

Human judgments of executive teams' human capital

Abstract

We provide the first large-sample evidence on whether human-generated judgments of the human capital of a firm's executive team are informative about future performance. Using a novel dataset from the banking industry, we find that banks with better human capital have fewer future non-performing loans and are less likely to fail. These results are robust to holding the overall ex-ante health of the bank constant and including bank fixed effects. We further find that better human capital is associated with more intense loan monitoring and timelier loan loss recognition. Finally, we find that the association between human capital and future performance is amplified when perceived human capital diverges from the bank's overall performance and when macroeconomic uncertainty is higher.

1. Introduction

The Securities and Exchange Commission’s recent update to human capital disclosure requirements attests to the widespread perception that top executives’ human capital is critical to a firm’s behavior and performance (e.g., Chambers et al. 1998).¹ However, human capital is by its very nature multi-dimensional and intangible and is therefore very difficult to quantify holistically (e.g., Batish et al. 2021). Reflecting this measurement challenge, the academic literature has examined the role of human capital through an enormous array of variables, including manager fixed effects, individuals’ innate characteristics, experiences and on- and off-the-job behaviors, firm outcomes and executive communications, among other characteristics (Bertrand 2009; Hanlon et al. 2022). Measurement of human capital is further complicated by the fact that managerial influences on firm outcomes are a joint product of top executive groups, their composition, and the demands placed on them (Finkelstein et al. 2009). These challenges have resulted in mixed and confusing findings in prior studies (Hambrick et al. (2015) and made it difficult to formulate precise conclusions about the role of human capital in firm performance.

In this paper, we investigate whether external stakeholders’ assessments of human capital are informative of future performance as well as the channels through which human capital influences firm performance. We exploit the setting of a single industry that is heavily dependent on human capital and also offers a large sample of human capital assessments based on a uniform rating system. Specifically, we focus on the U.S. banking sector and use confidential CAMELS ratings from over 150,000 bank examinations from 1993 to 2017. CAMELS ratings are the primary output produced by bank supervisors following on-site safety and soundness examinations and are available for every

¹ “Modernization of Regulation S-K Items 101, 103, and 105,” Rule 33-10825 (November 9, 2020), available at: <https://www.sec.gov/rules/final/2020/33-10825.pdf>. It states that companies must “provide a description of the registrant’s human capital resources, including [] any human capital measures or objectives that management focuses on in managing the business, to the extent such disclosures would be material to an understanding of the registrant’s business taken as a whole.”

commercial bank regardless of charter, size, or publicly traded status. CAMELS is an acronym that stands for the six observable dimensions by which examiners assess banks' status: capital adequacy (C), asset quality (A), managerial quality (M), earnings quality (E), liquidity (L), and sensitivity to market risk (S) (Agarwal, Lucca, Seru, and Trebbi 2014; Gopalan 2022). While examiners incorporate hard information from publicly observable financial reports in their assessments, prior research provides evidence that CAMELS ratings also embed significant unobservable information about the health of a bank, including private supervisory (soft) information and unobservable proprietary information.²

We measure the human capital of the top executive team based on the bank's M component rating.³ The M rating reflects bank examiners' overall assessment of the knowledge, character and leadership capabilities of executives, including the capabilities of the management team to operate all facets of the bank's business, foster a culture that promotes safe and effective operation, adhere to laws and regulations, and respond to potential stress in future periods.⁴ We document that M ratings are predictive of future bank performance, over and above observable hard information contained in financial reports and unobservable private information contained in other components of CAMELS ratings. This is consistent with M ratings reflecting unique information gleaned from supervisors' onsite observations and direct interactions with the management team. We also find that human capital is relatively more important for performance during times of high economic uncertainty. Finally, we provide evidence that higher human capital is associated with timelier loan loss provisioning and greater loan monitoring effort.

² For example, Gaul and Jones (2021), Deyoung, Flannery, Lang, and Sorescu (2001), Hirtle and Lopez (1999) and Peek, Rosengren, and Tootell (1999).

³ The composite CAMELS rating, and its component ratings, are expressed through a numerical scale of 1 through 5, with 1 being the highest rating, requiring the least degree of concern, and 5 being the lowest rating, requiring the highest degree of supervisory concern. To enhance expositional, we invert the M-rating and other CAMELS ratings so that higher values are associated with better ratings. We will use the terms M ratings (CAMELS) and human capital (fundamentals) interchangeably throughout the paper with the understanding that we have inverted the ratings.

⁴ The M component evaluates "the capability and performance of management and the board of directors"; and should reflect this executive teams' "ability in relation to all aspects of banking operations, as well as other financial-service activities the institution is involved in" (FRB 2020).

Our focus on the banking sector offers several advantages for examining human capital relative to the multi-industry studies common in the literature. First, U.S. regulations require the assignment of standardized CAMELS ratings to each bank during full-scope bank examinations, including an M rating assessment of the executive group's human capital. While M ratings provide a direct measure of human capital, the availability of the CAMELS composite rating further allows us to control for private information held by examiners and isolate the incremental effects of human capital on performance. Second, business models, strategic priorities, competitive and regulatory environments, value drivers and risks can vary significantly across industries, and may therefore place unique demands on the skills, knowledge, experiences and innate characteristics of managers. However, bank examiners tailor the M ratings we use to proxy for human capital to the specific strategic, risk management and operational considerations unique to the banking sector. Third, the banking industry is heavily reliant upon human capital. A rich literature points to the benefits and the role of relationship lending in shaping bank's business decisions and credit allocation (Petersen and Rajan 2002). This further enhances our ability to isolate the incremental effect of human capital on firm performance in this particular setting.

While our discussion thus far has presumed that bank examiners are able to produce judgments of human capital that are informative about future performance, it is not *ex-ante* clear that this is the case. A large body of work suggests that the ability of humans to make informative judgments about other people can be systematically distorted (e.g. Bertrand and Mullainathan 2004; Kahneman, Slovic, Slovic and Tversky 1982; Goldin and Rouse 2000). Measurement challenges also suggest that the value of human capital may show up only indirectly in future corporate results. For example, some papers treat executive teams' human capital as a "black-box" and attempt to extract information about managerial ability from realized performance (e.g., Demerjian, Lev, and McVay 2012). Further, revolving doors may give examiners incentives to use their discretion to distort regulatory assessments

(e.g. Shive and Forster, 2016). Regulators may also cater to management because they depend on managers for much of the information they need to do their job properly, and may additionally be constrained by inadequate funding and information asymmetry (Laffont 1994; Zingales 2012).

We acknowledge that fully distinguishing the role of human capital from the assessment capabilities of the regulators is not possible. However, our empirical specifications allow us to examine whether examiners' human capital judgments have incremental information over and above the private information about fundamentals embedded in other CAMELS components, an extensive set of bank-specific hard information, and time-invariant characteristics of the bank.

We begin our analysis by providing descriptive evidence about the extent to which the individual components of the CAMELS rating reflect soft versus hard information. We regress each component rating of the CAMELS system on an extensive vector of financial statement-based bank characteristics. We then compare the explanatory power of this hard information for each component rating and find that financial reporting information explains significantly less variation in the M rating relative to other CAMEL components. This preliminary evidence suggests that examiners incorporate unique information and judgment into their evaluations of human capital, and that the M rating is not merely a deterministic function of observable performance. This evidence is also consistent with prior literature suggesting that the M component of the CAMELS system is associated with greater judgment and discretion than the other components (Agarwal et al. 2014).

We next directly examine whether the M rating is informative about future performance as reflected in future non-performing loans and bank failure. Non-performing loans are an indication of the bank's asset quality and one of the most important measures of bank performance (Goldsmith-Pinkham, Hirtle, and Lucca 2016). Further, Bhat and Desai (2020) posit that the share of non-performing loans to assets reflects the ability of the bank to screen and originate high quality loans, the most fundamental aspect of banks' operations. Second, bank failure represents the default of the

financial institution, wherein federal regulators seize control of the institution and sell its assets to other bidders (Granja, Matvos, and Seru, 2017). Our empirical tests allow us to examine whether, ceteris paribus, banks with better human capital have fewer future non-performing loans and are less likely to fail.

We indeed find a significantly negative association between banks' human capital (i.e., the inverted M component rating) and both future non-performing loans and future bank failure. This is consistent with superior human capital being associated with better future loan portfolio performance and lower likelihood of extreme left-tail events, such as bank failure. In terms of economic magnitude, our baseline specification suggests that a deterioration in human capital of one within-fixed-effect standard deviation increase in the M rating is associated with an increase of approximately 3.8% (2.7%) of the within-fixed-effect standard deviation of future non-performing loans (future bank failure).⁵

We extend this analysis by examining how disparities between a bank's human capital and its fundamentals influence future bank performance. For example, greater human capital is likely of greater importance for poorer performing banks that may operate in depressed economic areas, or when management seeks to remedy faltering fundamentals during economic downturns. We construct variables indicating if the banks' human capital is assessed as superior to the overall condition of the bank as reflected by the composite CAMELS rating ((i.e., $M > \text{composite CAMELS}$) and if it is worse than the composite (i.e., $M < \text{composite CAMELS}$).⁶ This research design allows us to hold constant not only banks' observable performance and financial health, but also any private information held by bank examiners that is orthogonal to human capital. This design feature further differentiates our study from prior work which measures human capital based on the abnormal observable performance

⁵ We assess the economic magnitude of our findings by calculating the standard deviation of the independent and dependent variables within fixed-effects groups using the *sumhdfe* Stata package (available from: <https://github.com/ed-dehaan/sumhdfe>) following deHaan (2021). The within-fixed-effect distribution of variables differs from the pooled distribution reported in Table 1.

⁶ Recall that we have inverted the CAMELS so that higher values imply better human capital and bank fundamentals.

of the firm (e.g., Demerjian et al. 2012). We find that when human capital exceeds (falls short of) the composite rating, future non-performing loans and the likelihood of bank failure are significantly lower (higher). This is consistent with higher levels of executive group human capital overcoming the limitations associated with lower fundamentals. On the other hand, lower human capital leads to lower future performance, even under circumstances when bank fundamentals are superior.

In our next analysis, we exploit variation in macroeconomic conditions to provide further insights into conditions when human capital is relatively more important for future bank performance. Specifically, we examine the role of banks' human capital during periods of greater macroeconomic uncertainty. When economic uncertainty is high, there is considerable risk that future macroeconomic events and developments will negatively affect future payoffs from their current decisions. Therefore, greater uncertainty may dampen managers' ability to effectively operate the firm and generate positive performance. On the other hand, banks with superior human capital may be better equipped to successfully navigate and reap rewards during periods of macroeconomic uncertainty compared to banks with worse human capital. Consistent with this latter argument, we find evidence that banks with greater human capital are incrementally less likely to fail and have lower future non-performing loans during periods of greater macroeconomic uncertainty.

While our previous analyses provide evidence consistent with human capital being a powerful determinant of future bank performance, our final set of analyses explores channels through which human capital affects bank operations. First, we examine the role of loan loss recognition timeliness in promoting bank transparency. Prior research documents that delayed loan loss recognition is associated with more risk shifting behavior (Bushman and Williams 2012), reduced lending during economic downturns (Beatty and Liao 2011), and greater contribution of a bank to systemic risk (Bushman and Williams 2015). Delayed loan loss recognition may also derive from a bank's inability to assess loan portfolio quality due to low managerial talent or because banks have poor credit risk

modelling systems (e.g., Bhat, Ryan and Vyas 2018). Second, we examine the role of loan screening and monitoring. Bhat and Desai (2020) argue that salary expense as a fraction of total non-interest income captures the quality and quantity of labor input into loan screening and monitoring activities. We find that superior human capital is associated with more timely recognition of loan losses and more intensive loan screening and monitoring. In terms of economic magnitude, our results indicate that a deterioration in human capital of one within-fixed-effect standard deviation is associated with a decrease of approximately 1.6% (1.0%) of the within-fixed-effect standard deviation of future loan monitoring (loan loss timeliness).

We make several contributions to the growing literature examining the role of top executives' human capital in shaping firms' behavior and performance. First, we examine a setting that allows us to overcome, at least partially, the significant challenges involved in measuring human capital (e.g., Batish et al. 2021; Hanlon et al. 2022). Using a large sample of bank regulatory assessments of human capital, we provide evidence that the human capital of banks' top executive groups is positively associated with banks' future performance. Crucially, our setting allows us to control for the extensive private information that bank examiners impound in the other components of CAMELS ratings, allowing us to isolate the unique information that underpins the examiners' human capital assessments. Second, we provide novel evidence on conditions under which human capital is relatively more important for future bank performance, and show that human capital is relatively more important when human capital diverges from the fundamentals of the bank and when the bank faces greater macroeconomic uncertainty. Third, we provide new insight into the channels through which human capital influences performance given our finding that human capital is positively associated with timelier loan loss recognition and higher investments in loan screening and monitoring. Finally, our results demonstrate that, despite considerable biases to the contrary, humans are able to judge the human capital of firms' executive team in highly opaque settings, and that these judgments are

informative of future performance. While our results are clearly relevant for the banking literature and bank regulators, we believe this study also contributes to the larger efforts by regulators and investors seeking better measures of human capital and a deeper understanding of how human capital impacts firm behavior, strategies and performance.

2. Background and Setting

We examine whether external stakeholders' assessments of human capital are informative of future performance by studying the banking industry. This setting provides several distinct advantages over a cross-industry study on how subjective evaluations of human capital are developed. While the process of supervising banks rests upon formal rules developed by three main bank regulators (The Office of the Comptroller of the Currency (OCC), The Federal Deposit Insurance Corporation (FDIC), and the Board of Governors of the Federal Reserve System (FRB)), ultimate authority in determining bank performance and rating human capital rests with local examiners.

Local examiners are delegated monitors stationed at field offices and reserve banks throughout the country. The regulatory process includes combining off-site monitoring with on-site examinations in order to assess bank safety and soundness. While safety and soundness may have different interpretations for each stakeholder, overall, it refers to actions and decisions at the commercial bank that reduce the likelihood of insolvency. Through their delegated monitoring efforts, examiners develop ratings that summarize expectations about bank performance and risk across several different dimensions: capital adequacy (C), asset quality (A), management (M), earnings (E), liquidity (L), sensitivity to market risk (S), and a composite summary measure of overall performance and risk.⁷ Ratings are scored from 1 to 5. For example, a rating of 1 is given to a bank with low levels of risk or

⁷ The bank's composite rating is not a simple function (i.e., average) of the individual component ratings.

high expected performance along a particular dimension. Conversely, a rating of 5 is given to a bank with high risk or low level of expected performance. Collectively, this rating system is referred to by its acronym, CAMELS, and comprises the primary output from periodic bank examinations.

Most importantly for our study, the M component rating reflects banks examiners' assessment of the capability of management to manage all aspects of banking operations and any other financial service activities in which the institution is involved (FRB 2020). Additionally, prior literature provides evidence that the M component rating is particularly subject to examiners' discretion and "soft" information. Specifically, Agarwal et al. (2014) find the M ratings change the most between rotations of regulatory agencies, indicative of heightened subjectivity. Examiner manuals instruct local supervisors evaluate "the capability of the board of directors and management, in their respective roles, to identify, measure, monitor, and control the risks of an institution's activities, and to ensure a financial institution's safe, sound, and efficient operation" (FRB, 2018). These instructions provide concrete evidence that the M rating is meant to evaluate the quality of human capital within an organization. In particular, it is meant to capture the ability of its leadership to operate a bank in a prudent manner. Moreover, the evaluation of human capital quality within a bank is heavily subjective and is not a deterministic function based on the bank's observable performance.

3. Sample and Research Design

3.1 Sample

We construct a unique panel dataset for our analysis using publicly available and confidential data sources. We gather supervisory assessments of bank performance from the National Information Center (NIC), a data repository maintained by federal banking regulators. In addition to recording the numeric assessments assigned to banks after each bank examination, the NIC repository also contains the precise dates of bank examinations. While NIC contains data concerning bank examinations back to the 1980s (Gopalan 2022), we follow Agarwal et al. (2014) and begin our sample in 1991, when

NIC's examination records became more complete. In our final dataset, we use ratings from over 180,000 bank examinations.

We combine NIC data with publicly available information in the form of Reports of Condition and Income filings (i.e., Call Reports). A unique feature of the banking industry is that all commercial banks, regardless of charter, size, and listed status, must submit quarterly financial information that summarize balance sheet composition, income, and asset quality. The availability of Call Report filings allows us to control for a significant amount of information available to the examiners, a feature that is likely unavailable in many other settings or industries.

3.2 Research Design

We examine the association between examiners' human capital assessments (M ratings) and future bank outcomes by using the following regression model:

$$\begin{aligned}
 Outcome_{i,t+x} = & \alpha_1 Human\ Capital_{it} + \alpha_2 Log(1 + Assets_{i,t-1}) + \alpha_3 \frac{Equity_{i,t-1}}{Assets_{i,t-1}} + \alpha_4 \frac{C\&I_{i,t-1}}{Assets_{i,t-1}} \\
 & + \alpha_5 \frac{RE_{i,t-1}}{Assets_{i,t-1}} + \alpha_6 \frac{Ag_{i,t-1}}{Assets_{i,t-1}} + \alpha_7 \frac{Consumer_{i,t-1}}{Assets_{i,t-1}} + \alpha_8 \frac{LLR_{i,t-1}}{Assets_{i,t-1}} \\
 & + \alpha_9 \frac{OREO_{i,t-1}}{Assets_{i,t-1}} + \alpha_{10} \frac{Cash_{i,t-1}}{Assets_{i,t-1}} + \alpha_{11} \frac{Net\ Income_{i,t-1}}{Assets_{i,t-1}} + \alpha_i + \alpha_{st} + \alpha_c \\
 & + \epsilon
 \end{aligned} \tag{1}$$

In equation (1) above, the variable *Outcome* represents one of two measures of future bank performance. First, we measure future non-performing loans scaled by total assets two years after the bank examination (*Non-Performing Loans*). Non-performing loans provide an indication of the extent to which the bank's loan portfolio includes borrowers that are not current on their loan payments. Greater non-performing loans suggest the bank's future performance is poor. The quality of the loan portfolio affects multiple aspects of bank performance, including earnings and capital adequacy. Recent evidence also shows that the majority of bank examination report exposition and discussion focuses on the quality of banks' loan portfolios (Goldsmith-Pinkham et al. 2016).

Second, we construct an indicator variable equal to one if the bank fails over the two-year period following a bank examination (*Failure*). This analysis allows us to determine whether evaluations of the bank’s human capital are informative for extreme left-tail events, in addition to more continuous measures of future performance.

Our main independent variable, *Human Capital*, is the inverse of the M component rating assigned by bank examiners corresponding to the on-site bank examination at time t . Thus, as *Human Capital* increases, it represents an improvement in human capital as evaluated by bank examiners. If regulators’ assessments of human capital are informative of future performance, we expect a negative relation between *Human Capital* and both *Non-Performing Loans* and *Failure*.

We measure other control variables as of the most recent Call Report filing date relative to the bank examination date ($t - 1$). Control variables are intended to capture other factors that may also influence outcome variables, such as bank size, agricultural loan exposure, consumer loan exposure, real estate loan exposure, commercial loan exposure, poorly performing loans, earnings, cash, and capital adequacy. Figure 1 presents a diagram of our research design.

In addition, we include three sets of fixed effects to control for unobserved heterogeneity which may affect our inferences. The inclusion of bank fixed effects, α_i , ensures that our estimates are not biased due to invariant bank characteristics, such as bank “type”, and allows us to examine variation in ratings and outcome variables within a particular bank, rather than differences between banks. Further, the inclusion of state-year fixed effects, α_{st} , ensures that we net out time-varying, state-specific shocks that might affect financial performance and ratings of banks’ human capital. Lastly, we control for examiners’ overall judgment of bank performance by including CAMELS composite rating fixed effects (α_c). The inclusion of CAMELS composite rating fixed effect allows us to parse out the evaluation of human capital from the overall assessment of the bank. Further, the CAMELS composite rating fixed effect controls for examiners’ private information about the bank’s

overall health. Thus, the coefficient on M should identify the implications of human capital for future bank performance, after controlling for observable bank performance, unobservable time-invariant bank characteristics, unobservable time-varying economic conditions by state, as well as the qualitative and quantitative factors that determine the overall performance of the bank.

The goal of our analyses is to use the documented association between M component ratings and future performance to draw inferences about whether and how human capital affects future performance, and how this varies with observable features of bank risk management and the economic environment. To further probe the channels through which human capital shapes bank performance, in subsequent analyses we further use loan loss recognition timeliness and loan monitoring as dependent variables and examine their association with human capital.

3.3. Summary Statistics

Table 1 presents summary statistics for observations in our sample.⁸ Future bank failure (*Failure*) is a rare event in our sample, as only .4 percent of banks fail in the two years following bank examinations. Additionally, banks in our sample tend to have satisfactory asset quality. The mean ratio of future non-performing loans to total assets is 0.7 percent. A long literature in accounting suggests that as the loan loss reserve increases relative to future problem assets, bank management are more prompt in recognizing future loan losses. The ratios of current LLR to future problem assets suggests that on average, banks maintain a loan loss reserve much larger than future problem assets. Moreover, Bhat and Desai (2020) posit that the ratio of salary expense to total non-interest income reflects the bank's allocation towards human capital. As this ratio grows, so should the monitoring effort of the bank. In our sample, approximately one half of non-interest expense is devoted towards salary, suggesting that human capital plays a large role in the functioning of the bank.

⁸ We allow our sample size to vary, to maximize our sample size by outcome variable.

A unique feature of our setting is that we observe privately recorded CAMELS ratings. These ratings reflect examiners' soft and hard information sets. Ratings less than 3 suggest that banks as a whole (or along a particular dimension), are satisfactory in operation. In our sample, we find that the average banks is rated 2.035, whereas the median composite rating is 2.0. These statistics suggest that banks in our sample are relatively healthy and do not pose immediate insolvency risk.

In addition to examining the association between current M ratings and future non-performing loans, we control for many different facets of bank performance. One key control variable in our analysis is the relative importance of lending to the activity of the commercial bank. Our summary statistics suggest that banks in our sample are active in real estate lending, followed by commercial and industrial loans. Further, based on indicators of leverage, asset quality, loan loss reserve, other real estate owned, and annualized ROA, banks in our sample are relatively healthy, on average.

4. Results

4.1. Examiners' Judgment and Human Capital Ratings

A central premise of our motivation is that examiners have considerable discretion in assigning M ratings, as they are based on a subjective assessment of managers' ability to operate the bank. Furthermore, our analyses rest upon the argument that the M rating is not merely a function of observable, hard information available in banks' Call Reports. While no definitive test can compare the explanatory power of a set of variables across CAMELS ratings, we provide suggestive evidence that M ratings contain more soft information relative to other components of the CAMELS system.

We do so by amending model (1) and estimating the following regression:

$$\begin{aligned}
Rating_{it} = & \alpha_1 \text{Log}(1 + Assets_{i,t-1}) + \alpha_2 \frac{Equity_{i,t-1}}{Assets_{i,t-1}} + \alpha_3 \frac{C\&I_{i,t-1}}{Assets_{i,t-1}} + \alpha_4 \frac{RE_{i,t-1}}{Assets_{i,t-1}} + \\
& \alpha_5 \frac{Ag_{i,t-1}}{Assets_{i,t-1}} + \alpha_6 \frac{Consumer_{i,t-1}}{Assets_{i,t-1}} + \alpha_7 \frac{LLR_{i,t-1}}{Assets_{i,t-1}} + \alpha_8 \frac{OREO_{i,t-1}}{Assets_{i,t-1}} + \alpha_9 \frac{Cash_{i,t-1}}{Assets_{i,t-1}} + \\
& \alpha_{10} \frac{Net\ Income_{i,t-1}}{Assets_{i,t-1}} + \epsilon
\end{aligned} \tag{2}$$

To examine whether hard information from banks' Call Reports explain more variation in certain component ratings, we use the above model to regress different categories of CAMELS component ratings against the set of control variables from model (1) without any fixed effects and compare explanatory power across ratings categories.⁹

In untabulated analysis, we find that the control variables in model (1) explain less variation in the M component rating relative to the other CAMEL components. For example, when the management ('M') component rating is the dependent variable, the explanatory power of the independent variables is 0.460. Conversely, when the capital ('C') component rating is the dependent variable, the explanatory power of the independent variables is 0.611. This preliminary evidence suggests that the M rating is not a simple function of observable performance, and that examiners incorporate soft information and judgment into their assessment of banks' human capital.

4.2. Human Capital and Future Performance

Building on the descriptive evidence that examiners' assessments of managers' human capital are more likely based on subjective analysis, rather than a mechanistic function of observable variables, we directly examine whether CAMELS M ratings contain information about future performance. To do so, we estimate model (1) after including control variables and fixed effects in order to better isolate the impact of human capital.

⁹ We omit the sensitivity to market risk rating, "S", from this analysis because it was not a component of the regulatory rating system over our entire sample period, and thus has a shorter time series available than other components.

In Table 2, we report the results of model (1), which examines the association between banks' *Human Capital* and *Non-Performing Loans* and *Failure*. Our evidence is consistent with human capital being informative about future performance. Specifically, in column 1 (3) of Table 2, we find a statistically significant and negative association between *Human Capital* and *Non-Performing Loans* (*Failure*), suggesting that banks that examiners assess as having greater human capital have fewer future non-performing loans and are less likely to fail.

A challenge in using the CAMELS rating system to study the impact of human capital is the possibility that the coefficient on *Human Capital* may also capture private information beyond banks' human capital that examiners possess that may be correlated with future performance. In such an instance, *Human Capital* may bias us in favor of finding results that support our prediction. To control for this possibility, we take advantage of the fact that at the time examiners record the M rating, they also record the CAMELS composite rating. By controlling for the CAMELS composite rating, we can separate examiners' assessment of bank human capital from their private information about future performance.

In column 2 (4), we re-tabulate our results after including CAMELS composite rating fixed effects and find consistent evidence. In terms of economic significance, the results in column 2 (4) of Table 2 suggest that a deterioration in human capital of a one within-fixed-effect standard deviation in *Human Capital* is associated with an increase of approximately 3.8% (2.7%) of the within-fixed-effect standard deviation of *Non-Performing Loans* (*Failure*). The results presented in Table 2 provide evidence that humans, indeed, can create informative judgments of human capital. Moreover, their assessments are economically significant and meaningful.

Another challenge in evaluating human capital is separating out the impact of human capital from factors that are outside the influence of managerial actions. For example, banks with superior human capital may be able to overcome the limitations associated with poor overall performance,

while banks with inferior human capital may experience negative future outcomes even when fundamentals are acceptable.

In Table 3, we investigate this possibility by separately measuring whether examiners perceive the bank's human capital to be superior or inferior to the overall state of the bank. To do so, we create two indicator variables, *Human Capital < Bank Health* (*Human Capital > Bank Health*), which are equal to one if the banks' M rating is superior (inferior) to the banks' CAMELS composite rating. These indicator variables allow us to hold constant not only banks' observable performance and financial health, but also any private information embedded in the CAMELS composite rating that is orthogonal to human capital. We re-estimate model (1) with these two indicator variables in the model in place of *Human Capital* and estimate the following regression:

$$\begin{aligned}
 Outcome_{i,t+x} = & \alpha_1 Human\ Capital_{it} < Bank\ Health_{it}(0,1) + \alpha_2 Human\ Capital_{it} \\
 & > Bank\ Health_{it}(0,1) + \gamma Controls + \alpha_i + \alpha_{st} + \alpha_c \\
 & + \epsilon
 \end{aligned} \tag{3}$$

We find a positive (negative) association between both *Non-Performing Loans* and *Failure* and *Human Capital < Bank Health* (*Human Capital > Bank Health*), suggesting that future performance is higher (lower) when examiners' human capital rating is superior (inferior) to the CAMELS composite rating. Interestingly, this evidence suggests that not only that greater human capital can overcome the negative effects of lower bank fundamentals, but also that lower human capital leads to low future performance, even under circumstances when bank fundamentals are superior. More broadly, this evidence suggests that human capital is incrementally informative of future performance when it diverges from the overall state of the bank.

4.3. Cross-sectional Analyses based on Macroeconomic Uncertainty

In addition to examining whether the association between human capital and future performance varies based on the overall state of the bank, we also examine variation based on

macroeconomic conditions to provide further insights into conditions when human capital is relatively more important for future bank performance. We specifically examine the role of human capital during periods of greater macroeconomic uncertainty. Ex-ante, the effect of macroeconomic uncertainty is unclear. On one hand, higher macroeconomic uncertainty may diminish the association between human capital and future performance because such uncertainty increases the likelihood that macroeconomic developments have an abnormally large impact on payoffs from current managerial decisions. On the other hand, during periods of higher macroeconomic uncertainty, banks with greater human capital may be better equipped to make decisions that will result in greater future payoffs, thereby allowing the bank to reap greater rewards from its human capital.

In Table 4, we investigate these two alternatives by performing cross-sectional analyses of the association between *Human Capital* and *Non-Performing Loans/Failure* during periods of higher macroeconomic uncertainty. We measure macroeconomic uncertainty based on the Chicago Board Options Exchange Volatility Index (VIX), which reflects the expected volatility of the S&P 500 index over the subsequent thirty days. Higher levels of the VIX indicate greater macroeconomic uncertainty (Drechsler 2013). We create an indicator variable, *High VIX*, equal to one if the level of the VIX index is in the top quartile of our sample at the time of the bank examination, and zero otherwise. We amend model (1) by estimating the following regression:

$$\begin{aligned}
 Outcome_{i,t+x} = & \alpha_1 Human\ Capital_{it} + \alpha_2 High\ VIX_t + \alpha_3 Human\ Capital_{it} \times High\ VIX_t \\
 & + \gamma Controls + \alpha_i + \alpha_{st} + \alpha_c + \epsilon
 \end{aligned} \tag{4}$$

In model (4), the interaction *Human Capital* x *High VIX* represents the incremental association between human capital and our outcome variables of interest during periods of high macroeconomic uncertainty. We find a significantly negative coefficient on the interaction of *Human Capital* x *High VIX* in columns 1-2 of Table 4 when *Non-Performing Loans* is the dependent variable, and in columns 3-4 of Table 4 when *Failure* is the dependent variable. These results suggest that banks with greater

human capital are incrementally less likely to fail and have lower future non-performing loans when macroeconomic uncertainty is greater.

4.4. Loan Loss Recognition Timeliness and Loan Monitoring

The evidence presented thus far indicates that examiners' assessments of human capital are informative of future performance. Despite this evidence, little is known about the channels through which human capital shape bank activities. In the following set of tests, we examine the association between human capital and features of banks' financial reporting and operating environment.

First, a rich literature in accounting investigates the role of bank transparency in promoting financial stability (Beatty and Liao 2014; Bushman 2014). A key theme in this line of inquiry is that the ability for financial reporting, especially the loan loss reserve, to be forward looking with respect to future loan losses helps banks mitigate adverse economic outcomes, such as procyclical lending or tail risk (Beatty and Liao 2011; Bushman and Williams 2015). A central feature of this framework is that management has considerable discretion with how to record the loan loss reserve so that it better anticipates future deterioration in loan quality. Moreover, management has a key role to play in preventing large "overhangs" of problem assets that might materialize if the bank is not timely in its recognition of problem assets (Bushman 2014).

We take the framework from this literature and apply it to our setting. If the M rating captures variation in human capital, we expect that it should move predictably with changes in how the loan loss reserve varies with future problem assets. We test this prediction formally in Table 5 by replacing our primary outcome variables with the ratio of the loan loss reserve to future non-performing loans (*LLR Timeliness*). Increases in these ratios reflect greater timeliness in anticipating future deterioration in asset quality.

In Table 5 Panel A, we find a significant and positive association between *Human Capital* and *LLR Timeliness*. This result suggests that one mechanism by which human capital affects firm

performance is through management's diligence in recognizing future loan delinquencies and non-accruals. In terms of economic significance, the results suggest that a deterioration in *Human Capital* of one within-fixed-effect standard deviation is associated with a decrease of approximately 1.0% of the within-fixed-effect standard deviation of *LLR Timeliness*.

In Panel B of Table 5, we examine whether *LLR Timeliness* differs based on whether human capital diverges from the overall health of the bank. We find some evidence that banks exhibit greater loan loss recognition timeliness when human capital is superior to the bank's overall health as demonstrated by the significantly positive coefficient on *Human Capital > Bank Health* in column 1 of Table 5, Panel B. However, the significantly negative coefficients on *Human Capital < Bank Health* in columns 1-4 of Panel B of Table 5 provides evidence that banks for which human capital is inferior to the overall state of the bank exhibit lower loan loss recognition timeliness.

Finally, we examine the role of loan monitoring. A key role of human capital within banks is the ability to screen and monitor borrowers. However, a challenge in examining how human capital relates to monitoring effort is that effort in monitoring customers is usually unobservable. To circumvent this limitation, Bhat and Desai (2020) make use of banks' income statements to proxy for monetary resources that banks have in place to monitor customers. Specifically, Bhat and Desai (2020) suggest that a bank's ratio of salary expense to total non-interest expense captures the quality and quantity of labor input into loan screening and monitoring activities. We take this intuition and apply it to our setting on human capital.

At the time of each M rating, we take the average salary expense to total non-interest expense for the year leading up to the bank examination. We predict that human capital is positively associated with the ratio of salary expense to total non-interest expense increases. Consistent with this prediction, we find a significant and positive association between *Human Capital* and *Monitoring* in Table 6 Panel A. In terms of economic magnitudes, the results suggest that deterioration in human capital of one

within-fixed-effect standard deviation is associated with a decrease of approximately 1.6 percent of the within-fixed-effect standard deviation of *Monitoring*.

In Panel B of Table 6, we further investigate the association between human capital and loan monitoring when human capital diverges from the overall state of the bank. If examiners can evaluate the quality of bank human capital, then we predict that evaluations will vary based upon the quality of human capital relative to the overall state of the bank. Specifically, the negative (positive) coefficient on *Human Capital < Bank Health* (*Human Capital > Bank Health*) suggests that banks perform less (more) rigorous monitoring of their loan portfolio when human capital is assessed by examiners to be inferior (superior) to the overall health of the bank.

Collectively, the evidence reported in Tables 5 and 6 provide important evidence on the observable information that is associated with the formulation of the M rating. Examiners, in part, are able to impound managers' ability to anticipate loan losses, which is consistent with conjectures raised by prior literature. Despite a rich literature that suggests that loan loss reserve timeliness is associated with better management, to our knowledge, no direct evidence on this relation exists. By using the setting of M ratings formulated by examiners, we provide direct evidence on the role of managerial talent in recognizing problem assets.

Likewise, while existing research in accounting and finance acknowledge a primary role of human capital in monitoring loans, prior research has provided coarse or indirect evidence at best. By using CAMELS ratings, we shed light on how loan monitoring factors into examiners' evaluations of human capital. In summary, these results validate the M rating as a proxy for the quality of human capital within commercial banks.

5. Conclusion

Human capital, in general, is an intangible facet of firm operations and is multi-dimensional in nature. Reflecting this challenge, prior research has often resorted to using abnormal performance,

on- and off-the-job behaviors, firm outcomes, and manager fixed effects to infer how human capital affects firm operations. However, the results of these studies are dependent upon drawing inferences from varied industries and proxies, making it difficult to formulate precise conclusions.

In this study, we complement this research by providing the first large-sample evidence on whether human generated judgments of human capital by bank examiners are informative about future performance. While prior research may presume that bank examiners can produce informative judgments of human capital, it is not *ex-ante* clear that this is the case. Humans may have biases that may render their judgments orthogonal to future outcomes. Furthermore, human capital may only be indirectly related to future outcomes, and regulators may suffer from conflicts of interest. On the other hand, customized evaluations of firms' operations and assets may allow regulators to impound valuable qualitative information into their ratings, allowing them to create quantitative assessments of human capital that are informative about future performance.

Our research findings are consistent with the prediction that human judgments of human capital are incrementally informative about future performance, over and above hard information available to outsiders. Specifically, we find that the M rating, which focuses on banks' human capital quality, incrementally predicts future non-performing loans and failure. This association is robust to the inclusion of a wide variety of control variables, as well as bank and state-year fixed effects. Moreover, these results are robust even after controlling for the overall state of the bank (*i.e.*, the CAMELS composite rating).

We find that human capital matters more during times of volatility. Specifically, as financial market volatility increases, banks with high quality human capital incrementally lower their share of future non-performing loans and their likelihood of failure. These findings indicate that banks with superior human capital reap greater rewards during periods of macroeconomic uncertainty compared

to banks with inferior human capital. We also find that that examiners' judgments of human capital are strongly associated with timelier loan loss recognition and enhanced loan monitoring.

Collectively, the evidence indicates that on average, subjective assessments of firm performance improves delegated monitoring. This feature may be especially important in the banking industry, and may allow examiners to impound valuable qualitative information into their assessments. While we acknowledge the caveat that we are unable to measure how informative subjective judgments would be in the absence of any possibility of regulatory capture or behavioral biases, we believe that our results represent an important first step in showing that human judgments of human capital plays a significant role in delegated monitoring, especially in opaque settings and industries.

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Variable Definitions

Outcome Variables

1. *Non-Performing Loans*: The share of non-performing loans to total loans eight quarters after the quarter of the bank examination.
2. *Failure*: An indicator variable that equals 1 if the bank fails within eight quarters of the bank examination
3. *LLR/Fwd 12 mo DQTL*: The allowance for loan and lease losses measured at the quarter of the bank examination as a fraction of total loan delinquencies measured one year after the bank examination
4. *LLR/Fwd 24 mo DQTL*: The allowance for loan and lease losses measured at the quarter of the bank examination as a fraction of total loan delinquencies measured two years after the bank examination
5. *Monitoring*: The average of salary expense to total non-interest expense for the year preceding the start of a bank examination, derived from Bhat and Desai (2020).

Supervisory Ratings

6. *CAMELS*: The CAMELS composite rating assigned to the bank at the end of the bank examination
7. *C*: The CAMELS capital component rating assigned to the bank at the end of the bank examination
8. *A*: The CAMELS asset quality component rating assigned to the bank at the end of the bank examination
9. *M*: The CAMELS management component rating assigned to the bank at the end of the bank examination
10. *E*: The CAMELS earnings component rating assigned to the bank at the end of the bank examination
11. *L*: The CAMELS liquidity component rating assigned to the bank at the end of the bank examination
12. *S*: The CAMELS sensitivity to market risk component rating assigned to the bank at the end of the bank examination
13. *Human Capital*: The inverse of the M component rating. As *Human Capital* increases, examiners' assess the bank to have superior human capital.

14. *Human Capital > (<) Bank Health*: An indicator variable that equals 1 if the bank's M component is better (worse) rated than the bank's overall composite CAMELS rating.

Control Variables

15. *_Delinquencies*: The share of total delinquencies to total assets as of the quarter before the start of the bank examination
16. *Size*: The natural log of total assets as of the quarter before the start of the bank examination
17. *Equity*: The share of total bank equity to total assets as of the quarter before the start of the bank examination
18. *C&I Loans*: The share of commercial and industrial loans to total assets as of the quarter before the start of the bank examination
19. *Real Estate Loans*: The share of total real estate loans to total assets as of the quarter before the start of the bank examination
20. *Agricultural Loans*: The share of total agricultural loans to total assets as of the quarter before the start of the bank examination
21. *Consumer Loans*: The share of total consumer loans to total assets as of the quarter before the start of the bank examination
22. *LLR*: The share of the allowance for loan and lease losses to total assets as of the quarter before the start of the bank examination
23. *OREO*: The share of other real estate owned assets to total assets as of the quarter before the start of the bank examination
24. *Cash*: The share of total cash to total assets as of the quarter before the start of the bank examination.
25. *ROA*: The share of net income to total assets as of the quarter before the start of the bank examination
26. *High VIX*: An indicator variable that equals 1, if in year t, the index is in the highest quartile. It equals zero otherwise.

Figure 1: Research Design Diagram

This figure provides a diagram of our research design. We observe the starting quarter of every bank examination in the United States. We take the most recent financial information from Call Reports, captured in quarter t-1 relative to the start of the exam. We measure *Failure* by creating an indicator variable that equals 1 if the bank fails within the next 8 quarters from the start of the bank examination. We measure *Non-Performing Loans* as the share of non-performing loans to total assets eight quarters after the bank examination start date. We measure *Monitoring* by taking the average of salary expense to total non-interest expense for the four quarters preceding the start of the bank examination. We measure *LLR Timeliness* by taking the share of LLR at the time of the examination as a ratio of future non-accrual (non-performing) loans in quarters t+4 and t+8. Variable descriptions are provided in the appendix.

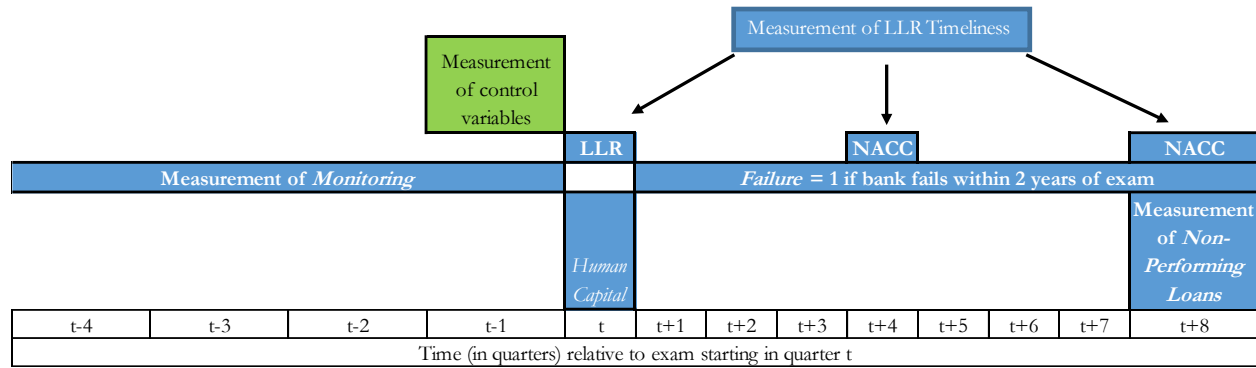


TABLE 1: Descriptive Statistics

This table reports descriptive statistics for sample observations used in empirical tests. Variable descriptions are provided in the appendix.

Variable	N	Mean	25th Pctl	Median	75 Pctl	Std Dev
Dependent Variables:						
<i>Non-Performing Loans</i>	164,392	0.007	0.012	0.001	0.003	0.009
<i>Failure</i>	182,988	0.014	0.119	0.000	0.000	0.000
<i>LLR/Fwd 12 Mo DQTL</i>	172,302	1.432	3.268	0.332	0.587	1.143
<i>LLR/Fwd 24 Mo DQTL</i>	161,453	1.439	3.379	0.315	0.572	1.139
<i>LLR/Fwd 12 Mo NACC</i>	147,689	7.630	21.042	0.830	1.800	4.776
<i>LLR/Fwd 24 Mo NACC</i>	138,425	7.548	20.656	0.812	1.796	4.723
<i>Monitoring Effort</i>	160,383	0.514	0.088	0.464	0.520	0.572
CAMELS Ratings:						
<i>CAMELS Composite Rating</i>	182,988	2.035	0.936	1.000	2.000	2.000
<i>C Rating</i>	182,988	1.832	0.930	1.000	2.000	2.000
<i>A Rating</i>	182,988	1.981	1.042	1.000	2.000	2.000
<i>M Rating</i>	182,988	2.116	0.887	2.000	2.000	2.000
<i>E Rating</i>	182,988	2.188	1.088	1.000	2.000	3.000
<i>L Rating</i>	182,988	1.737	0.785	1.000	2.000	2.000
<i>S Rating</i>	93,400	1.898	0.786	1.000	2.000	2.000
Control Variables:						
<i>Delinquencies</i>	182,988	0.021	0.021	0.007	0.014	0.027
<i>Size</i>	182,988	11.399	1.339	10.470	11.235	12.121
<i>Equity</i>	182,988	0.098	0.034	0.077	0.091	0.111
<i>C&I Loans</i>	182,988	0.099	0.072	0.048	0.082	0.131
<i>Real Estate Loans</i>	182,988	0.353	0.173	0.221	0.342	0.478
<i>Agricultural Loans</i>	182,988	0.051	0.081	0.000	0.010	0.068
<i>Consumer Loans</i>	182,988	0.072	0.066	0.025	0.055	0.098
<i>LLR</i>	182,988	0.010	0.006	0.007	0.009	0.012
<i>OREO</i>	182,988	0.006	0.012	0.000	0.001	0.005
<i>Cash</i>	182,988	0.065	0.053	0.032	0.048	0.077
<i>ROA</i>	182,988	0.002	0.004	0.001	0.002	0.003
<i>Total Assets (\$ millions)</i>	182,988	683,461	14,900	35,768	76,996	186,452

TABLE 2: Human Capital and Future Performance

This table reports the results of a model examining the association between banks' human capital and future performance. *Non-Performing Loans* is the bank's non-performing loans eight quarters after the regulatory examination scaled by total assets. *Failure* is an indicator variable equal to one if the bank fails at any point in the eight quarters following the regulatory examination. *Human Capital* is the inverse of the bank's management component rating assigned to the commercial bank after a bank examination. All variables are defined in the appendix. ***, **, * indicates statistical significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1) <i>Non-Performing Loans</i>	(2) <i>Non-Performing Loans</i>	(3) <i>Failure</i>	(4) <i>Failure</i>
<i>Human Capital</i>	-0.130*** (-9.81)	-0.0828*** (-8.28)	-0.00671*** (-3.82)	-0.00558*** (-4.19)
<i>Delinquencies</i>	11.90*** (13.84)	11.32*** (13.51)	0.671*** (5.18)	0.488*** (5.01)
<i>Size</i>	0.306*** (6.10)	0.307*** (6.14)	0.00663** (2.15)	0.00752** (2.31)
<i>Equity</i>	0.553 (1.49)	0.840** (2.40)	-0.332*** (-4.49)	-0.186*** (-3.94)
<i>C&I Loans</i>	1.215*** (9.88)	1.235*** (10.18)	-0.0322** (-2.23)	-0.00827 (-0.68)
<i>Real Estate Loans</i>	1.189*** (6.88)	1.208*** (7.09)	-0.0173* (-1.89)	-0.00493 (-0.71)
<i>Agricultural Loans</i>	1.691*** (11.58)	1.695*** (11.84)	-0.0159 (-1.08)	-0.00586 (-0.45)
<i>Consumer Loans</i>	0.0701 (0.57)	0.0946 (0.77)	-0.0569*** (-3.39)	-0.0320** (-2.53)
<i>LLR</i>	-3.329* (-1.94)	-5.234*** (-3.24)	1.152*** (4.72)	0.644*** (3.50)
<i>OREO</i>	-0.666 (-0.37)	-2.261 (-1.32)	0.867*** (4.71)	0.404** (2.41)
<i>Cash</i>	-0.0806 (-0.69)	-0.0786 (-0.67)	0.00646 (0.47)	0.00215 (0.18)
<i>ROA</i>	-16.62*** (-6.42)	-14.49*** (-5.63)	-2.415*** (-5.67)	-1.697*** (-5.29)
Bank FE	Yes	Yes	Yes	Yes
CAMELS FE	No	Yes	No	Yes
State x Year FE	Yes	Yes	Yes	Yes
N	163,832	163,832	182,988	182,988
Adj. R-Squared	0.548	0.549	0.565	0.600

TABLE 3: Human Capital Relative to Overall Bank Health

This table reports the results of a model examining the association between banks' human capital and future performance when human capital diverges from the bank's overall health. *Non-Performing Loans* is the bank's non-performing loans eight quarters after the regulatory examination scaled by total assets. *Failure* is an indicator variable equal to one if the bank fails at any point in the eight quarters following the regulatory examination. *Human Capital < Bank Health* (*Human Capital > Bank Health*) is an indicator variable equal to one if the bank's management component rating is worse than (better than) the bank's composite rating. All variables are defined in the appendix. ***, **, * indicates statistical significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1) <i>Non-Performing Loans</i>	(2) <i>Non-Performing Loans</i>	(3) <i>Failure</i>	(4) <i>Failure</i>
<i>Human Capital < Bank Health</i>	0.0701*** (8.04)	0.0526*** (6.03)	0.00373*** (4.43)	-0.0000806 (-0.13)
<i>Human Capital > Bank Health</i>	-0.136*** (-6.18)	-0.151*** (-6.85)	-0.0114*** (-3.57)	-0.0163*** (-4.58)
CAMELS	0.153*** (9.17)		0.00747*** (3.26)	
<i>Delinquencies</i>	11.65*** (13.42)	11.32*** (13.57)	0.666*** (5.21)	0.488*** (5.01)
<i>Size</i>	0.309*** (6.13)	0.308*** (6.16)	0.00673** (2.15)	0.00762** (2.35)
<i>Equity</i>	0.745* (1.94)	0.853** (2.45)	-0.328*** (-4.35)	-0.183*** (-3.94)
<i>C&I Loans</i>	1.203*** (9.81)	1.231*** (10.16)	-0.0329** (-2.27)	-0.00892 (-0.73)
<i>Real Estate Loans</i>	1.186*** (6.88)	1.205*** (7.08)	-0.0177* (-1.91)	-0.00562 (-0.80)
<i>Agricultural Loans</i>	1.683*** (11.58)	1.693*** (11.80)	-0.0163 (-1.10)	-0.00624 (-0.48)
<i>Consumer Loans</i>	0.0708 (0.58)	0.0930 (0.76)	-0.0572*** (-3.41)	-0.0323** (-2.55)
LLR	-3.858** (-2.19)	-5.139*** (-3.17)	1.149*** (4.73)	0.655*** (3.56)
OREO	-1.195 (-0.65)	-2.169 (-1.27)	0.864*** (4.51)	0.418** (2.49)
<i>Cash</i>	-0.0755 (-0.65)	-0.0771 (-0.66)	0.00657 (0.48)	0.00227 (0.19)
ROA	-15.63*** (-5.98)	-14.40*** (-5.65)	-2.389*** (-5.76)	-1.680*** (-5.27)
Bank FE	Yes	Yes	Yes	Yes
CAMELS FE	No	Yes	No	Yes
State x Year FE	Yes	Yes	Yes	Yes
N	163,832	163,832	182,988	182,988
Adj. R-Squared	0.548	0.549	0.565	0.600

TABLE 4: Cross-Sectional Test based on Macroeconomic Uncertainty

This table reports the results of a model examining the association between banks' human capital and future performance. *Non-Performing Loans* is the bank's non-performing loans eight quarters after the regulatory examination scaled by total assets. *Failure* is an indicator variable equal to one if the bank fails at any point in the eight quarters following the regulatory examination. *Human Capital* is the inverse of the bank's management component rating assigned to the commercial bank after a bank examination. *High VIX* is an indicator variable equal to one if the quarterly average of the VIX index is in the opt quartile of the sample, and zero otherwise. All variables are defined in the appendix. ***, **, * indicates statistical significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1)	(2)	(3)	(4)
	<i>Non-Performing Loans</i>	<i>Non-Performing Loans</i>	<i>Failure</i>	<i>Failure</i>
<i>Human Capital</i>	-0.101*** (-12.30)	-0.0567*** (-4.82)	-0.00326** (-2.58)	-0.00264 (-1.52)
<i>High VIX</i>	-0.214** (-2.58)	-0.208** (-2.63)	-0.0285** (-2.48)	-0.0259** (-2.67)
<i>Human Capital × High VIX</i>	-0.122*** (-3.25)	-0.119*** (-3.32)	-0.0145** (-2.68)	-0.0133*** (-2.80)
<i>Delinquencies</i>	11.78*** (13.81)	11.22*** (13.46)	0.653*** (5.31)	0.474*** (5.08)
<i>Size</i>	0.302*** (6.11)	0.302*** (6.14)	0.00599** (2.06)	0.00693** (2.25)
<i>Equity</i>	0.550 (1.49)	0.828** (2.37)	-0.332*** (-4.51)	-0.188*** (-4.00)
<i>C&I Loans</i>	1.208*** (9.81)	1.228*** (10.11)	-0.0329** (-2.30)	-0.00911 (-0.75)
<i>Real Estate Loans</i>	1.190*** (6.96)	1.208*** (7.19)	-0.0172* (-1.84)	-0.00491 (-0.70)
<i>Agricultural Loans</i>	1.713*** (11.64)	1.717*** (11.88)	-0.0138 (-0.95)	-0.00393 (-0.30)
<i>Consumer Loans</i>	0.0654 (0.53)	0.0897 (0.73)	-0.0573*** (-3.45)	-0.0326** (-2.59)
<i>LLR</i>	-3.377* (-1.97)	-5.224*** (-3.25)	1.144*** (4.65)	0.646*** (3.46)
<i>OREO</i>	-0.340 (-0.20)	-1.895 (-1.16)	0.908*** (4.87)	0.450*** (2.79)
<i>Cash</i>	-0.0608 (-0.57)	-0.0594 (-0.55)	0.00881 (0.62)	0.00435 (0.35)
<i>ROA</i>	-16.25*** (-6.76)	-14.21*** (-5.85)	-2.347*** (-5.90)	-1.648*** (-5.34)
Bank FE	Yes	Yes	Yes	Yes
CAMELS FE	No	Yes	No	Yes
State x Year FE	Yes	Yes	Yes	Yes
N	163,832	163,832	182,988	182,988
Adj. R-Squared	0.549	0.550	0.567	0.601

TABLE 5: Human Capital and Loan Loss Recognition Timeliness

This table reports the results of a model examining the association between banks' human capital and delayed loan loss recognition. *LLR/Fwd 12 Mo DQTL* (*LLR/Fwd 24 Mo DQTL*) is the bank's loan loss reserve scaled by delinquent loans in 12 (24) months. *LLR/Fwd 12 Mo NACC* (*LLR/Fwd 24 Mo NACC*) is the bank's loan loss reserve scaled by non-accrual loans in 12 (24) months. *Human Capital* is the inverse of the management component rating assigned to the commercial bank after a bank examination. *Human Capital < Bank Health* (*Human Capital > Bank Health*) is an indicator variable equal to one if the bank's management component rating is worse than (better than) the bank's composite rating. All variables are defined in the appendix. ***, **, * indicates statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Human Capital Rating Levels

VARIABLES	(1)	(2)	(3)	(4)
	<i>LLR/Fwd 12 Mo DQTL</i>	<i>LLR/Fwd 24 Mo DQTL</i>	<i>LLR/Fwd 12 Mo NACC</i>	<i>LLR/Fwd 24 Mo NACC</i>
<i>Human Capital</i>	0.113*** (5.33)	0.0817*** (2.98)	0.409*** (2.77)	0.355** (2.20)
<i>Delinquencies</i>	-20.67*** (-12.29)	-16.54*** (-11.49)	-100.7*** (-10.34)	-72.92*** (-11.90)
<i>Size</i>	-0.377*** (-10.34)	-0.333*** (-7.61)	-1.863*** (-7.74)	-1.401*** (-6.10)
<i>Equity</i>	1.057 (1.40)	-0.379 (-0.55)	-7.745** (-2.26)	-7.513* (-2.00)
<i>C&I Loans</i>	-2.466*** (-7.34)	-2.819*** (-7.97)	-11.90*** (-6.50)	-13.63*** (-9.05)
<i>Real Estate Loans</i>	-1.078*** (-5.12)	-1.442*** (-7.33)	-3.965*** (-3.32)	-7.941*** (-6.26)
<i>Agricultural Loans</i>	-3.504*** (-7.51)	-3.242*** (-6.53)	-12.55*** (-4.05)	-17.21*** (-5.33)
<i>Consumer Loans</i>	-3.938*** (-14.81)	-3.765*** (-11.69)	-4.417 (-1.63)	-8.182*** (-3.33)
<i>LLR</i>	66.44*** (13.75)	87.43*** (16.77)	225.4*** (9.87)	306.8*** (10.89)
<i>OREO</i>	-7.205*** (-3.82)	-4.123* (-1.72)	-34.97*** (-3.91)	-33.00*** (-3.37)
<i>Cash</i>	0.511 (1.31)	0.862* (1.88)	0.236 (0.11)	0.0630 (0.03)
<i>ROA</i>	12.30*** (3.29)	20.33*** (5.33)	13.63 (0.66)	77.27*** (4.22)
Bank FE	Yes	Yes	Yes	Yes
CAMELS FE	Yes	Yes	Yes	Yes
State x Year FE	Yes	Yes	Yes	Yes
N	171,841	160,873	147,028	137,635
Adj. R-Squared	0.268	0.262	0.158	0.156

TABLE 5: Human Capital and Delayed Loan Loss Recognition (continued)

Panel B: Human Capital Relative to the Bank's Overall Health

VARIABLES	(1)	(2)	(3)	(4)
	<i>LLR/Fwd 12 Mo</i> <i>DQTL</i>	<i>LLR/Fwd 24 Mo</i> <i>DQTL</i>	<i>LLR/Fwd 12 Mo</i> <i>NACC</i>	<i>LLR/Fwd 24 Mo</i> <i>NACC</i>
<i>Human Capital < Bank Health</i>	-0.125*** (-4.85)	-0.0871** (-2.54)	-0.515** (-2.32)	-0.418** (-2.37)
<i>Human Capital > Bank Health</i>	0.0893** (2.21)	0.0672 (1.39)	0.200 (0.75)	0.191 (0.73)
<i>Delinquencies</i>	-20.67*** (-12.29)	-16.55*** (-11.48)	-100.7*** (-10.34)	-72.93*** (-11.89)
<i>Size</i>	-0.377*** (-10.34)	-0.333*** (-7.61)	-1.862*** (-7.74)	-1.401*** (-6.11)
<i>Equity</i>	1.060 (1.40)	-0.378 (-0.55)	-7.703** (-2.25)	-7.490* (-2.00)
<i>C&I Loans</i>	-2.467*** (-7.35)	-2.819*** (-7.96)	-11.91*** (-6.51)	-13.64*** (-9.05)
<i>Real Estate Loans</i>	-1.079*** (-5.13)	-1.442*** (-7.33)	-3.978*** (-3.34)	-7.949*** (-6.26)
<i>Agricultural Loans</i>	-3.505*** (-7.51)	-3.242*** (-6.53)	-12.56*** (-4.05)	-17.21*** (-5.33)
<i>Consumer Loans</i>	-3.940*** (-14.84)	-3.767*** (-11.70)	-4.427 (-1.64)	-8.194*** (-3.33)
<i>LLR</i>	66.47*** (13.74)	87.45*** (16.82)	225.7*** (9.91)	307.1*** (10.88)
<i>OREO</i>	-7.158*** (-3.79)	-4.094 (-1.69)	-34.64*** (-3.86)	-32.74*** (-3.36)
<i>Cash</i>	0.511 (1.31)	0.862* (1.87)	0.233 (0.11)	0.0628 (0.03)
<i>ROA</i>	12.38*** (3.30)	20.39*** (5.31)	14.18 (0.68)	77.79*** (4.23)
Bank FE	Yes	Yes	Yes	Yes
CAMELS FE	Yes	Yes	Yes	Yes
State x Year FE	Yes	Yes	Yes	Yes
N	171,841	160,873	147,028	137,635
Adj. R-Squared	0.268	0.262	0.158	0.156

TABLE 6: Human Capital and Loan Monitoring

This table reports the results of a model examining the association between banks' human capital and loan monitoring. *Monitoring* is derived from Bhat and Desai (2020) and is the average of the bank's salary expense scaled by the non-interest expense. *Human Capital* is the inverse of the management component rating assigned to the commercial bank after a bank examination. *Human Capital < Bank Health* (*Human Capital > Bank Health*) is an indicator variable equal to one if the bank's management component rating is worse than (better than) the bank's composite rating. All variables are defined in the appendix. ***, **, * indicates statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Human Capital Rating Levels

VARIABLES	(1) <i>Monitoring</i>	(2) <i>Monitoring</i>
<i>Human Capital</i>	0.00915*** (13.67)	0.00206*** (3.58)
<i>Delinquencies</i>	-0.268*** (-11.97)	-0.209*** (-9.23)
<i>Size</i>	0.00607*** (3.98)	0.00577*** (3.84)
<i>Equity</i>	0.139*** (5.71)	0.101*** (4.29)
<i>C&I Loans</i>	0.0147* (1.90)	0.0140* (1.81)
<i>Real Estate Loans</i>	0.0319*** (6.06)	0.0308*** (5.95)
<i>Agricultural Loans</i>	0.106*** (8.16)	0.106*** (8.22)
<i>Consumer Loans</i>	-0.0314*** (-2.95)	-0.0334*** (-3.13)
<i>LLR</i>	-0.574*** (-5.52)	-0.409*** (-3.91)
<i>OREO</i>	-1.174*** (-27.97)	-1.032*** (-23.99)
<i>Cash</i>	-0.0203** (-2.39)	-0.0197** (-2.38)
<i>ROA</i>	1.761*** (13.56)	1.550*** (12.85)
Bank FE	Yes	Yes
CAMELS FE	No	Yes
State x Year FE	Yes	Yes
N	159,928	159,928
Adj. R-Squared	0.716	0.718

Panel B: Human Capital Relative to the Bank's Overall Health

VARIABLES	Monitoring
Human Capital < Bank Health	-0.00162** (-2.67)
Human Capital > Bank Health	0.00317** (2.71)
Delinquencies	-0.209*** (-9.25)
Size	0.00576*** (3.84)
Equity	0.101*** (4.29)
C&I Loans	0.0141* (1.82)
Real Estate Loans	0.0309*** (5.97)
Agricultural Loans	0.106*** (8.22)
Consumer Loans	-0.0333*** (-3.13)
LLR	-0.410*** (-3.93)
OREO	-1.033*** (-24.14)
Cash	-0.0198** (-2.38)
ROA	1.549*** (12.82)
Bank FE	Yes
CAMELS FE	Yes
State x Year FE	Yes
N	159,928
Adj. R-Squared	0.718