Does Accounting Measurement Impact Market Efficiency? A Laboratory Market Perspective *

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Abstract

Using laboratory markets where accounting regimes can be directly compared with equivalent economic parameters, we test whether and how two different accounting measurement bases – historical cost and mark-to-market – influence trader perceptions and asset mispricing. Across three experiments, our results show that traders perceive otherwise equivalent assets differently by regime. In the mark-to-market regime traders perceive stronger links between performance and market price changes, and weaker links between performance and asset fundamentals. We also observe that traders in the mark-to-market regime prefer information about future market prices but traders in the historical cost regime prefer information about future dividends. These perceptions correspond with greater market-level mispricing/bubbles in the mark-to-market regime. Our results suggest that accounting regimes can, on their own, contribute to price bubbles and their subsequent collapse.

Keywords: Price bubbles, Measurement regime, Mark-to-market, Historical cost

1. Introduction

Debate over Mark-to-Market accounting (hereafter 'MTM') alternately argues that MTM increases market volatility relative to alternative measurement bases such as historical cost accounting (hereafter 'HC') (de Jager 2014; Gorton 2010; Heaton, Lucas and McDonald 2010; McSweeney 2009; Yingling 2008), or that MTM is merely a bystander in times of crisis - reporting economic reality without influencing it (e.g., Baderstcher et al. 2012; Barth and Landsman 2010; Sapra 2008). Despite the far-reaching consequences of this debate, limited opportunities exist to isolate and test the incremental effects of accounting measurement regimes on market behavior (Arnold 2009; Laux and Leuz 2009; Sapra 2010).[1] We investigate mispricing in laboratory asset markets under MTM and HC accounting, and thus provide evidence relevant to this issue.

We advance two related hypotheses. First, at the individual-level, we argue that traders in our study will rely on accounting income, which is constructed differently under the two regimes, to understand their own performance. When the asset measurement regime causes market price changes to be included in income, as in MTM accounting, traders will direct greater attention to market price changes. Thus, we hypothesize traders will perceive market price changes to play a greater role in performance under MTM than under HC, even though the economic parameters are otherwise identical, and income is constructed from publicly available information. Second, at the market-level, we argue that price-based strategies will lead to greater mispricing in the market because assets are strategic complements with regard to mispricing (e.g. traders' incentives to buy are increasing in the expectation that others will buy). Thus, we hypothesize that traders' increased emphasis of market price changes will lead to greater mispricing under MTM than under HC.

[1] Laboratory asset markets address design challenges that weigh on research investigating this and similar issues in active financial markets (e.g. NYSE, etc.). Unlike active financial markets, laboratory markets may selectively remove non-essential factors from the research setting, tightly controlling which differences exist between conditions. This sharpens attributions of price changes and facilitates counterfactual construction. Moreover, laboratory markets enable researchers to control what information is made available to traders, improving our ability to assert that price changes reflect mispricing in the market (Dufwenberg, Lindqvist and Moore 2005; Haruvy, Lahav and Noussair 2007). Lastly, laboratory markets permit researchers to measure the individual judgments and decisions that underlie market phenomena (Hobson 2011).

We conduct a total of 26 laboratory markets across three experiments. Our markets follow a standard design that minimizes competing explanations for observed effects (Palan 2013, Smith et al. 1988). Traders in each market begin with an endowment of experiment cash and assets that they may trade in the market. Assets pay one of two possible dividends at the conclusion of each of 15 periods, a fact that is mutually known, and that does not depend on their owner or condition. We also assign a financial context with literal descriptions in place of financial jargon (e.g. 'contract payments' instead of 'dividends', etc.) to maximize internal validity within our design. Lastly, we provide traders feedback about their own performance in the form of simplified financial statements including an income statement ('Earnings') and balance sheet ('Holdings').

In our experiments, we manipulate the measurement regime used to assign carrying values to traders' contract holdings in their own simplified financial statements. Asset carrying values are based either on recent market prices (MTM) or an allocated portion of the assets' acquisition price (HC). Both methods cause changes in asset carrying values to be reflected in earnings, but in MTM these changes are derived from market price changes (labeled 'market value changes'), whereas in HC the changes reflect an expired portion of assets' underlying productive life (as amortization, labeled 'contract expiration'). All traders in a market begin the market assigned to the same regime. In experiments one and two, traders remain in the assigned regime for the duration of the market. Experiment two incorporates ex-dividend pricing into MTM values and experiment three enables traders to subsequently change between the regimes as they wish. The information needed to compute accounting income for either method is publicly available in all conditions and accounting income is disaggregated so that earnings derived from carrying value changes can be identified and separated from earnings derived from cash flows. The primary dependent variable at the individual level is traders' implied weighting of accounting information in a performance self-assessment made at the end of each trading period. At the market level, we examine mispricing using the signed and unsigned deviation in assets' market prices from their fundamental values (see Appendix A).

Results support our predictions. In experiments one and two, we observe that traders in the MTM condition systematically link their perceived performance to market value changes but traders in the HC condition do not; traders in the HC condition perceive a stronger link between their performance and assets' cash flows (dividends and amortization). Traders in MTM regimes also more frequently indicate in a hypothetical trade-off that they would prefer to receive information about future market prices rather than information about future dividends, but traders in HC regimes prefer the information about future dividends over future market prices. This corresponds with greater market-level mispricing under MTM relative to HC. In experiment three, where participants may change between regimes, we observe that the proportion of trader-periods spent under MTM corresponds with both traders' tendency to perceive market price changes as impacting their performance and also with greater mispricing in our markets.

Our study makes several important contributions to research and practice. Foremost, we contribute to burgeoning research of the influence of accounting regimes on market dynamics. Prior studies show that accounting measurement interacts with market features such as regulatory capital requirements (Plantin et al. 2008) credit dynamics (Lin, Pfeiffer and Porter 2017), and corporate governance (Plantin and Tirole 2018), thereby diminishing pricing efficiency. Our study demonstrates that the market-level implications of accounting regimes emerge even in the absence of interacting institutions. Importantly, our design allows us to simultaneously observe the relationship between market-level effects and individual-level performance perceptions.

Our study suggests that strategy differences triggered by MTM may alter traders' understanding of the otherwise economically equivalent assets. Traders link their performance perceptions to assets' market price changes under MTM but not under HC, even though the underlying market parameters do not differ, and the components of earnings are disaggregated. Traders in our experiment also select strategies based on the factors they perceive to influence income, because traders appear to rely on income to understand performance. Thus, our study

suggests that strategy differences triggered by MTM may contribute to the reduced informativeness of income observed under MTM accounting (DeFond, Hu, Hung, Li, 2019). We also contribute to the literature by providing insight into the role of accounting measurement on market dynamics prior to the formation of market bubbles. While numerous studies examine the link between accounting (usually MTM) and recent financial crises, these studies focus on the impact of MTM during the crisis, leaving little understood regarding the time period prior to the crisis (de Jager 2014). Our multi-period laboratory market design uniquely allows us to examine the effects of accounting measurement not only during, but also preceding and following an asset pricing bubble.

Our evidence additionally answers calls for investigations on the effects of fair value accounting in the absence of institutional interactions such as capital constraints (e.g., Arnold 2009; Chen, Tan and Wang 2013; Heaton et al. 2010; Hopwood 2009; Laux and Leuz 2009). On net, our study informs our understanding of the impact of accounting measurement on market dynamics and provides evidence explaining how MTM triggers individual-level effects that aggregate into more pronounced market swings relative to markets under an HC regime. That is, we observe that individual trading strategies aggregate to influence market dynamics, contributing to greater price bubbles under MTM. These findings underscore the importance of jointly considering both market-level and individual-level factors when determining the construction of accounting income (cf. Ganguly, Kagel and Moser 1994).

Section 2 lays out relevant background and develops our hypotheses. Section 3 details the study's experimental design. Section 4 reports results. Section 5 concludes the study with discussion of our findings, their limitations, and opportunities for future research.

2. Background and Hypothesis Development

Background

Asset Measurement Bases

Few accounting measurement regimes have been more widely debated than fair value /

mark-to-market (MTM) accounting (Laux and Leuz 2009). Criticisms of the role of fair value accounting during financial crises are generally rooted in the claim that MTM amplifies market price volatility. These criticisms argue that the measurement of net income reported under fair value accounting standards injects procyclical volatility into the market that accelerates and deepens the downward spiral.[2] Proponents counter that MTM merely reflects current market conditions, and hence provides more timely and transparent information. This, in turn, arguably encourages prompt and appropriate corrective responses from markets in times of distress, thereby mitigating rather than exacerbating the severity of a financial crisis.[3]

However, evidence informing the debate remains elusive amid the numerous confounding factors within active markets that make direct evidence difficult to isolate and observe (Sapra 2008). Moreover, there is still little consensus on whether market prices in prior crises significantly deviated from expectations of underlying fundamentals (Badertscher, Burks and Easton 2012; Laux and Leuz 2009). It is equally unclear whether market reactions would be less extreme under an HC regime. Analytical models have generated mixed theoretical evidence. Plantin, Sapra and Shin (2008) find that, relative to an HC measurement regime, MTM injects artificial risk into the market, leading to procyclical price volatility. In contrast, Bleck and Liu (2007) provide theoretical evidence indicating HC may distort market participants' incentives, inducing contagion in the form of 'gains trading' that is not observed under a MTM regime.[4]

[2] Generally, MTM / fair value accounting standards prescribe the use of market prices for reporting of certain assets and liabilities on the balance sheet and that subsequent changes in market value be recognized in income on the income statement.

[3] For detailed summaries of the arguments supporting and opposing mark-to-market accounting, see Barker and Schulte (2017), Barth and Landsman (1995), Laux and Leuz (2009); Linsmeier (2011), McSweeney (2009); Nissim and Penman (2008), Penman (2007) and SEC (2008).

[4] Three experimental studies investigate other important dimensions of the accounting measurement debate. Anderson, Brown, Hodder and Hopkins (2015) find that investors better understand managers' choices and therefore better differentiate performance owed to managerial choices from performance caused by external market forces under fair value accounting than under historical cost accounting. Gaynor, McDaniel, and Yohn (2011) find that investors struggle with understanding the negative valence of income statement gains triggered by credit worthiness decreases, reported under fair value accounting. Lastly, Chen, Tan, and Wang (2013) find that managers make suboptimal hedging decisions under fair value accounting. Numerous archival and analytic studies also speak to different individual- and market-level effects. We note again that the totality of the accounting measurement debate is greater than any single study, including the present study. Our study

There are reasons to believe that accounting measurement could influence investors' and market behavior. Managers and investors rely on periodic accounting reports to test and modify their understanding of the causal relationships underlying performance (Kelly 2010; Luft and Shields 2001; Bruns and McKinnon 1993).[5] A large body of evidence indicates that the weight given to accounting information in investors' judgments is a function not only of the information's content, but also the form and structure of its presentation (Elliott, Hobson and White 2015; Lachmann, Stefani and Wöhrmann 2015; Hales, Venkataraman and Wilks 2012; Gaynor et al. 2011; Libby, Bloomfield and Nelson 2002; Maines and McDaniel 2000; Hirst and Hopkins 1998; Hopkins 1996). An extensive stream of research shows that presentations of otherwise equivalent accounting information can shape individuals' judgments, stemming from their need to reduce the cognitive burden of processing, whether due to limited attention, bounded rationality or both. These studies consistently find that more prominently presented information commands greater weight in individuals' judgments and decisions, despite the availability of other inputs that are objectively of similar relevance (Elliott, Hobson and Jackson 2011; Elliott et al. 2015; Maines and McDaniel 2000; Hirst and Hopkins 1998). A key consequence relates to investors' tendency to excessively fixate on earnings and other income-summary measures in their evaluations of performance, a behavior observed by regulators, managers, market participants and academics alike (e.g., Elliott et al. 2011; SEC 2008). That is, investors' judgments follow the salience of reported income measures.[6]

Laboratory Asset Markets and Mispricing

contributes by investigating interactions between individual- and market-level consequences of accounting measurement, across multiple periods, in a setting where accounting effects are isolated and mispricing can be measured.

[5] A primary function of accounting information is to inform managers and investors of performance, by documenting managerial choices and their consequences (Dichev 2008; Kothari, Ramanna, and Skinner 2010; Macintosh, Shearer, Thornton and Welker 2000; Waymire 2009).We do not intend to imply that the informational role of accounting is the only function. For example, the role of accounting in contracting is arguably of equal importance to the information role we describe here. While these two functions are distinct, we believe that the implications of accounting measurement regime examined from an informational perspective in the present study are no less relevant to a contracting setting (cf. Macintosh et al. 2000).

[6] Other research notes that individuals sometimes conflate accounting measures with the constructs they represent (e.g. 'income' and 'performance'), possibly reinforcing earnings fixation (Choi, Hecht and Taylor2013; Lachmann et al. 2015; Macintosh et al. 2000).

Laboratory asset market research spans several decades, finding price bubbles to be a robust phenomenon that occurs under a variety of circumstances. This research broadly attributes price bubble formation to a type of market-specific mutual knowledge that does not depend on the number of participants or their prior experience in other markets (e.g. professional traders, etc.) (Palan 2013). Instead, research suggests that individuals develop beliefs about others in the market, which tend to reduce bubbles when believing that limited opportunities exist to capitalize on mispricing and tend to increase bubbles otherwise (Cheung, Hedegaard and Palan 2014; Haruvy et al. 2007; Palan 2013; Smith et al. 1988). Research has noted several factors that moderate mispricing in markets (see Stöckl, Huber and Kirchler 2010 and Palan 2013 for literature reviews).

In accounting literature, laboratory market research has typically investigated how the quality, complexity, transparency, and amount of information contributes to price bubbles. This research observes that information quality interacts with market parameters, such that higher information quality / lower information complexity reduces mispricing generally (Barron and Qu 2014), but not in markets prone to bubble (Hobson 2011). Other research finds that individuals do not fully respond to systemic sources of unrealized gains reported in comprehensive income (Bloomfield, Nelson and Smith 2006), or to others' different information in the market (Bloomfield and Libby 1996), and that individuals appear to incorrectly weight redundant and biased disclosures (Dietrich, Kachelmeier, Kleinmuntz and Linsmeier 2001). Lastly, research suggests that disclosure transparency can in some cases increase mispricing when analysts anticipate stronger reactions from certain investor groups (Elliott et al. 2010).

At least one study includes conditions comparing asset measurement regimes in a laboratory market setting, similar to the present study. Lin, Pfeiffer and Porter (2017) examine the interaction of accounting regimes with credit institutions, finding that collateral requirements linked to assets' market values can result in feedback loops under MTM that inflame market bubbles. Lin et al. (2017) also includes conditions comparing asset measurement regimes in the absence of

lending, observing no reliable differences in market behavior between regimes. However, our study differs from Lin et al. (2017) in important ways. Traders in our study receive accounting information throughout the study, including real-time balance sheet and income statement information both during and between all trading periods. In contrast, traders in similar conditions of Lin et al. (2017) receive limited balance sheet information (cash holdings and a count of assets) during trading and expanded balance sheet information (including also the value of shares held) between periods. They do not receive accounting income either during or between periods. Our study argues that individuals rely on accounting income to understand their own performance; this argument suggests that the differential availability of and traders' access to accounting information, particularly accounting income, likely factors into differences observed in the results of the two studies.[7] We expand on our argument and predictions below.

Hypothesis Development

Traders' Implied Performance Models (Individual-Level)

We argue that traders will perceive that items included in accounting income should influence performance, since individuals tend to fixate on income in performance assessments and/or conflate accounting income with performance (Gaynor et al. 2011; Maines and McDaniel 2000; Kachelmeier 1996; Lachmann et al. 2015).[8] Thus, traders will give greater weight to market price changes in determining their economic performance when market price changes are reflected in income. We therefore predict that traders will assign greater weight to market value changes in

[7] Additionally, we elicit trader self-assessments of their own performance after each period. We do so to better understand how accounting measures inform traders' understanding of performance and corresponding strategies. Also, Lin et al. (2017) permit traders to reinvest received dividends (as well as to borrow from computerized lenders), but we place reinvestment constraints on received dividends to control market liquidity. We do so to better isolate the direct effect of accounting regime on mispricing, separate from interactions with other market dynamics.

[8] Our argument is also consistent with neuropsychological observations that (a) the brain experiences monetary gains and losses as expected welfare gains and losses (Dickhaut, Basu, McCabe and Waymire 2010; Tom, Fox, Trespel and Poldrack 2007; Schultz, Dayan and Montague 1997), consistent with individuals' conflating income with performance (see Choi et al. 2013), (b) human numerosity appears to rely on a single number line, suggesting that summary performance measures such as income may be overweighted even when disaggregated components are reported (Dehaene 1997), and (c) balance sheet measures such as total equity or total assets may be subject to 'cognitive materiality' where small changes in large amounts are less noticed (Rose, Beaver, Becker and Sorter 1970; Longo and Lourenco 2007).

their trading performance under MTM because MTM recognizes market price changes in accounting income. In contrast, when an asset's purchase price is allocated across future periods to reflect the decline in its productive life, traders will perceive amortization and dividends (which reflects assets' production) as playing a greater role in their performance. We also predict that traders will assign greater weight to assets' implied expiration (amortization) under HC, because HC accounting income recognizes periodic declines in assets' remaining useful life.

> HYPOTHESIS 1a. Traders will perceive a stronger link between market price changes and performance under mark-to-market accounting than under historical cost accounting.
>
> HYPOTHESIS 1b. Traders will perceive a stronger link between amortization and performance under historical cost accounting than under mark-to-market accounting.

Market Mispricing (Market-Level)

Traders' perceptions of performance inputs shape their strategies, which broadly relate to sources of investment value stemming from assets' future cash flows and/or future mispricing. Following Hypothesis 1, we expect traders in MTM regimes to perceive market price changes to play a greater role in their performance. Consequently, we also expect these traders to select trading strategies that 'manage' the performance consequences of market price changes by anticipating and trading against future market price. Conversely, when traders emphasize assets' declining productive life, we expect traders' trading strategies to emphasize anticipating and trading against the future dividends that comprise assets' productive life.

We expect traders' differential emphasis of investment strategies at the individual level to correspond with differential market-level mispricing (Ganguly et al. 1994). Traders' incentives to buy or sell are increasing in expectation of others' buying and selling and are thus strategic complements with regard to mispricing. Traders' buying and selling based on expected future mispricing introduces *present* mispricing into the market, increasing the potential gains for trading on mispricing and potentially also leading others to update their mispricing beliefs in a recursive

manner. Prior research observes that strategic complementarity increases price volatility in markets and coordination failures in social dilemmas (Morris and Shin 2002; Plantin et al. 2008; Banerjee and Maier 2016). In the present study, we note that financial assets' strategic complementarity corresponds with investment strategies emphasizing mispricing, which we expect to be more prevalent under MTM. Accordingly, we predict that mispricing will increase under MTM compared to HC because traders under MTM to increasingly emphasize market prices in their trading strategies, which will tend to increase mispricing.

HYPOTHESIS 2. Mispricing will be greater under mark-to-market accounting.

3. Research Design

We utilize laboratory asset markets to test our hypotheses where participants have real economic incentives, and manipulate the accounting measurement regime to which each market is initialized. Accounting regimes differ in the method of assigning values to held assets, which may reflect either a portion of the assets' original purchase price (HC), or may reflect recent market prices (MTM). We discuss our laboratory market structure, as well as our manipulation of accounting regime and the experimental procedure below.

Market Structure

Our market follows the standard design first introduced by Smith, Suchanek, and Williams (1988), where traders are endowed with experiment money and may trade in a risky asset that pays a series of dividends with common knowledge of the dividend distribution. Assets are traded in a continuous double auction market and prices in the market are presented in experiment dollars, paid out at the conclusion of the experiment based on traders' ending holdings in a ratio of $1 for every $22,332 experiment dollars. We employ a generic financial context to reduce participant confusion (see Kirchler et al. 2012) , labeling assets as 'contracts' which make payments ('contract payments')

to owners in each of 15 periods and then expire.[9]

Eight to twelve participants are recruited for each market (average 10.25). Traders begin the market with an endowment of assets (3) and cash ($200,000) sufficient to purchase at least four additional assets at their starting fundamental value of $45,000 (detailed below). Traders may then post and/or accept buy and sell offers in 15 four-minute trading periods, subject to cash and holding availability.[10] Traders may not borrow funds, and cash holdings do not yield interest.

At the conclusion of each period, each asset pays a random dividend ('contract payments' as noted above). For computational simplicity, dividends can take one of two levels, high ($5,500) or low ($500) per period, per asset, with all assets paying at the same level in any given period (risk cannot be diversified). Each dividend level is equally probable and dividends in different periods are made independently. Thus, the expected value of each dividend is $3,000 and the expected value of each asset is $3,000 times the number of dividends remaining ($45,000 in the first period), independent of who the owner is and how many assets are owned. After the final period, assets pay their final dividend and then expire with no additional value. Each participant's payout is equal to the dividends s/he received over the 15 periods plus any remaining cash holdings, which may have increased or decreased based on purchases and sales during the session.

Traders receive dividends immediately and hold them in a separate account ('contract payments') that cannot be used to buy additional contracts. This holds liquidity in the market constant. Cash, asset holdings, and received dividends carry over to the next period but prices reset at the beginning of the period to prevent stale prices from being displayed. Instructions inform participants of all important market information including demonstrating how to compute expected

[9] We use plain-spoken labels in place of technical financial jargon whenever possible to enhance the internal validity of our experimental design, which is consistent with traditional laboratory market designs.
[10] Traders may end trading periods early if all traders click a 'Done Trading' button that increments a tally without disabling any market functions. No market periods ended early.

value and requiring participants to correctly estimate an example problem.[11] Thus, assets' expected cash flows are mutually known, easily calculable, and do not depend on condition, their owner or on how many assets are owned.

Accounting Information

Participants receive accounting information regarding their own performance in the form of a simplified Balance Sheet ('Holdings') and a simplified Income Statement ('Earnings'). See Figure 1, Panel A. The simplified Balance Sheet reports current cash and asset holdings, as well as received dividends. Included in the Balance Sheet is a dollar value assigned to Contract Holdings (computed differently by condition, described below). Directly below the simplified Balance Sheet is an additional area labeled 'Contract Summary' that details the computation of the carrying value assigned to 'Contracts' on an aggregated basis (for all contracts, together). Traders are also provided a button to 'View Detail', which provides carrying value computations individually, for each asset currently owned.[12] The simplified Earnings Statement reports *changes* in Total Holdings. This includes contract carrying value changes (either as 'Contract Expiration' or as 'Market Value Change', as described below), received dividends ('Contract Payments'), and trading gains/losses.[13] This information is displayed both during and between trading periods.

[INSERT FIGURE 1 HERE]

Manipulation of Accounting Measurement Regime

We manipulate *measurement regime* between sessions in a two-cell design (HC or MTM) with all traders in a market receiving the same regime. Measurement regime relates to the method of assigning carrying values to assets held in Holdings, reported in the simplified Balance Sheet.

[11] Traders in all sessions receive the same predetermined dividend draw set to reduce noise in our analyses.

[12] The 'View Detail' option is initially collapsed.

[13] When an asset is sold, traders' oldest asset is automatically selected, similar to "First-In-First-Out" inventory selection. We additionally conduct four sessions using 'tax minimizing' inventory selection that approximates practice for financial assets, where the highest value asset is automatically selected for sale (to minimize taxes by minimizing accounting income). Results are robust to the inclusion of these four sessions.

Importantly, prior to the first period of trading, participants receive instruction and must demonstrate their ability to derive assets' underlying (i.e., fundamental) values, on which actual payouts (i.e., profits) are based, from information publicly displayed, regardless of measurement regime.

Under the HC regime (Figure 1, Panel C), assets' carrying values are computed by reducing their original purchase price at the end of each period, based on the portion of payments already received (amortized on a straight-line basis). For example, if an asset was purchased for $35,000 in period five (ten dividends remaining), its reported value would decrease by $3,500 each period. Under HC, assets' carrying values decline over their life, ending at $0 after the final payment. Under the MTM regime (Figure 1, Panel C), assets' carrying values are adjusted at the end of each period to reflect the price of the last completed trade. For example, if an asset was purchased for $35,000 in period five, its value would be $35,000 for the remainder of the period. At the end of the period, its value would update to the value of the last completed trade, as would all shares. Under MTM, assets' carrying values increase in times of rising prices and decrease in times of falling prices.[14] Under both regimes, changes in assets' carrying values flow through to Earnings. In the HC regime, these changes are displayed as 'Contract Expiration', which is a negative value that increments after any period ended with contracts, reflecting prior contract expiration plus the new contract expiration from the current period. In the MTM regime, changes in assets' carrying values are displayed as 'Market Value Change', which is a positive or negative value that increments after any period that (a) the trader ends owning contracts and (b) market values change.[15] Assets' carrying values under both regimes begin the market initialized to their fundamental value, and neither amortization nor market value update until the conclusion of the first period. Thus, accounting information for the

[14] Although the market was programmed to use the last completed trade in any period, there were no MTM periods with zero trades. Thus, the market price was always derived from the prior period's last completed trade.

[15] Because measurement base influences assets' carrying values, it also indirectly impacts Trading Gains/Losses, which reflect the difference between assets' selling price and their carrying value. Under MTM, Trading Gains/Losses reflect only the portion of unrealized gains/losses that have not already been recognized (only those which have occurred in the current period). Under HC, unrealized gains/losses equal unrecognized gains/losses.

first period is equivalent for both regimes. After the final dividend (following the final trading period), assets have no remaining value and are written down to $0.

Performance Self-Assessments

Between periods, traders receive both Earnings and Holdings information again, updated to include dividend and amortization or market value changes for the most recently concluded period. The information is displayed for 25 seconds before advancing to a performance self-assessment question (Figure 1, Panel B) prompting participants to 'Please rate your performance in the prior round' (7pt scale, 3 = Very Good, -3 = Very Bad). Responses become the dependent variable in regressions examining implied emphasis of accounting information.

Experimental Procedure

After all participants complete the instructions, a four-minute practice period begins to familiarize participants with the market interface. The practice period utilizes alternate liquidity levels ($10M in cash, 50 assets) to minimize carry-over effects into the live market. Participants are instructed to make at least one purchase and one sale each. To minimize confusion, the practice period includes the between-period sequence, displaying the dividend draw, summary financial information, and performance evaluation question that follow a typical market period. Next, participants begin the 15-period live market. At the conclusion of the final period, participants return to Qualtrics to complete a short exit survey consisting of approximately 30 questions. Laboratory administrators prepare compensation while participants work on the surveys. After completing their surveys and receiving compensation, participants are dismissed.

4. Results

Descriptive Statistics

We conduct a total of eight market sessions, four markets under each measurement regime. Each market session lasts 2 hours, with participants receiving a fixed show-up fee ($5 plus research credit) and variable performance-based compensation based on ending holdings that averages

$15.42.[16] Participants are recruited through a participant pool comprised primarily of undergraduate business and pre-business students associated with the business school of a large public university in North America.[17] Individual-level descriptive statistics are reported in Table 1, Panel A. Participants average 19.0 years old (SD 1.6 yrs). 50.6% of participants report their gender as male. On average, traders' self-assessed performance is 4.1 (1.5 S.D.) out of 7.0, (3.9 for traders in the HC regime and 4.2 for traders in the MTM regime).

Market-level descriptive statistics are reported in Table 1, Panel B. The average asset turnover, which reflects the ratio of total trades occurring in the market to the total assets in the market, is 5.9 (2.4 S.D.) across all markets (6.3 in HC markets and 5.6 in MTM markets). Indicators of mispricing are broadly consistent with expectations. We observe that price exceeds the maximum possible dividend payout for an average of 6.00 periods per MTM market (Out-of-Range) but does so in only one HC market period (0.25 avg.). We also observe that average Relative Deviation (RD), which reflects the signed difference between trading price and fundamental value, is 39% (0.36 S.D.) across all markets (14% in HC, and 64% in MTM). The average Relative Absolute Deviation (RAD), reflecting an unsigned measure of mispricing, is 45% (0.34 S.D.) across all markets (20% in HC, and 71% in MTM). Other indicators of mispricing magnitude are directionally consistent with our primary measures.[18]

[INSERT TABLE 1 HERE]

We plot average market prices in Figure 2. Average prices are reported by regime, overlaid on Fundamental Value (solid grey) and Maximum and Minimum Values (dashed grey), based on

[16] In four sessions, we supplement recruitment with participants from a paid participant pool associated with the business school. Paid participants receive identical performance pay but receive $15 of fixed pay instead of $5 because these participants receive no research credit. Paid pool participants are balanced between conditions.

[17] In untabulated results, we also conduct six markets (three MTM and three HC) using a separate participant pool composed primarily of non-business students. All results replicate in the alternate sample.

[18] All mispricing measures reported throughout the manuscript are commonly used in the experimental asset market literature (see Stöckl, Huber and Kirchler 2010 for a review), and are defined in Appendix A.

the expected, maximum possible and minimum possible dividend payouts respectively. We observe that average prices for both conditions begin slightly below fundamental value but approximate fundamental value by the second period, consistent with the majority of baseline laboratory markets (Palan 2013). Average price then trends upward for several periods in the case of MTM markets but tracks fundamental value in HC markets. Average price in MTM regimes exceed the maximum possible dividend payout both on average, and for three of four MTM markets. However, it exceeds the maximum possible dividend payout in only one HC market.

[INSERT FIGURE 2 HERE]

Test of H1 – Individual-Level Effects

H1 predicts that traders will perceive a stronger link between market price changes (amortization) and performance under MTM (HC) accounting than under HC (MTM). To test H1, we first confirm that traders link performance perceptions primarily to earnings rather than to holdings, consistent with theory established in prior literature (Kothari et al. 2010; Maines and McDaniel 2000; Hirst and Hopkins 1998; Sloan 1996).[19] To examine the relative weight traders assign to reported and implied sources of value, we regress components of accounting information for both regimes on traders' performance self-assessments We include both the displayed components corresponding to the active condition and the computed but undisplayed components that correspond to the other condition (e.g. 'amortization' is computed but not displayed to traders in the MTM condition). We first compare traders' emphasis of Earnings versus Holdings between regimes using the following regression:

$$(1)\ \text{Performance}_{it} = \alpha + \beta_1 \text{Earnings}_{it} + \beta_2 \text{Holdings}_{it} + \beta_3 \text{MTM}_{it} + \beta_4 \text{MTM} * \text{Earnings}_{it} + \beta_5 \text{MTM} * \text{Holdings}_{it} + \varepsilon_{it}$$

Performance is trader *i*'s self-assessed performance in period *t. Earnings* is the displayed

[19] We do this to avoid including both levels (balance sheet) and changes (income statement) information in the same regression.

summary Earnings for trader *i* in period *t*. *Holdings* is the displayed summary of assets held by trader *i* in period *t*. Statistically significant coefficients reflect a tendency of traders to link changes in *Earnings* and/or *Holdings* with self-assessed *Performance*. We perform regressions for each condition separately and pool our full sample to compare weighting of accounting information between regimes. In the pooled sample, we employ an indicator variable *MTM* set to 1 for observations in the MTM condition, fully interacted with our other variables of interest.

Table 2 reports the results of our analysis. We observe that traders' performance perceptions are significantly related to their earnings in both subsamples (MTM: $t_{610} = 5.25$, *p-value* < 0.01, HC: $t_{616} = 3.30$, *p-value* < 0.01) but not related to their holdings in either subsample (MTM: $t_{610} = 0.61$, *p-value* 0.55, HC: $t_{616} = 0.14$, *p-value* = 0.89). These results also hold in our pooled regression, although earnings receive a lower weight under MTM ($t_{610} = -2.23$, *p-value* = 0.02). We conclude that traders associate performance with earnings but not measurably with holdings. We therefore utilize components of earnings in our primary test of H1.

[INSERT TABLE 2 HERE]

Differential Emphasis of Disaggregated Income Items

H1 specifically predicts that traders in MTM markets perceive a stronger link between their own performance and market price changes than those in HC markets (H1a); and, that traders in HC markets perceive a stronger link between performance and assets' cash-generating lifespan (reflected in amortization) than those in MTM markets (H1b). To test H1, we compare traders' emphasis of disaggregated earnings components using the following regression:

(2) $$\text{Performance}_{it} = \alpha + \gamma_1 \text{MVChange}_{it} + \gamma_2 \text{Amortization}_{it} + \gamma_3 \text{Dividends}_{it} + \gamma_4 \text{TradingGains}_{it} + \gamma_5 \text{MTM}_{it} + \gamma_6 \text{MTM} * \text{MVChange}_{it} + \gamma_7 \text{MTM} * \text{Amortization}_{it} + \gamma_8 \text{MTM} * \text{Dividends}_{it} + \gamma_9 \text{MTM} * \text{TradingGains}_{it} + \varepsilon_{it}$$

Performance is as described in Model (1) above. *MVChange* reflects total differences between market prices and carrying values in period *t* for trader *i* (computed in both conditions but

recognized in accounting income only in the MTM condition).[20] *Amortization* reflects the total allocation of assets' purchase price recognized for trader *i* in period *t* (computed in both conditions but recognized in accounting income only in the HC condition). *Dividends* are the contract payments received by trader *i* for contracts that s/he held at the end of period *t* (computed and displayed identically in both conditions). *Trading Gains* reflects the difference between sold assets' carrying value and their market price for trader *i* for assets sold in period *t*, using the carrying value displayed in the corresponding condition (carrying values embed market price changes in MTM conditions, and embed amortization in HC conditions). We estimate regressions for each condition separately and also pool our entire sample to test for weighting differences between regimes. In the pooled sample, we employ an indicator variable *MTM* set to 1 for observations in the MTM condition, fully interacted with our other variables of interest.

We regress traders' per-period performance self-assessments against disaggregated components of income, clustering by participant to control for participant fixed effects. See Table 3. Consistent with H1a, results indicate that *MVChange* is significantly associated with performance perceptions in MTM markets (t_{606} = 3.74, *p-value* < 0.01), but not related to performance self-assessments in HC markets (t_{612} = -0.60, *p-value* = 0.56). We also find evidence that the effect of *MVChange* reliably differs between regimes ($t_{1,227}$ = 2.62, *p-value* < 0.01). In contrast, *Amortization* is not significantly associated with performance self-assessments in MTM markets (t_{606} = -0.29, *p-value* = 0.77), but is significant in HC markets (t_{612} = 2.17, *p-value* = 0.02). The differential effect of *Amortization* information also reliably differs between regimes ($t_{1,227}$ = -2.06, *p-value* = 0.02), which is consistent with our prediction for H1b. We additionally note that traders in HC markets assign greater weight to *dividends* than do traders in MTM markets ($t_{1,227}$ = -3.20, *p-value* < 0.01). Thus, we conclude that the collective evidence observed in these analyses support H1a and H1b.

[20] The information needed to compute all displayed and undisplayed components of accounting income is publicly available in both conditions.

[INSERT TABLE 3 HERE]

Differential Information Preferences

We additionally provide evidence regarding traders' asset management strategies. We examine traders' preferences for uncertain information, elicited in a hypothetical trade-off posed in the post-experimental questionnaire. We posit that traders who emphasize strategies based on assets' underlying cash flows will prefer knowledge of assets' future dividends, but traders who emphasize strategies based on future mispricing will prefer knowledge of future trading prices. Traders respond to the 7pt. Likert-type question "If you could choose one, which would you prefer to have?" ('Knowledge of Next Period's Contract Payment (3), No Preference (0), Knowledge of Next Period's Average Trading Price (3)').[21] Response averages and frequency of preferences are reported in Table 4. We observe that 62.5% of traders in the HC condition indicate that they prefer future dividend info by selecting an option left of the midpoint, but 34.1% do so in the MTM condition. This difference is statistically significant (*z-score* = -2.29, one-tailed *p-value* = 0.01). We also observe that 32.5% of traders in the HC condition prefer future trading price info, but 51.2% do so in the MTM condition. This difference is also statistically significant (*z-score* = 1.86, one tailed *p-value* = 0.03).[22] Together, evidence is consistent with traders in MTM conditions emphasizing strategies based on anticipating and trading against future market prices.

[INSERT TABLE 4 HERE]

Test of H2 – Market-Level Effects

In H2, we predict that mispricing will be greater in MTM markets than in HC markets. Our prediction follows from the expectations that traders in MTM markets will perceive price changes

[21] Two traders (both HC) did not answer the post-experimental question. Thus, the total number of observations in the analysis is 81, instead of 83.

[22] Responses are grouped into three categories for expositional purposes (preferring dividend information, preferring trading price information, or having no preference). Results hold for the untransformed Likert-type responses (t = *2.30*, one-tailed *p-value* = 0.01).

as playing a greater role in their performance and will therefore adopt strategies based on anticipating and trading against future market prices. To test H2, we estimate Wilcoxon Rank-Sum test statistics (nonparametric) to compare differences for two primary mispricing measures – Relative Deviation (RD) (signed mispricing) and Relative Absolute Deviation (RAD) (unsigned mispricing). We present our results in Table 5. We observe that both signed (RD, *z-score* = -2.31, *p-value* = 0.02) and unsigned (RAD, *z-score* = -2.31, *p-value* = 0.02) price deviations are greater for the MTM regime than for the HC regime, and that these results persist across a number of other commonly used mispricing measures.[23] Taken together, we conclude that the evidence reliably indicates greater mispricing under MTM regimes relative to HC, and that H2 is supported.

[INSERT TABLE 5 HERE]

Supplemental Experiments

Are results robust to mid-trading ex-dividend announcements?

In our primary experiment, economic information is held constant across conditions in the sense that accounting numbers can be computed for either regime with additional effort. However, because assets pay dividends between periods, and prices in MTM markets are based on closing prices from preceding periods, the precision with which MTM traders price dividends into asset prices may be an additional source of variance across regimes. Thus, we conduct a supplemental experiment that mirrors the design of our primary experiment, and also includes an ex-dividend feature that allows us to test whether the results of our original experiment persist in a setting where traders in both regimes are better able to precisely price dividends into asset prices. Specifically, in the second experiment forthcoming dividends (high or low) are announced half-way through each period, enabling the market to impound the dividend into market price. Second, the market assigns

[23] Table 5 also reports results for tests of differential mispricing between regimes using Relative Period Deviation, Relative Period Absolute Deviation, Haessel's R-Square, as well as a count of the number of periods where average price exceeds the maximum possible amount of dividends that could be received (Out-of-Range) as alternative measures of market-level mispricing.

values to MTM assets based on prior market price, now subtracting the value of the dividend from market price. Thus, MTM values assigned to assets reflect the economics of the present period, rather than the economics of the prior period. This decouples dividend announcements from their payment, enabling market participants to fully and precisely price the dividend.

[INSERT FIGURE 3 HERE]

Participants in the second experiment are recruited similarly to experiment one. Descriptive statistics at the individual-level are reported in Table 6, Panel A, and at the market-level in Panel B. We observe that measures of mispricing continue to follow expectations, with greater mispricing observed under MTM than under HC. In experiment two we also introduce a new measure, *implied price response* (*IPR*), a ratio reflecting the change in market price following the dividend announcement relative to the expected price change.[24] We observe that the *IPR* is 1.35 across all markets, suggesting that market price changes by about $1.35 for every $1.00 of dividends announced. *IPR* is 0.74 for HC markets and 1.95 for MTM markets.

[INSERT TABLE 6 HERE]

We plot average market prices in Figure 4. Average prices are reported by regime, overlaid on Fundamental Value (solid grey) and Maximum and Minimum Values (dashed grey), based on the expected, maximum possible and minimum possible dividends respectively. Consistent with results from our original experiment, we observe a pronounced pricing bubble under MTM markets but not under HC markets.

[INSERT FIGURE 4 HERE]

While the incremental design changes in the second experiment are primarily intended to enhance control of one potential source of variance in our tests of market-level effects, we repeat all

[24] In our *IPR* ratio, the numerator, comprised of actual price change, is the difference between average market price in the two minutes before the dividend announcement and the two minutes after the dividend announcement. The denominator, comprised of expected price change, is the difference between the risk-weighted expected dividend ($3,000) and the announced dividend (high $5,500 or low $500). If the market perfectly prices all information, the *IPR* would approximate 1.0.

individual-level and market-level analyses from our original experiment for the sake of comparability. Results from analyses of individual-level effects are presented in Table 7.[25]

[INSERT TABLE 7 HERE]

We next examine the relationship between accounting regime and market-level mispricing. We report results from non-parametric Wilcoxon Rank-Sum tests in Table 8. We observe that MTM accounting regime is significantly associated with both signed (RD, *z-score =2.31*, *p-value* = 0.02), and unsigned price deviations (RAD, *z-score* = 2.31, *p-value* = 0.02). Consistent with results from our original experiment, we also observe significant differences across regimes in all other measures of market-level mispricing. Additionally, we find that the *IPR* is significantly greater under MTM than HC (*z-score* = -2.31, *p-value* = 0.02), reflective of a greater price response to information under MTM than under HC.[26]

[INSERT TABLE 8 HERE]

The results of our second experiment demonstrate that the influence of measurement regime on mispricing is robust to inclusion of a more realistic treatment of dividends. That is, inclusion of ex-dividend information in our experimental markets does not explain the pattern of differential pricing we observe between HC and MTM regimes. Namely, traders in HC markets perceive a stronger link between their performance and asset fundamentals. This corresponds with less mispricing under HC than under MTM.

Are information acquisition costs equivalent across regimes?

[25] We observe that *MVChange* is significantly associated with performance perceptions in MTM markets (t_{662} = 2.53, *p-value* = 0.01), and weakly related to performance self-assessments in HC markets (t_{705} = 1.42, *p-value* = 0.08). The difference is not statistically significant ($t_{1,367}$ = 0.77, *p-value* = 0.22). In contrast, we observe that *amortization* is not associated with performance self-assessments in MTM markets (t_{662} = -0.34, *p-value* = 0.37), but is significant in HC markets (t_{705} = 5.34, *p-value* < 0.01). The difference is statistically significant ($t_{1,367}$ = -2.49, *p-value* < 0.01). As in experiment one, we observe that traders in HC markets assign greater weight to dividends ($t_{1,367}$ = -2.74, *p-value* < 0.01). This evidence suggests that HC traders assign greater weight in their performance perceptions to assets' amortization and dividends. Thus, we conclude that the evidence supports H1b but not H1a.

[26] We additionally conduct eight markets (four per regime) that employ the dividend announcement feature without the ex-dividend reduction in prior period market price. All results hold in those markets. (*Wilcoxon Rank Sum:* RD, p = 0.047; RAD, p = 0.047; RPD, p = 0.021; RPAD, p = 0.047; HAESSEL, p = 0.011; OUT-OF-RANGE, p = 0.040).

In the two experiments described above, information was held constant across conditions such that traders in either condition could effortfully calculate accounting income as determined by both MTM and HC. However, direct observation of actual cognitive effort is elusive. We therefore conduct a third experiment that allows stricter control over the possibility that differences in information acquisition costs between conditions are driving our results. Specifically, we incrementally extend design of our original experiment, but by enabling traders to change measurement regime within the market. Operationally, a button is added to the market interface that enables participants to change between regimes (see Figure 5). Clicking the button restates financial data, including historical data and summary profit, into the other regime (e.g. from HC to MTM or vice versa). Changes occur immediately, and traders can change as many times as they wish at no additional cost or other consequence. Thus, participants can have information under either regime, and may move between the methods if they feel that doing so is helpful. Additionally, instructions are updated in experiment three to present both methods (both HC and MTM) to all participants.

[INSERT FIGURE 5 HERE]

For the sake of comparability with the two previously reported experiments, we present descriptive statistics at both the individual- and market-level. Individual-level descriptives are reported in Table 9, Panel A. In experiment three, each trader changes between regimes an average of 35.5 times per market session (median: 15 changes). We classify trader-periods based on the accounting regime displayed to the trader in the period. We classify periods where the accounting regime changed at least once as 'Change' and classify periods with no changes as either 'MTM' or 'HC' based on which regime was displayed in the period. Traders average 4.96 HC periods (7.77 in HC-seeded markets, 1.94 in MTM-seeded markets) and average 4.73 MTM periods (1.80 in HC-seeded markets, 7.88 in MTM-seeded markets). Market-level descriptive statistics are reported in Table 9, Panel B. The average asset turnover is 9.4 (3.8 S.D.) across all markets (10.2 in HC-seeded markets and 8.6 in MTM-seeded markets). We observe that measures of mispricing broadly follow

expectations. Lastly, we observe that 32.1% of trader-periods are classified as MTM (12.3% in HC-seeded markets, 52.0% in MTM-seeded markets).[27]

[INSERT TABLE 9 HERE]

We plot average market prices in Figure 6. Average prices are reported by regime, overlaid on Fundamental Value (solid grey) and Maximum and Minimum Values (dashed grey), based on the expected, maximum possible and minimum possible dividends respectively. We observe that average prices for both conditions track similarly for the first 8 periods. Average price then trends downward for several periods in the case of HC markets but does not in MTM markets.

[INSERT FIGURE 6 HERE]

In experiment three, we update our regression analysis of traders' performance self-assessments to examine the degree to which traders' emphasis of fundamentals and/or market prices varies according to their use of HC and/or MTM within-session. As in experiment one, we include only income statement items to avoid including both levels (balance sheet) and changes (income statement) measures in the same regression:

(3) $$\text{Performance}_{it} = \alpha + \gamma_1 \text{MVChange}_{it} + \gamma_2 \text{Amortization}_{it} + \gamma_3 \text{Dividends}_{it} + \gamma_4 \text{TradingGains}_{it} + \gamma_5 \text{HCPeriod}_{it} + \gamma_6 \text{MTMPeriod}_{it} + \gamma_{7-10} \text{HCPeriod} * \text{INTERACTIONS}_{it} + \gamma_{11-14} \text{MTMPeriod} * \text{INTERACTIONS}_{it} + \varepsilon_{it}$$

Variables are defined as in experiment one. In the current analysis, we also include the variables *HCPeriod* and *MTMPeriod*, which are indicator variables set to 1 for trader-periods classified as HC or MTM respectively. Trader-periods are classified according to the accounting regime that was displayed during the period. In periods where traders change regime at least once, the trader-period is categorized as 'Change'. In periods where only HC (*HCPeriod* = 1) or MTM (*MTMPeriod* = 1) are displayed for the entire duration of the period, we activate a corresponding

[27] The market-level average reflects the simple average of each market. Because markets differ in the number of traders who participate in each market, the market-level average (Panel B) differs from the individual average (Panel A).

indicator variable.[28] This measure reflects the prevalence of accounting regimes both between and within markets. We interact each indicator variable with the components of income.

We perform regressions for the pooled sample to test for weighting differences, clustering by participant to control for trader fixed effects. See Table 10. We observe that the coefficient on *HCPeriod*MVChange* is negative and statistically significant ($t = -3.02, p < 0.01$). This is consistent with traders perceiving a weaker relationship between market price changes and their performance as their emphasis of HC increases, consistent with H1a. We also observe that coefficients on *MTMPeriod*Amort* (*t* = -2.20, p=0.015), and *MTMPeriod*Dividends* (*t* = -3.55, p<0.01) are negative and statistically significant. This is consistent with traders' emphasis of asset fundamentals decreasing in their use of MTM accounting, consistent with H1b.

[INSERT TABLE 10 HERE]

We next examine the relationship between accounting regime and market-level mispricing. We regress our measures of mispricing on continuous measure of HC proportion, which captures within- and between-regime variation in the use of HC accounting.[29] To correct for small sample size we employ bootstrap resampling, which relaxes parametric regression requirements. Bootstrap resampling involves generating a sample distribution with variations of a given sample by removing and replacing observations within the sample in an iterative manner. We generate 500 such samples in each regression. We report results in Table 11. We find marginal evidence that the MTM accounting regime is associated with signed price deviations (RD, *z-score =1.57*, *p-value* = 0.06), and is significantly related to unsigned price deviations (RAD, *z-score* = 2.38, *p-value* = 0.01). We also observe statistically significant differences in other measures of mispricing such as RPD (*z-score* = 3.09, *p-value* < 0.01), RPAD (*z-score* = 2.79, *p-value* < 0.01), and out-of-range periods

[28] Thus, there are three categories: Change, HCPeriod, or MTMPeriod. We do not include Change periods in our analysis because regime changing may reflect different functions, complicating the interpretation of these periods.

[29] To correct for small sample size we employ bootstrap resampling, which relaxes parametric regression requirements. Bootstrap resampling involves generating a sample distribution with variations of a given sample by removing and replacing observations within the sample in an iterative manner. We generate 500 such samples in each regression.

(OUTOFRANGE, *z-score = 1.98*, *p-value* = 0.02), but not significantly related to Haessel's R-Square (HAESSEL, *z-score = -1.14*, *p-value* = 0.13). We conclude that H2 is supported, reflective of greater mispricing under MTM regimes.[30]

[INSERT TABLE 11 HERE]

In experiment three, traders were given the ability to change between accounting regimes throughout the market session. This addressed concerns regarding the equivalence of information made available to traders in experiment one. We observe that our primary inferences hold in experiment three. Namely, that traders' individual emphasis of market pricing and market-level indicators of mispricing both appear to increase in the use of MTM accounting in our study.

5. Conclusion

In this study, we report the results of three laboratory market experiments in which traders received simplified accounting reports detailing their holdings and earnings in the market. The accounting reports assign carrying values to asset holdings based either on a proportion of their original price ('historical cost') or based on recent market prices ('mark-to-market'), with carrying value changes being recognized in accounting income. We hypothesize that individual traders will select strategies that follow the construction of accounting income, emphasizing asset fundamentals under HC and market prices under MTM. At the market level, we hypothesize that traders' emphasis of market price strategies will tend to foster increased mispricing, leading MTM markets to experience greater mispricing. We observe results in all three experiments consistent with our hypotheses. HC is associated with emphasis of asset fundamentals and MTM is associated with emphasis of market price strategies. At the market level, we observe that MTM is positively related to measures of mispricing. This is true even though assets' economics are identical in all conditions,

[30] Market-level results hold but are in some cases weaker for alternately specified regressions, using either a variable reflecting the proportion of HC periods (RD, p = 0.055; RAD, p = 0.055; RPD, p = 0.016; RPAD, p = 0.03; HAESSEL, p = 0.028; OUT-OF-RANGE, p =0.031) or a dichotomous indicator variable for the seeded accounting regime (RD, p = 0.057; RAD, p = 0.014; RPD, p = 0.001; RPAD, p = 0.003; HAESSEL, p = 0.078; OUT-OF-RANGE, p = 0.014).

and income is both disaggregated and constructed from publicly available information. In experiment three, traders may freely change between regimes.

Broadly, our study demonstrates that accounting measurement regimes can influence market-level mispricing, separate from other underlying market factors. Given the public externalities generated by market crashes and regulators' ability to choose accounting methods, our results should interest academics, regulators and policymakers. This is particularly true when triangulated with extant theoretical models (e.g., Heaton et al. 2010; Plantin et al. 2008; Plantin and Tirole 2018) and empirical evidence in non-laboratory settings (e.g., Laux and Leuz 2010).

Our study also responds to a number of open questions and calls for research. We provide evidence on the effects of fair value accounting in the absence of institutional interactions such as capital constraints (Heaton et al. 2010; Laux and Leuz 2009) and credit dynamics (Lin et al. 2017). Our study suggests that traders systematically assign lower weights to asset fundamentals, and greater weights to market price changes under MTM, resulting ultimately in greater market-level mispricing under MTM. We also observe that traders in MTM regimes preferred information about future market prices that could advantage them individually in timing the bubble, but which could also draw more traders into the bubble. This may suggest the presence of underlying regulatory tensions between providing information that is individually desired versus information that promotes orderly and efficient markets (cf. Barker and Schulte 2017).

On the whole, traders in our study appear to understand market economics differently depending on the accounting regime employed. Their understanding appears to be driven by differences in the construction of accounting income. This occurs even though earnings are derived from public information and we disaggregate the components of earnings in our study. Traders' differential understanding of economics is consistent with a form of profit fixation not arising from conditioning (Haka, Friedman and Jones 1986). From a high level, our findings are consistent with accounting income serving an important cognitive function in decision-making, which should not

be overlooked (Lachmann et al. 2015; Waymire and Basu 2008). Our results obtain even though traders in our study are explicitly informed that their compensation will be based only on their final cash and dividends received. This suggests that managerial performance metrics rooted in fair value income may trigger shifts in judgments and decisions even if the fair value components of income are subsequently backed out for compensation purposes (DeFond et al. 2019).

Our study is subject to limitations. Foremost, our study employs a laboratory setting that differs in many ways from 'real world' financial markets typically investigated in archival studies. Our setting offers several advantages in terms of control, counterfactual construction, and the measurement of mispricing. However, one limitation of our setting is that we cannot speak to whether the effects we observe would persist in markets with competing institutions – our study should not be interpreted as an investigation of any specific financial crisis. Nevertheless, our results suggest that accounting treatments should not be ruled out of consideration as a contributing factor, either. Additionally, our study employs simplified accounting statements, reflecting traders' own performance rather than the performance of investment targets. While this differs from the assessments typically investigated in other accounting studies, we note that traders are themselves beholden to profit and loss requirements and their investments are more likely to be carried at market prices than are other assets, particularly for large financial institutions. One potential consequence is that market-level effects may be triggered by traders' own accounting reports.

Our study also facilitates several opportunities for future research. One implication of our study is that traders in the two regimes may learn differently about the market because they rely on accounting information to understand what inputs influence performance. To the extent that traders in MTM markets are attending to market prices rather than asset fundamentals (underscored by information preferences we report in supplemental analysis), their learning may reflect information related to the size and timing of bubbles rather than computing expected cash flow values. Ultimately, this may lead traders in MTM regimes be more prone to experiencing subsequent

bubbles under MTM than under HC. Second, future research could investigate alternative accounting regimes and/or the ability of supplemental accounting information such as disclosures to mitigate adverse consequences observed under either accounting regimes, an option available to regulators and one that may forge a compromise between information demands of different trader constituencies.

APPENDIX A
Market Bubble Measures

Measure	Expression	Description
Turnover	$= \frac{1}{TSU} \sum_{1}^{t=15} q_t$	*Scaled measure of trading volume*. When Turnover equals 1.0, the number of trades during the market equals the number assets in the market.
RD	$= \frac{1}{15} \sum_{t=1}^{15} \frac{(P_t - FV_t)}{mean(FV)}$	*Relative Deviation*. Indicator of mispricing in the market. Average signed deviation of price from fundamental value. Underpricing offsets overpricing; $1 deviation weighted equally in all periods.
RAD	$= \frac{1}{15} \sum_{t=1}^{15} \frac{\lvert P_t - FV_t \rvert}{mean(FV)}$	*Relative Absolute Deviation*. Indicator of mispricing. Average unsigned deviation of price from fundamental value. Underpricing and overpricing both contribute; $1 deviation weighted equally in all periods.
RPD	$= \frac{1}{15} \sum_{t=1}^{15} \frac{(P_t - FV_t)}{(FV_t)}$	*Relative Period Deviation*. Indicator of mispricing in the market. Average signed deviation of price from fundamental value. Underpricing offsets overpricing; $1 deviation weighted more heavily in early periods (when FV is greater) than in later periods (when FV is lower).
RPAD	$= \frac{1}{15} \sum_{t=1}^{15} \frac{\lvert P_t - FV_t \rvert}{(FV_t)}$	*Relative Period Absolute Deviation*. Indicator of mispricing. Average unsigned deviation of price from fundamental value. Underpricing and overpricing both contribute; $1 deviation weighted more heavily in early periods (when FV is greater) than in later periods (when FV is lower).
Out-of-Dividend Range	$= count\{\tau: P_t > HighPayoff * (16 - t)\}$	*Simple count of the number of periods where price exceeds maximum possible remaining dividends* (if all remaining dividends were HIGH).
Haessel's R_2	$R^2 of\ OLS\ Regression\ (individual)$: $P_t = \alpha + \beta_1 FV_t + \epsilon_t$	*Indicator of price volatility*. Higher values indicate that slope of market price declines with fundamental value.

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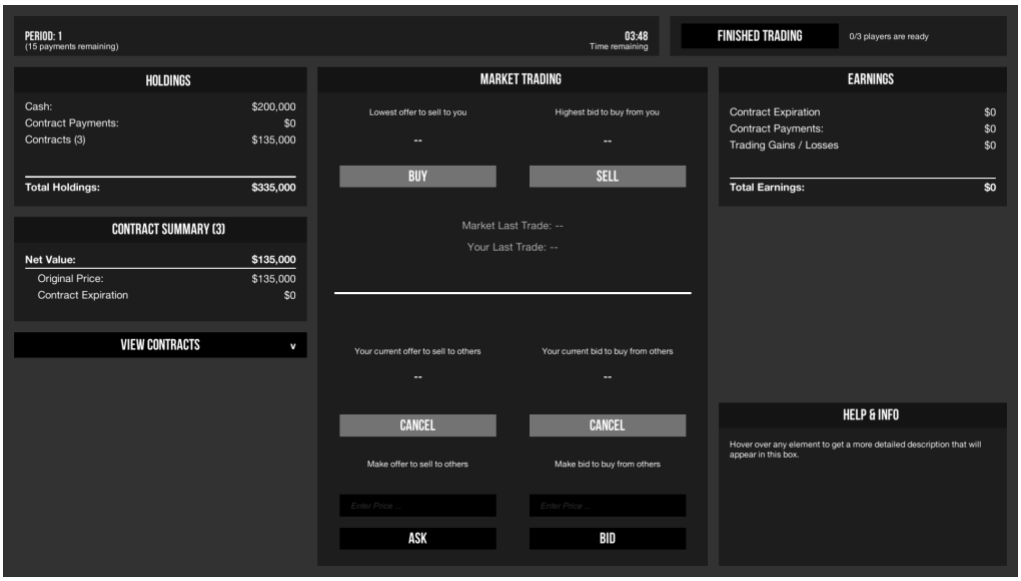
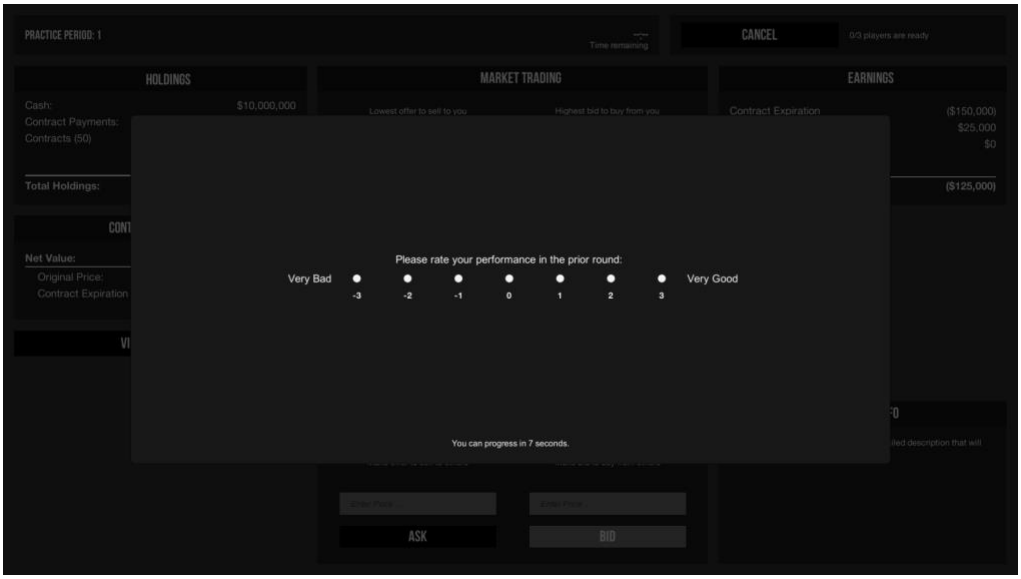
FIGURE 1
Market Interface – Experiment One

Panel A: Trading Screen



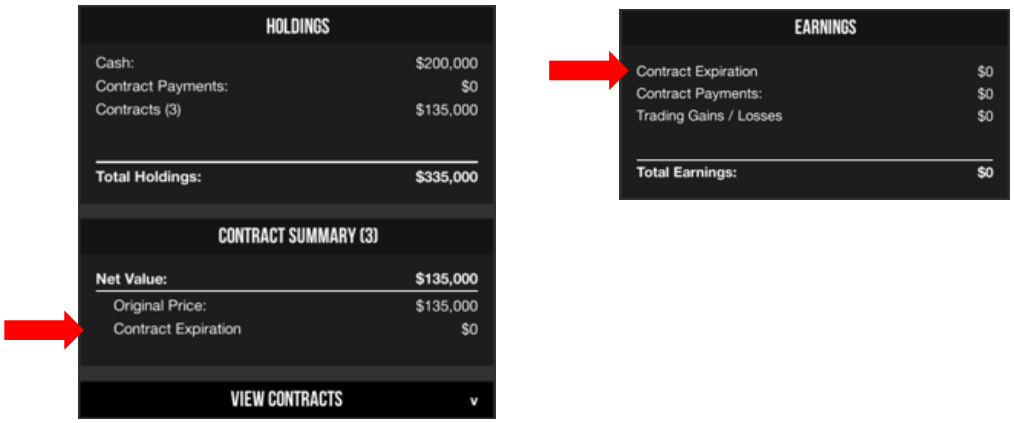
Panel B: Performance Self-Assessment Screen



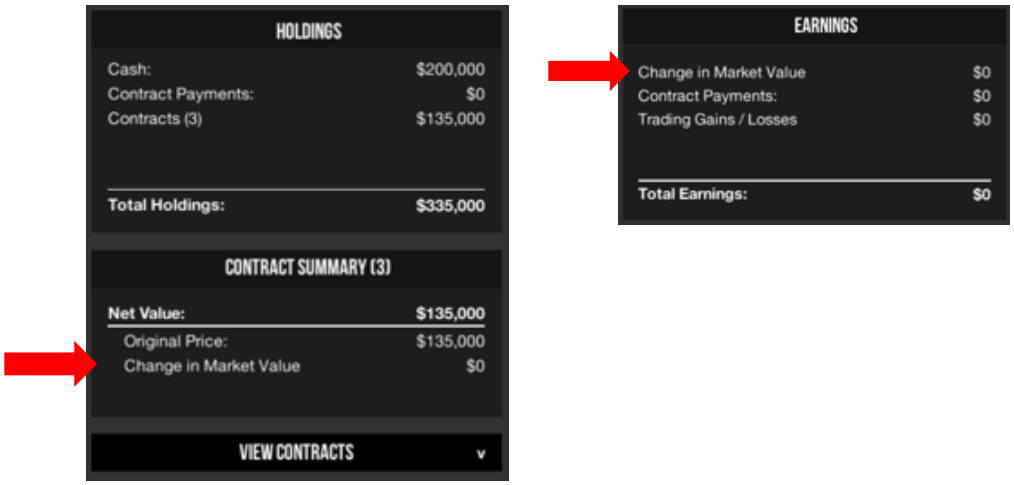
Note: Question reads "Please rate your performance in the prior round:" Participants given a seven-point range with numerical labels (-3 to +3) on each point, and end point labels "Very Bad" to "Very Good".

Panel C: Accounting Detail

Historical Cost

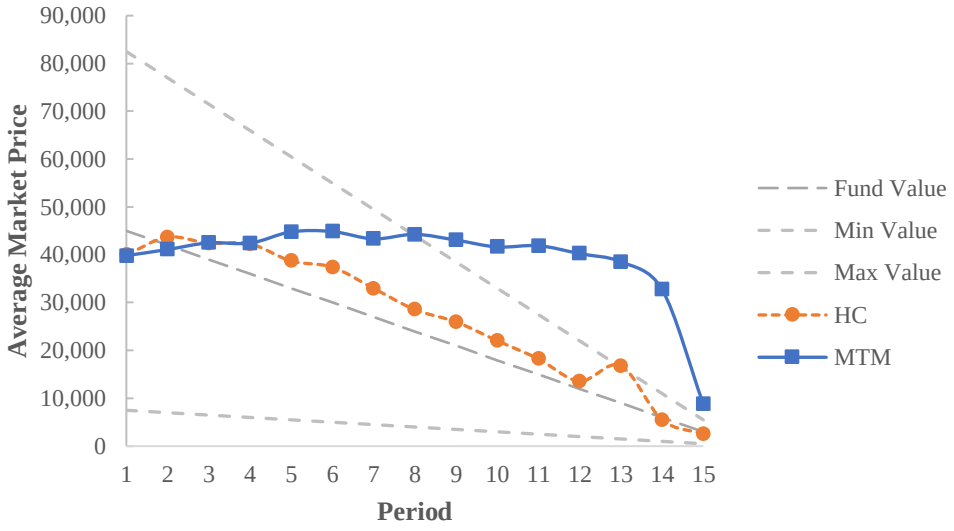


Mark-to-Market



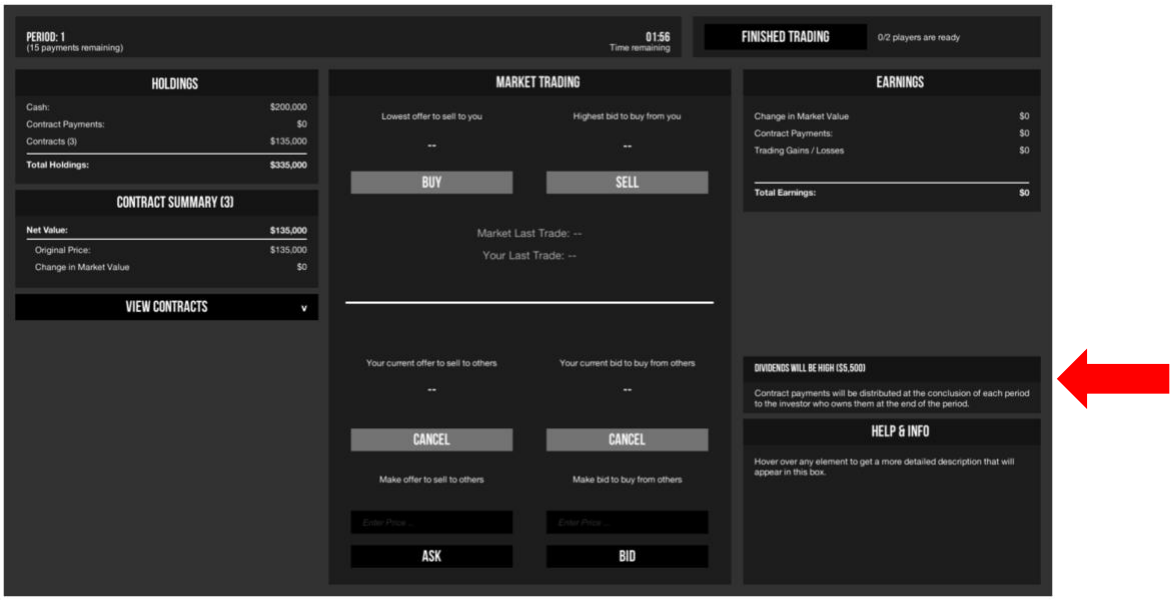
Notes: Under both accounting regimes, participants receive accounting information in the form of simplified financial statements including a balance sheet ('Holdings', left) and income statement ('Earnings', right). Accounting regime manipulates the method of assigning values to held assets, which is based either on an allocation of the original purchase price, decreased after each period ('Historical Cost', top), or on recent market prices, updated between periods (Mark-to-Market, below). Changes in contract values are also recorded in 'Earnings', either as 'Contract Expiration' (reflecting amortization in Historical Cost), or as 'Market Value Changes' (in mark-to-market).

FIGURE 2
Average Market Prices – Experiment One (8 Markets)



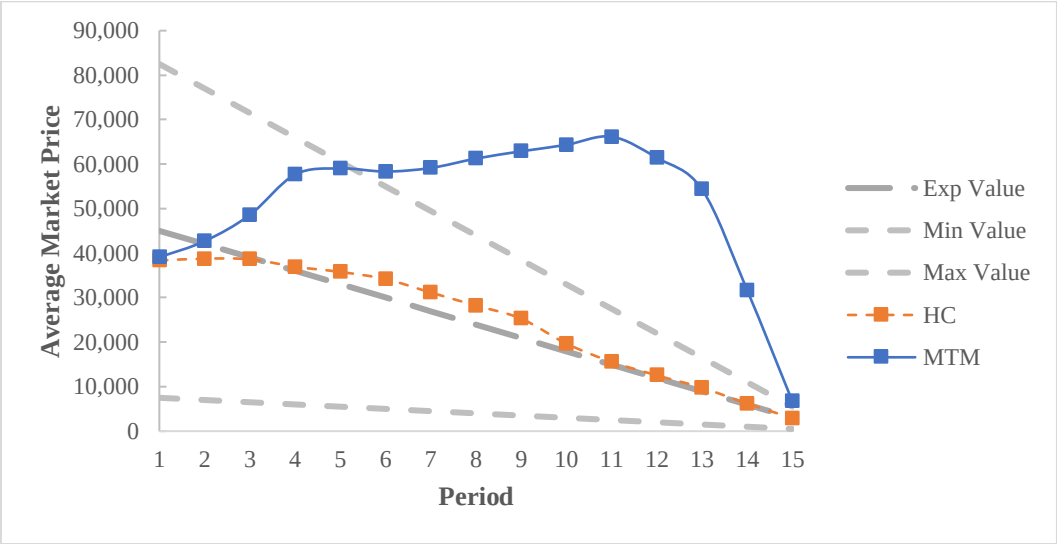
Notes: Average Market Prices are reported per period, averaged for each regime. Fundamental Value (dark grey) also reported, as are maximum values (if assets returned HIGH dividend in all remaining periods), and minimum values (if assets returned LOW dividend in all remaining periods).

FIGURE 3
Market Interface – Experiment Two



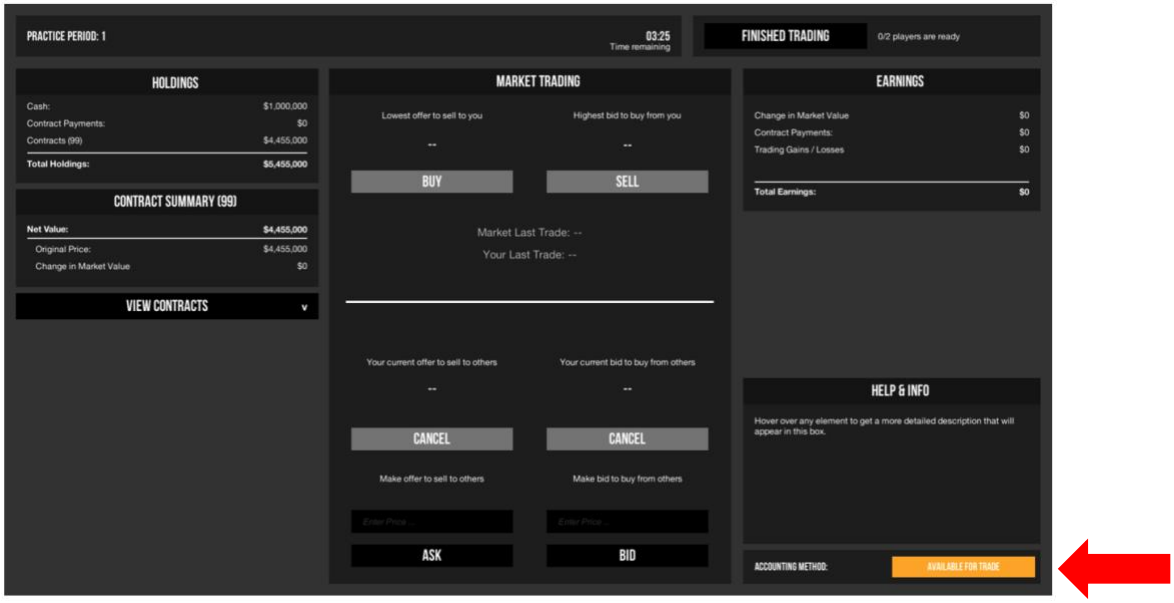
Notes: Dividend Announcement made at the 2:00 mark of each four-minute period. The value of the forthcoming dividend is announced. Dividend is paid between periods.

FIGURE 4
Average Market Prices – Experiment Two: Ex Dividend Setting (8 Markets)



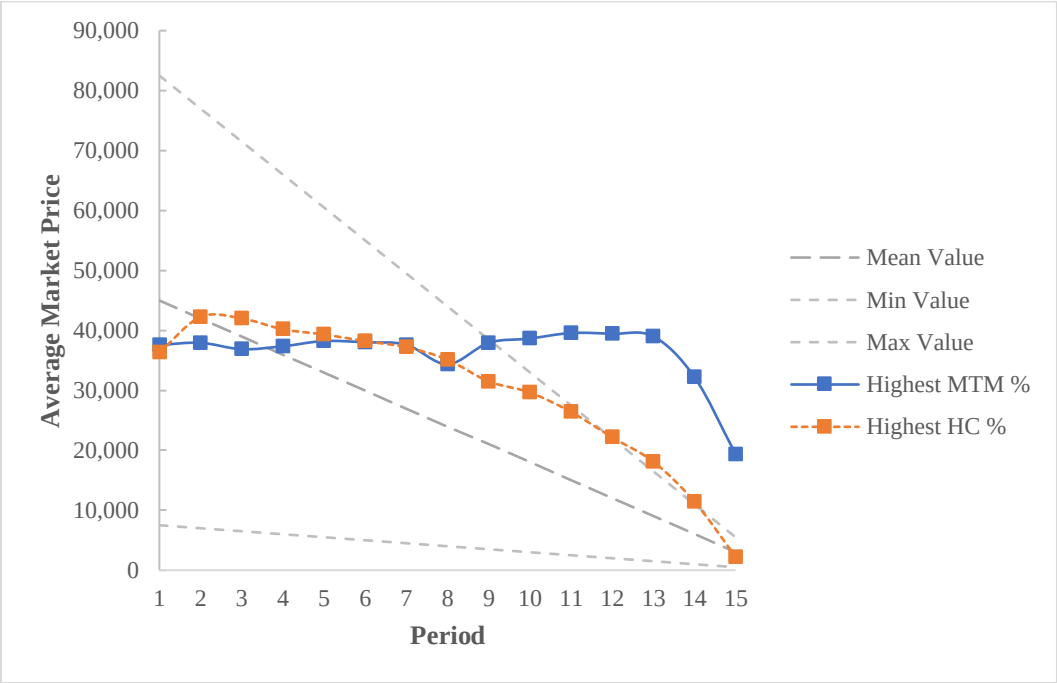
Notes: Average Market Prices are reported per period, averaged for each regime. Fundamental Value (dark grey) also reported, as are maximum values (if assets returned HIGH dividend in all remaining periods), and minimum values (if assets returned LOW dividend in all remaining periods).

FIGURE 5
Market Interface – Experiment Three



Notes: Accounting Method toggles between "Available for Trade" (MTM) and "Hold for Payments" (HC). If button is pressed, all financial information is restated under the new method.

FIGURE 6
Average Market Prices – Experiment Three: Traders Choose Regime (10 Markets)



Notes: Average Market Prices are reported per period, averaged the five markets with the highest % of HC trader time (solid) and the five markets with the highest % of MTM trader time (dashed). Fundamental Value (dark grey) also reported, as are maximum values (if assets returned HIGH dividend in all remaining periods), and minimum values (if assets returned LOW dividend in all remaining periods).

TABLE 1
Descriptive Statistics – Experiment One

Panel A: Individual-Level

Condition	n	Age [a]	% Male	Performance [a]	Performance Pay [a]
Overall	83	19.0 (1.6)	50.6%	4.07 (1.0)	15.42 (6.21)
HC	41	18.9 (1.3)	45.0%	3.94 (1.0)	15.49 (4.35)
MTM	42	19.0 (1.8)	56.1%	4.20 (1.0)	15.34 (7.73)

Notes: AGE is the age of participants. *MTM* is an indicator variable set 1 for the Mark-to-Market regime or 0 for Historical Cost (HC) regime. *n* is the number of traders. % PERCENT *MALE* reflects the percentage of participants who report their gender as male. *PERFORMANCE* is traders' response to the between-period question 'Please rate your performance in the prior round' (7-pt Likert-type, Very Good, Very Bad), averaged for all 15 periods. *PERFORMANCE PAY* reflects the variable portion of participants' compensation, based on their ending *Holdings (Cash, and Dividends).*

[a] Mean displayed above (standard deviation displayed in parentheses below)

Panel B: Market-Level

Condition	Avg. Traders[a]	Turns[a]	RD[a]	RAD[a]	RPD[a]	RPAD[a]	Haessel[a]	Out-of-Range[a]
Overall	10.5 (1.6)	5.9 (2.4)	0.39 (0.36)	0.45 (0.34)	0.70 (0.70)	0.77 (0.67)	0.58 (0.41)	3.13 (3.87)
HC	10.8 (1.3)	6.3 (3.2)	0.14 (0.12)	0.20 (0.06)	0.15 (0.14)	0.24 (0.09)	0.89 (0.10)	0.25 (0.50)
MTM	10.3 (2.1)	5.6 (1.7)	0.64 (0.35)	0.71 (0.31)	1.24 (0.57)	1.29 (0.57)	0.26 (0.35)	6.00 (3.56)

Notes: AVG. TRADERS is the number of traders participating in each market. *RAD ('Relative Absolute Deviation')* reflects unsigned differences between avg. trading prices and FV each period. *HAESSEL ('Haessel's R-Square')* is computed as the unadjusted R_2 from a regression of market price on FV. *OUT OF RANGE* is a count of periods where average price exceeds the maximum dividends that can be received (e.g. if assets yielded only high dividends for all remaining periods.) *RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower. *TURNS* is the total number of trades divided by number of assets in the market.

[a] Mean displayed above (standard deviation displayed in parentheses below)

TABLE 2
The Role of Earnings in Traders' Performance Self-Assessments – Experiment One

(1) $\text{Performance}_{it} = \alpha + \beta_1 \text{Earnings}_{it} + \beta_2 \text{Holdings}_{it} + \beta_3 \text{MTM}_{it} + \beta_4 \text{MTM} * \text{Earnings}_{it} + \beta_5 \text{MTM} * \text{Holdings}_{it} + \varepsilon_{it}$

	MTM Performance [a]	*HC* Performance [a]	*Pooled* Performance [a]
Earnings	0.073***	0.231***	0.231***
	(5.25)	(3.30)	(3.31)
Holdings	0.003	0.004	0.004
	(0.61)	(0.14)	(0.14)
MTM			0.220
			(0.21)
MTM*Earnings			-0.158**
			(-2.23)
MTM*Holdings			-0.001
			(-0.02)
Constant	4.077***	3.847***	3.847***
	(14.51)	(3.72)	(3.74)
n	615	621	1,236
Participant Clusters	41	42	83
Adj. R-Square	0.108	0.131	0.123

Notes: Coefficients per $10,000.

EARNINGS is the sum of *Dividends ('Contract Payments'), Trading Gains & Losses,* and either *Amortization ('Contract Expiration', Historical Cost)* or *Market Value Change (MTM),* measured for each participant at the end of each period. *HOLDINGS* reflects *Cash, Dividends,* and *Asset Carrying Values ('Net Values'),* measured for each participant at the conclusion of each period. *n* is the number of observations reflected in each row (traders at the individual-level, and markets at the market-level). *MTM* is an indicator variable set 1 when the accounting regime is Mark-to-Market or 0 when Historical Cost (HC). *PERFORMANCE* reflects traders' response to the between-period question 'Please rate your performance in the prior round' (7-pt Likert-type, Very Good, Very Bad). Regressions cluster by participant.

[a] Mean displayed above, (t-statistic displayed in parentheses below)

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 3
Traders' Emphasis of Accounting Information – Experiment One

(2) $\text{Performance}_{it} = \alpha + \gamma_1 \text{MVChange}_{it} + \gamma_2 \text{Amortization}_{it} + \gamma_3 \text{Dividends}_{it} + \gamma_4 \text{TradingGains}_{it} + \gamma_5 \text{MTM}_{it} + \gamma_6 \text{MTM} * \text{MVChange}_{it} + \gamma_7 \text{MTM} * \text{Amortization}_{it} + \gamma_8 \text{MTM} * \text{Dividends}_{it} + \gamma_9 \text{MTM} * \text{TradingGains}_{it} + \varepsilon_{it}$

	MTM Performance [a]	*HC* Performance [a]	*Pooled* Performance [a]
MV Change	0.058***	-0.014	-0.014
	(3.74)	(-0.60)	(-0.60)
Amort	-0.019	0.262**	0.262**
	(-0.29)	(2.17)	(2.18)
Dividends	0.173**	0.506***	0.506***
	(2.14)	(7.60)	(7.64)
Trading Gains	0.115***	0.171***	0.171***
	(5.38)	(4.00)	(4.02)
MTM			0.310
			(1.20)
MTM*MVChange			0.072***
			(2.62)
MTM*Amort			-0.281**
			(-2.06)
MTM*Dividends			-0.333***
			(-3.20)
MTM*TradingGains			-0.056
			(-1.19)
Constant	4.074***	3.764***	3.764***
	(23.75)	(19.40)	(19.51)
n	615	621	1,236
Participant Clusters	41	42	83
Adj. R-Square	0.126	0.185	0.158

Notes: AMORT is amortization that occurred each period for assets that each participant owns measured on straight-line basis (displayed only in HC condition). *DIVIDENDS* are payments each participant received each period. *MVCHANGE* is change in market values of all assets that participant owns in the period, computed for both conditions (but displayed only in MTM) by subtracting assets' new market value from that of prior period. *PERFORMANCE* reflects responses to 'Please rate your performance in the prior round' (7-pt, Very Good, Very Bad). *TRADINGGAINS* are gains/losses each participant experienced in present period. Regressions cluster by participant.

[a] Coefficients per $10,000 displayed above (t-statistic displayed in parentheses below)

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 4
Traders' Information Preferences – Experiment One

	MTM	*HC*	*Full Sample*
Preference [a]	0.38 (2.60)	-0.93 (2.60)	-0.27 (2.57)
% Prefer Dividend Info	34.1%	62.5%	48.1%
% Prefer Price Info	51.2%	32.5%	41.9%
No Preference	14.6%	5.0%	9.9%
n	41	40	81

Notes: MTM is an indicator variable set to 1 when the accounting regime is Mark-to-Market or 0 when Historical Cost (HC). *NO PREFERENCE* reflects % of participants who selected the scale midpoint (0). *PRICE* is the average trading price of assets in *period t* of market *m. PREFERENCE* reflects the average response (untransformed) to the 7 pt. Likert-type question "If you could choose one, which would you prefer to have? Knowledge of What Next Period's Contract Payment Would Be (-3), (-2), (-1), No Preference (0), (1), (2), Knowledge of What Next Period's Average Trading Price Would Be (3)". *% PERCENT PREFER DIVIDEND INFO* reflects % of participants who indicated some level of preference for Dividend Info ('Contract Payments') by selecting an option left of the midpoint (1), (2), or (3). *% PERCENT PREFER PRICE INFO* reflects % of participants who indicated some level of preference for Trading Prices by selecting an option right of the midpoint (1), (2), or (3).

[a] Mean displayed above, (standard deviation displayed in parentheses below)

TABLE 5
Market Mispricing – Experiment One

	RD [c]	RAD [c]	RPD [c]	RPAD [c]	Haessel [c]	Out-of- Range [c]
MTM	2.31** (0.02)	2.31** (0.02)	2.31** (0.02)	2.31** (0.02)	-2.31** (0.02)	2.48** (0.01)
Markets	8	8	8	8	8	8
df	1	1	1	1	1	1

Notes: HAESSEL ('Haessel's R-Square') is computed as the unadjusted R^2 from a regression of market price on FV. *MTM* is an indicator variable set 1 when the accounting regime is Mark-to-Market or 0 when Historical Cost (HC). *OUT OF RANGE* is a count of the number of periods where average price exceeds the maximum possible amount of dividends that could be received (e.g.if assets yielded only high dividends for all remaining periods). *RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *RAD ('Relative Absolute Deviation')* reflects unsigned differences between avg. trading prices and FV each period. *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower.

[a] Wilcoxon rank-sum *z*-score displayed above (*p*-value displayed in parentheses below). All results identical for Kruskal-Wallis Chi-Square.

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 6
Descriptive Statistics – Experiment Two

Panel A: Individual-Level

Condition	n	Age [a]	% Male	Performance [a]	Performance Pay [a]
Overall	91	18.9 (1.0)	45.6%	4.03 (1.0)	14.69 (7.56)
HC	47	18.9 (1.0)	47.8%	3.95 (1.1)	14.73 (7.05)
MTM	44	19.0 (1.0)	43.2%	4.11 (1.0)	14.66 (8.16)

Notes: AGE is the age of participants. *MTM* is an indicator variable set 1 for the Mark-to-Market regime or 0 for Historical Cost (HC) regime. *n* is the number of traders. % PERCENT *MALE* reflects the percentage of participants who report their gender as male. *PERFORMANCE* is traders' response to the between-period question 'Please rate your performance in the prior round' (7-pt Likert-type, Very Good, Very Bad), averaged for all 15 periods. *PERFORMANCE PAY* reflects the variable portion of participants' compensation, based on their ending *Holdings (Cash, and Dividends).*

[a] Mean displayed above (standard deviation displayed in parentheses below)

Panel B: Market-Level

Condition	*n*	RD[a]	RAD[a]	RPD[a]	RPAD[a]	Haessel[a]	Out-of-Range[a]	IPR[a]
Overall	8	0.54 (0.79)	0.63 (0.86)	0.71 (1.13)	0.88 (1.18)	0.66 (0.37)	2.50 (3.30)	1.35 (2.05)
HC	4	0.14 (0.06)	0.18 (0.03)	0.15 (0.14)	0.26 (0.03)	0.94 (0.04)	0.00 (0.00)	0.74 (0.28)
MTM	4	0.94 (1.01)	1.09 (1.09)	1.28 (1.46)	1.51 (1.49)	0.37 (0.32)	5.00 (2.94)	1.95 (2.95)

Notes: RAD ('Relative Absolute Deviation') reflects unsigned differences between avg. trading prices and FV each period. *HAESSEL ('Haessel's R-Square')* is computed as the unadjusted R^2 from a regression of market price on FV. *IPR* (*Implied Price Response)* is the ratio of actual price to expected price change following dividend announcements. Actual price change is computed by subtracting average trading price in the two minutes following the dividend announcement from the average trading price in the two minutes prior to dividend announcement. Expected response is computed by subtracting the announced dividend (high or low) from the risk-weighted expected value ($3,000). *OUT OF RANGE* is a count of periods where average price exceeds the maximum dividends that can be received (e.g. if assets yielded only high dividends for all remaining periods.) *RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower.

[a] Mean displayed above (standard deviation displayed in parentheses below)

TABLE 7
Traders' Emphasis of Accounting Information – Experiment Two

(2) $\text{Performance}_{it} = \alpha + \gamma_1 \text{MVChange}_{it} + \gamma_2 \text{Amortization}_{it} + \gamma_3 \text{Dividends}_{it} + \gamma_4 \text{TradingGains}_{it} + \gamma_5 \text{MTM}_{it} + \gamma_6 \text{MTM} * \text{MVChange}_{it} + \gamma_7 \text{MTM} * \text{Amortization}_{it} + \gamma_8 \text{MTM} * \text{Dividends}_{it} + \gamma_9 \text{MTM} * \text{TradingGains}_{it} + \varepsilon_{it}$

	MTM Performance [a]	*HC* Performance [a]	*Pooled* Performance [a]
MV Change	0.011***	0.038*	0.098***
	(2.54)	(1.42)	(2.77)
Amort	-0.024	0.588***	0.106*
	(-0.34)	(5.34)	(1.62)
Dividends	0.203***	0.698***	0.512***
	(4.03)	(9.48)	(7.11)
Trading Gains	0.086***	0.161***	0.157***
	(3.63)	(5.01)	(4.59)
MTM			0.208
			(0.55)
MTM*MVChange			0.081
			(2.79)
MTM*Amort			-0.089***
			(-2.50)
MTM*Dividends			-0.264***
			(-2.76)
MTM*TradingGains			-0.065*
			(-1.57)
Constant	3.658***	3.916***	3.648***
	(10.05)	(18.66)	(19.34)
n	662	705	1,236
Participant Clusters	45	47	92
Adj. R-Square	0.098	0.235	0.147

Notes: AMORT is amortization that occurred each period for assets that each participant owns measured on straight-line basis (displayed only in HC condition). *DIVIDENDS* are payments each participant received each period. *MVCHANGE* is change in market values of all assets that participant owns in the period, computed for both conditions (but displayed only in MTM) by subtracting assets' new market value from that of prior period. *PERFORMANCE* reflects responses to 'Please rate your performance in the prior round' (7-pt, Very Good, Very Bad). *TRADINGGAINS* are gains/losses each participant experienced in present period. Regressions cluster by participant.

[a] Coefficients per $10,000 displayed above (t-statistic displayed in parentheses below)

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 8
Market Mispricing – Experiment Two

	RD [c]	RAD [c]	RPD [c]	RPAD [c]	Haessel [c]	Out-of-Range [c]	Implied Price Response [c]
MTM	2.31** (0.02)	2.31** (0.02)	1.73* (0.08)	2.31** (0.02)	-2.31** (0.02)	2.46** (0.01)	2.31** (0.02)
Markets	8	8	8	8	8	8	8
df	1	1	1	1	1	1	1

Notes: HAESSEL ('Haessel's R-Square') is computed as the unadjusted R^2 from a regression of market price on FV. *Implied Price Response* is the ratio of actual price to expected price change following dividend announcements. Actual price change is computed by subtracting average trading price in the two minutes following the dividend announcement from the average trading price in the two minutes prior to dividend announcement. Expected response is computed by subtracting the announced dividend (high or low) from the risk-weighted expected value ($3,000). *MTM* is an indicator variable set 1 when the accounting regime is Mark-to-Market or 0 when Historical Cost (HC). *OUT OF RANGE* is a count of the number of periods where average price exceeds the maximum possible amount of dividends that could be received (e.g. if assets yielded only high dividends for all remaining periods). *RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *RAD ('Relative Absolute Deviation')* reflects unsigned differences between avg. trading prices and FV each period. *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower.

[a] Wilcoxon rank-sum *z*-score displayed above (*p*-value displayed in parentheses below). All results identical for Kruskal-Wallis Chi-Square.

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 9
Descriptive Statistics – Experiment Three

Panel A: Individual-Level

Condition	n	Age [a]	% Male	Performance [a]	Performance Pay [a]	Regime Swaps [a]	HC Periods [a]	MTM Periods [a]
Overall	108	18.8 (1.4)	50.0%	3.92 (1.1)	15.34 (10.31)	35.5 (55.6)	4.96 (5.66)	4.73 (5.38)
Seeded HC	56	19.1 (1.4)	51.8%	3.93 (1.0)	15.34 (6.95)	37.2 (62.6)	7.77 (5.72)	1.80 (3.18)
Seeded MTM	52	18.5 (1.5)	48.1%	3.91 (1.1)	15.34 (13.08)	33.0 (45.0)	1.94 (3.73)	7.88 (5.51)

Notes: AGE is the age of participants. *HC PERIODS* reflects the number of periods classified as 'HC'. Periods are classified as HC if the trader used HC for the entire period. *MTM PERIODS* reflects the number of periods classified as 'MTM'. Periods are classified as MTM if the trader used MTM for the entire period. % *PERCENT MALE* reflects the percentage of participants who report their gender as male. *n* is the number of traders. *PERFORMANCE* is tradres' response to the between-period question 'Please rate your performance in the prior round' (7-pt Likert-type, Very Good, Very Bad), averaged for all 15 periods. *PERFORMANCE PAY* reflects the variable portion of participants' compensation, based on their ending *Holdings (Cash, and Dividends). REGIME SWAPS* is a simple count of the number of times that the trader changed between accounting regimes. *SEEDED HC* is an indicator variable set 1 for markets that begin initialized to the Historical Cost regime. *SEEDED MTM* is an indicator variable set 1 for markets that begin initialized to the Mark-to-Market regime.

[a] Mean displayed above (standard deviation displayed in parentheses below)

Panel B: Market-Level

Condition	n	Avg. Traders[a]	Turns[a]	RD[a]	RAD[a]	RPD[a]	RPAD[a]	Haessel[a]	Out-of-Range[a]	MTM Proportion [a]
Overall	10	10.8 (1.5)	9.4 (3.8)	0.38 (0.27)	0.49 (0.24)	0.84 (0.67)	0.94 (0.67)	0.58 (0.30)	4.3 (3.0)	32.1% (21.8%)
Seeded HC	10	11.2 (1.3)	10.2 (0.8)	0.26 (0.34)	0.36 (0.26)	0.38 (0.52)	0.50 (0.46)	0.71 (0.24)	2.6 (3.6)	12.3% (3.6%)
Seeded MTM	10	10.4 (1.7)	8.6 (5.5)	0.50 (0.12)	0.62 (0.13)	1.30 (0.47)	1.38 (0.57)	0.45 (0.31)	6.0 (0.7)	52.0% (8.3%)

Notes: AVG. TRADERS is the number of traders participating in each marke*t. RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *HAESSEL ('Haessel's R-Square')* is computed as the unadjusted R^2 from a regression of market price on FV. *MTM PROPORTION* reflects the proportion of trader-periods classified as MTM as a proportion of the total number of trader-periods in the market. Trader-periods are classified as MTM when the corresponding trader employs MTM for the entire period. *OUT OF RANGE* is a count of periods where average price exceeds the maximum dividends that can be received (e.g. if assets yielded only high dividends for all remaining periods.) *RAD ('Relative Absolute Deviation')* reflects unsigned differences between avg. trading prices and FV each period. *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower. *TURNS* is the total number of trades divided by number of assets in the market.

TABLE 10
Traders' Emphasis of Accounting Information – Experiment Three

(3) $\text{Performance}_{it} = \alpha + \gamma_1 \text{MVChange}_{it} + \gamma_2 \text{Amortization}_{it} + \gamma_3 \text{Dividends}_{it} + \gamma_4 \text{TradingGains}_{it} + \gamma_5 \text{HCPeriod}_{it} + \gamma_6 \text{MTMPeriod}_{it} + \gamma_7 \text{HCPeriod} * \text{MVChange}_{it} + \gamma_8 \text{HCPeriod} * \text{Amortization}_{it} + \gamma_9 \text{HCPeriod} * \text{Dividends}_{it} + \gamma_{10} \text{HCPeriod} * \text{TradingGains}_{it} + \gamma_{11} \text{MTMPeriod} * \text{MVChange}_{it} + \gamma_{12} \text{MTMPeriod} * \text{Amortization}_{it} + \gamma_{13} \text{MTMPeriod} * \text{Dividends}_{it} + \gamma_{14} \text{MTMPeriod} * \text{TradingGains}_{it} + \varepsilon_{it}$

	Pooled Sample [a]
MV Change	0.67***
	(2.42)
Amort	1.74**
	(1.98)
Dividends	5.03***
	(6.78)
Trading Gains	1.08***
	(3.39)
HC Period	0.52***
	(2.91)
MTM Period	0.03
	(0.18)
HC Period*MVChange	-0.97***
	(-3.02)
HC Period*Amort	1.60*
	(1.53)
HC Period*Dividends	-0.88
	(-0.98)
HC Period*TradingGains	0.37
	(0.85)
MTM Period*MVChange	-0.01
	(-0.44)
MTM Period*Amort	-0.13**
	(-2.20)
MTM Period*Dividends	-0.22***
	(-3.55)
MTM Period*TradingGains	-0.14
	(-0.50)
Constant	-0.42***
	(-2.70)
n	1,616
Participant Clusters	108
Adj. R-Square	0.151

Notes: AMORT is amortization that occurred each period for assets that each participant owns measured on straight-line basis (displayed only in HC condition). *DIVIDENDS* are payments each participant received each period. *HC PERIOD* is an indicator variable set to 1 for trader-periods classified as HC, 0 otherwise. Trader-periods are classified as HC when the corresponding trader uses HC for the entire period. *MTM PERIOD* is an indicator variable set to 1 for trader-periods classified as MTM, 0 otherwise. Trader-periods are classified as MTM when the corresponding trader uses MTM for the entire period. *MVCHANGE* is change in market values of all assets that participant owns in the period, computed for both conditions (but displayed only in MTM) by subtracting assets' new market value from that of prior period. *PERFORMANCE* reflects responses to 'Please

rate your performance in the prior round' (7-pt, Very Good, Very Bad). *TRADINGGAINS* are gains/losses each participant experienced in present period. Regressions cluster by participant.

[a] Coefficients per $10,000 displayed above (t-statistic displayed in parentheses below)

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

TABLE 11
Market Mispricing – Experiment Three

	RD [a]	RAD [a]	RPD [a]	RPAD [a]	Haessel [a]	Out-of- Range [a]
MTM Proportion	0.58* (1.57)	0.65*** (2.38)	2.23*** (3.09)	2.16*** (2.79)	-0.55 (-1.14)	7.59** (1.98)
Intercept	0.19 (1.09)	0.28** (2.08)	0.13 (0.45)	0.24 (0.95)	0.75*** (5.34)	1.86 (0.97)
Markets	10	10	10	10	10	10
Bootstrap Iterations [b]	500	500	500	500	500	500
Adjusted R-Square	0.116	0.274	0.459	0.430	0.056	0.212

Notes: HAESSEL ('Haessel's R-Square') is computed as the unadjusted R^2 from a regression of market price on FV. *MTM PROPORTION* reflects the proportion of trader-periods classified as MTM as a proportion of the total number of trader-periods in the market. Trader-periods are classified as MTM when the corresponding trader employs MTM for the entire period. *OUT OF RANGE* is a count of the number of periods where average price exceeds the maximum possible amount of dividends that could be received (e.g. if assets yielded only high dividends for all remaining periods). *RD ('Relative Deviation')* reflects signed differences between avg. trading prices and fundamental value (FV). *RAD ('Relative Absolute Deviation')* reflects unsigned differences between avg. trading prices and FV each period. *RPD ('Relative Period Deviation')* reflects signed differences between avg. trading prices and FV. *RPAD ('Relative Period Absolute Deviation')* reflects the unsigned differences between avg. trading prices and FV each period; For *RPD* and *RPAD*, prices in period *t* are compared to the FV in period *t;* thus, $1 of mispricing has a greater impact on these measures in later periods when FV is lower.

[a] coefficients displayed above (*z*-score displayed in parentheses below).

[b] All iterations conducted via Stata, random seed set to (1)

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level