of these models in explaining debt prices (Eom et al. 2004; Schaefer and Strebulaev 2008).

It is important to recognize that empirical studies make a number of assumptions for the model inputs. While the use of more precise information about the characteristics of the instruments by the managers in a neutral fashion may improve the fair value estimates, we need to consider a number of issues. First, if managers try to incorporate all the features of the financial instruments, valuation models can become complex and difficult to implement. It is far from obvious that the average reporting entity has the expertise to deal with these models. Second, Schaefer and Strebulaev (2008) conclude that the poor performance of structural models is due to their inability to explain the part of the value that is due to the non-credit risk component. The non-credit risk component is influenced by factors like market liquidity, and these factors are absent from structural models altogether. Finally, another concern that is related more generally to non-traded assets/liabilities is the exercise of managerial discretion or manipulation. Beyond considering issues related to reliability and improving the performance of structural models, research could consider how to present the information related to DVAs to investors to improve their understanding of what these changes mean.

### *3.3 Fair value disclosures*

Reported fair value amounts are ultimately presented in financial statements as point estimates, but like many financial statement numbers the true value of an asset or liability measured at fair value lies somewhere within a band of possibilities. Additional, useful disclosures can help financial statement users better ascertain the extent to which fair values were measured with a high or low degree of certainty. In particular, the usefulness of fair value information is often conditional on financial statement users understanding the information they are provided through relevant financial disclosures (Gaynor et al. 2011).



Consistent with a firm's information environment playing an important role in determining the usefulness of fair value information to capital market participants, academic research considers the effect of fair value-related disclosures on the usefulness of fair value estimates. Chung et al. (2017a) find that voluntary disclosures are associated with higher market pricing and lower information risk for Level 3 fair value estimates, while Clor-Proell et al. (2014) find that making fair value changes more salient in the income statement allow users to better incorporate disclosed measurement differences into their judgments. However, Griffin (2014) demonstrates that auditors are less likely to require adjustments of Level 3 fair value estimates when supplemental footnote disclosures are provided by a firm, suggesting that supplemental disclosures may have unintended consequences related to the auditing of fair values recognized in the financial statements. Taken together, these studies suggest that firms can reduce the information processing costs imposed on financial statement users by providing high quality disclosures about the fair value estimation process.

### *3.3.1 What is disclosed?*

Firms are required to make extensive disclosures about the fair value measurements included in the financial statements. The nature of the disclosure depends on whether the fair value measurement is recognized or disclosed in the financial statements. Further, the disclosures for items recognized at fair value differ depending on whether the items are recurring or nonrecurring measurements. Firms are required to disclose the period end amounts of items measured at fair value, the category in the fair value measurement hierarchy to which the measurement belongs, a description of the valuation technique used and significant details about Level 3 including a roll forward of the balance and an analysis of the sensitivity of the measurement. The disclosures for

many firms can be several pages long. Clearly one question that research could address is whether the information is useful to investor and whether the disclosure could be improved?

In an effort to start to shed light on these questions, we have collected from SEC 10-K filings the fair value measurement footnotes for all financial institutions (two digit SIC codes 60 through 67) in the US for the period 2010 through 2018. Our final sample contains 5,004 firm-year observations. We include some basic descriptive statistics of the textual properties of the disclosures in Table 4. We use variables as defined in Loughran and McDonald (2016) and Bodnaruk et al (2015). Panel A presents the basic descriptive statistics for the whole sample. There is a large distribution for each variable for firms in the sample. For example, the mean (median) observation has 179.9 (135) numbers disclosed but the first percentile firm has 11 numbers while the 99<sup>th</sup> percentile firm has 1,071 numbers.

Clearly, the nature of the disclosures varies with the firm. As an initial examination, we partition firms with an SIC code of 60, depository institutions, between large and small. Once again, we use \$50 billion in assets to partition the sample. The two sub-samples differ on nearly every dimension, the only variables not significantly different are *Avg\_syllables\_per\_word* and *Avg\_word\_length*. Small banks have both less positive and negative words than large banks but these firms are more uncertain. Interestingly, the increased *Uncertainty* does not result in a larger proportion of *Litigious*. Large banks' disclosures are significantly larger across every dimension we capture, e.g., *Alphabetic* is 44% larger for Large banks than Small banks (16,897 versus 9,524) and *Numbers* is 46% larger for Large Banks than Small Banks (317 versus 170).

It could be interesting to examine some of the textual properties of these disclosures with some of the issues raised earlier. For example, Large banks have more assets and liabilities recognized in Level 3 and this will automatically lead to a larger disclosure requirement. However, Large banks

have less uncertainty in the disclosures. Why would numbers potentially lacking reliability result in less uncertainty in the disclosures? In addition, it is important to determine whether these disclosures provide incremental information to financial statements users, as well as the characteristics that make fair value disclosures more or less useful.

#### **4. Conclusions**

Our objective in this paper is to contribute to the discourse on the role of fair value measurement in financial reporting. Rather than argue for one measurement basis over another, we take stock of fair value accounting in current practice and provide context through a discussion of how we got to where we are today. We also offer perspectives on areas of the fair value measurement “black box” that we believe warrant further investigation.

We document that there are important differences in the extent to which firms across different industries and countries incorporate in their financial reports assets and liabilities measured at fair value. At a minimum, these differences are important to be considered when making research design choices, but they may also provide opportunities for further research to deepen our understanding of fair value measurement.

When we review research related to the usefulness of fair value measurements and fair value-related disclosures in terms of their valuation and risk relevance, we are left with a number of questions. We currently know little about why investors may view fair value measurements for liabilities as relatively less decision useful than asset fair values. The literature does not provide much evidence on how firms measure assets and liabilities at fair value using Level 2 inputs, at what point do managers switch from using a Level 1 input to a Level 2 input or from a Level 2 input to a Level 3 input. Also, we know little about the role of managements’ incentives in the Level classification, and

what can firms and their auditors do to improve the usefulness of their fair value measurements. We have only started to scratch the surface of the technologies used in the fair value estimation process and the impact that these technologies may have on financial reporting.

Future research should also shed more light into whether historical cost and fair value accounting are substitutes or compliments, and whether this relationship varies in time and type of entity. In doing so, we need to better understand if there is information in historical cost numbers that is lost if fair values are used, as well as the differences in the research designs of academics and analysts. Finally, accounting research needs to further investigate the role of fair value disclosures in reducing the information processing costs for financial statement users, as well as the potential unintended consequences of these disclosures.

**Table 1**  
**Fair Value Measurements by U.S. Entities**

The table provides descriptive statistics on fair value measurement of assets and liabilities by US entities in 2017. FVA/TA (FVL/TL) is the ratio of assets (liabilities) measured at fair value to total assets (liabilities). AssetsL1/FVA (AssetsL2/FVA, AssetsL3/FVA) is the ratio of assets measured at fair value Level 1 (Level 2, Level 3) to total assets measured at fair value. LiabL1/FVL (LiabL2/FVL, LiabL3/FVL) is the ratio of liabilities measured at fair value Level 1 (Level 2, Level 3) to total liabilities measured at fair value. Panel A (Panel B) provides information for non-financial (financial) entities, while Panel C provides mean values by industry.

*Panel A: Non-financial*

	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>S.D.</b>	<b>P1</b>	<b>P99</b>
FVA/TA	2,360	0.19	0.03	0.29	0.00	1.00
FVL/TL	2,360	0.05	0.00	0.13	0.00	0.71
AssetsL1/FVA	1,974	0.51	0.55	0.42	0.00	1.00
AssetsL2/FVA	1,974	0.44	0.36	0.42	0.00	1.00
AssetsL3/FVA	1,974	0.04	0.00	0.18	0.00	1.00
LiabL1/FVL	1,436	0.08	0.00	0.23	0.00	1.00
LiabL2/FVL	1,436	0.49	0.44	0.47	0.00	1.00
LiabL3/FVL	1,436	0.43	0.04	0.47	0.00	1.00

*Panel B: Financial*

	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>S.D.</b>	<b>P1</b>	<b>P99</b>
FVA/TA	1,053	0.27	0.15	0.30	0.00	0.98
FVL/TL	1,053	0.03	0.00	0.13	0.00	0.82
AssetsL1/FVA	1,028	0.15	0.00	0.29	0.00	1.00
AssetsL2/FVA	1,028	0.74	0.96	0.37	0.00	1.00
AssetsL3/FVA	1,028	0.11	0.00	0.28	0.00	1.00
LiabL1/FVL	515	0.08	0.00	0.24	0.00	1.00
LiabL2/FVL	515	0.66	0.99	0.43	0.00	1.00
LiabL3/FVL	515	0.25	0.00	0.41	0.00	1.00

Panel C: By industry (mean)

	<b>FVA/TA</b>	<b>FVL/TL</b>	<b>AssetsL1 /FVA</b>	<b>AssetsL2 /FVA</b>	<b>AssetsL3 /FVA</b>	<b>LiabL1 /FVL</b>	<b>LiabL2 /FVL</b>	<b>LiabL3 /FVL</b>
Consumer NonDurables	0.06	0.03	0.43	0.52	0.05	0.11	0.66	0.22
Consumer Durables	0.05	0.04	0.51	0.48	0.01	0.07	0.63	0.31
Manufacturing	0.05	0.02	0.45	0.53	0.02	0.06	0.73	0.21
Energy	0.04	0.05	0.37	0.58	0.05	0.08	0.68	0.23
Chemicals	0.05	0.04	0.49	0.48	0.04	0.17	0.60	0.23
Business Equipment	0.20	0.03	0.53	0.44	0.03	0.05	0.47	0.48
Telecommunications	0.08	0.05	0.42	0.46	0.13	0.11	0.53	0.36
Utilities	0.03	0.01	0.53	0.34	0.13	0.16	0.57	0.27
Shops	0.06	0.05	0.51	0.43	0.06	0.10	0.60	0.30
Healthcare	0.44	0.09	0.55	0.44	0.01	0.02	0.16	0.83
Finance	0.27	0.03	0.15	0.74	0.11	0.08	0.66	0.25
Other	0.15	0.03	0.57	0.38	0.05	0.07	0.47	0.46

**Table 2**  
**Fair Value Measurements by U.S. and IFRS Banks**

The table provides mean values of the ratio of different types of bank assets (liabilities) to total assets (liabilities) for banks reporting under US GAAP and IFRS in 2017. The table provides also information on fair value Levels. AssetsL1/FVA (AssetsL2/FVA, AssetsL3/FVA) is the ratio of all assets measured at fair value Level 1 (Level 2, Level 3) to total assets measured at fair value. LiabL1/FVL (LiabL2/FVL, LiabL3/FVL) is the ratio of all liabilities measured at fair value Level 1 (Level 2, Level 3) to total liabilities measured at fair value. Financial assets (liabilities) category includes all financial assets (liabilities) that are recognised on the balance sheet, irrespective of the measurement method. Large banks include banks with total assets more than \$50 billion. \*, \*\*, and \*\*\* indicate statistical significance in the differences at 10%, 5% and 1% levels (two-tailed t-test) respectively.

	All banks				Large banks				Smaller banks			
	US		Diff		US		Diff		US		Diff	
	GAAP	IFRS			GAAP	IFRS			GAAP	IFRS		
	n=480	n=362		n=25	n=129			n=455	n=233			
<b>Assets</b>												
Cash and Cash Eq.	0.06	0.10	-0.04	***	0.11	0.08	0.03	**	0.05	0.11	-0.06	***
Trading Assets	0.00	0.04	-0.03	***	0.03	0.06	-0.03	*	0.00	0.02	-0.02	***
Other Securities	0.18	0.12	0.06	***	0.21	0.11	0.10	***	0.17	0.12	0.05	***
Available for Sale	0.15	0.09	0.06	***	0.15	0.08	0.06	***	0.15	0.09	0.05	***
Held to maturity	0.03	0.03	0.00		0.07	0.03	0.04	***	0.03	0.02	0.00	
Total Net Loans	0.70	0.59	0.11	***	0.53	0.57	-0.04		0.71	0.60	0.11	
Financial Assets	0.94	0.94	0.00	*	0.91	0.94	-0.03	***	0.94	0.95	0.00	***
<b>Total Assets</b>	<b>1.00</b>	<b>1.00</b>			<b>1.00</b>	<b>1.00</b>			<b>1.00</b>	<b>1.00</b>		
AssetsL1/FVA	0.05	0.50	-0.45	***	0.13	0.47	-0.34	***	0.04	0.51	-0.47	***
AssetsL2/FVA	0.90	0.42	0.48	***	0.82	0.48	0.35	***	0.90	0.38	0.52	***
AssetsL3/FVA	0.06	0.09	-0.03	***	0.04	0.06	-0.01		0.06	0.10	-0.05	***

<b>Liabilities</b>												
Trading Liabilities	0.00	0.02	-0.02	***	0.02	0.05	-0.03	**	0.00	0.01	-0.01	***
Deposits	0.89	0.68	0.22	***	0.79	0.61	0.18	***	0.90	0.71	0.18	***
Total Debt	0.09	0.14	-0.05	***	0.16	0.16	0.00		0.09	0.13	-0.04	***
Financial Liabilities	0.99	0.96	0.03	***	0.95	0.94	0.01		0.99	0.96	0.02	***
<b>Total Liabilities</b>	<b>1.00</b>	<b>1.00</b>			<b>1.00</b>	<b>1.00</b>			<b>1.00</b>	<b>1.00</b>		
LiabL1/FVL	0.04	0.08	-0.04	***	0.11	0.10	0.01		0.03	0.06	-0.03	*
LiabL2/FVL	0.84	0.88	-0.04	***	0.86	0.86	0.00		0.84	0.89	-0.05	*
LiabL3/FVL	0.12	0.05	0.07	***	0.03	0.04	-0.01		0.13	0.05	0.08	***

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**Table 3**  
**Fair Value Measurements by U.S. Bank Holding Companies**

The table provides mean values of the ratio of different types of bank assets (liabilities) to total assets (liabilities) for US bank holding companies in 2017. The sample includes 322 bank holding companies. The table provides also information on the percentage of each fair valued item measured at Level 1, Level 2 and Level 3. This percentage is based only on the bank-holding companies that have fair valued assets/liabilities in the specific category. Financial assets (liabilities) category includes all financial assets (liabilities) that are recognised on the balance sheet, irrespective of the measurement method.

<b>Assets</b>		<b>Liabilities</b>	
1. Cash and Cash Equivalents	4.94%	1. Deposits	88.93%
1.1 Other Cash and Cash Equivalents	4.59%	1.1 Deposits_HC	88.66%
1.2 Federal Funds and Repos	0.35%	1.2 Deposits_FV	0.28%
1.2.1 Federal Funds and Repos_HC	0.31%	Level 1	0.00%
1.2.2 Federal Funds and Repos_FV	0.04%	Level 2	94.44%
Level 1	0.00%	Level 3	5.56%
Level 2	100.00%	2. Federal Funds and Repos	1.74%
Level 3	0.00%	2.1 Federal Funds and Repos_HC	1.73%
2. Trading Assets	0.28%	2.2 Federal Funds and Repos_FV	0.02%
Level 1	17.09%	Level 1	16.67%
Level 2	76.64%	Level 2	83.21%
Level 3	6.27%	Level 3	0.13%
3. Other Securities	18.29%	3. Trading Liabilities	0.13%
3.1 Held to Maturity	3.14%	Level 1	3.50%
3.2 Available for Sale	15.15%	Level 2	90.78%
Level 1	7.14%	Level 3	5.71%
Level 2	92.14%	4. Total Debt	9.65%
Level 3	0.72%	4.1 Debt_HC	9.58%
4. Loans and Leases	70.25%	4.1 Debt_FV	0.07%
4.1 Held for Investment	69.46%	Level 1	0.00%
4.1.1 Held for Investment_HC	69.13%	Level 2	67.82%
4.1.1 Held for Investment_FV	0.33%	Level 3	32.18%
Level 1	4.35%	5. Other Liabilities at Fair Value	0.05%
Level 2	25.70%	Level 1	8.43%
Level 3	69.95%	Level 2	77.41%

4.2 Held for Sale	0.79%	Level 3	14.16%
4.2.1 Held for Sale	0.39%	Total Liabilities at Fair Value	0.53%
4.2.2 Held for Sale_FV	0.40%	Level 1	6.08%
Level 1	1.02%	Level 2	80.06%
Level 2	87.62%	Level 3	13.85%
Level 3	11.36%	Financial Liabilities	98.58%
5. Other Assets at Fair Value	0.17%	<b>Total Liabilities</b>	<b>100.00%</b>
Level 1	6.08%		
Level 2	55.49%		
Level 3	38.43%		
Total Assets at Fair Value	16.37%		
Level 1	6.86%		
Level 2	91.06%		
Level 3	2.09%		
Financial Assets	93.47%		
<b>Total Assets</b>	<b>100.00%</b>		

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**Table 4****Analysis of the Textual Properties of the Fair Value Measurement Footnotes**

The table provides descriptive statistics on the textual properties of fair value measurement footnote disclosures from the 10-K reports of firms in two digit SIC codes 60-67. All variables are as defined in Loughran and McDonald (2016) and Bodnaruk et al (2015).

*Panel A: All-financials*

	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>S.D.</b>	<b>P1</b>	<b>P99</b>
Positive	5,004	0.317	0.266	0.308	0	1.504
Negative	5,004	1	0.99	0.684	0	3.015
Uncertainty	5,004	1.478	1.448	0.65	0	3.478
Litigious	5,004	0.288	0.195	0.392	0	1.728
Modal_weak	5,004	0.23	0.202	0.214	0	0.968
Modal_moderate	5,004	0.314	0.304	0.228	0	0.988
Modal_strong	5,004	0.115	0.0809	0.134	0	0.561
Constraining	5,004	0.794	0.737	0.537	0	2.145
Alphabetic	5,004	9,454	7,485	8,467	623	45,727
Digits	5,004	679	524	706.4	28	3,716
Numbers	5,004	179.9	135	197.3	11	1,071
Avg_syllables_per_word	5,004	1.918	1.923	0.0783	1.707	2.083
Avg_word_length	5,004	5.651	5.661	0.19	5.146	6.101

Panel B: Depository Institutions

	All N=2,403			Large > \$50bn Assets N=832			Small < \$50bn Assets N=1,571			Diff	t-Stat
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD		
Positive	0.32	0.09	0.21	0.36	0.32	0.21	0.30	0.27	0.20	0.06	6.79
Negative	1.21	0.54	0.55	1.26	1.28	0.48	1.19	1.17	0.59	0.06	2.88
Uncertainty	1.46	0.95	0.43	1.41	1.43	0.40	1.48	1.47	0.45	(0.06)	(3.62)
Litigious	0.24	0.00	0.23	0.36	0.30	0.27	0.17	0.15	0.17	0.19	18.43
Modal_weak	0.26	0.08	0.15	0.23	0.22	0.15	0.27	0.26	0.16	(0.04)	(6.37)
Modal_moderate	0.37	0.15	0.19	0.34	0.34	0.17	0.39	0.39	0.19	(0.04)	(5.86)
Modal_strong	0.12	0.00	0.13	0.10	0.09	0.09	0.13	0.09	0.14	(0.03)	(5.96)
Constraining	1.07	0.50	0.46	0.88	0.86	0.36	1.16	1.16	0.48	(0.28)	(16.00)
Alphabetic	12077	4289	8241	16897	15000	11186	9524	9476	4339	7,373	18.30
Digits	852	303	676	1266	1015	951	632	621	286	634	18.79
Numbers	221	80	189	317	241	277	170	161	82	147	14.95
Avg_syllables_per_word	1.93	1.87	0.08	1.93	1.93	0.05	1.93	1.93	0.08	0.00	0.35
Avg_word_length	5.68	5.53	0.16	5.70	5.70	0.13	5.68	5.68	0.18	0.02	3.28

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