Peer Pressure in Reporting Discretion:
Evidence from Bank Holding Company Subsidiaries

by

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Dedication

To Gretchen, who supported me through this journey, and to Rowan, Deacon, and Peyton, who made this journey much more exciting.

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All errors within are my own.

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Abstract

Subsidiaries of a firm can use their reporting discretion for several goals, such as reporting earnings comparable to other subsidiaries or reporting earnings that are smooth over time. Prior theoretical work on reporting discretion recognizes the tension among these goals (Holmstrom, 1982; Demski and Sappington, 1974), but empirical work has not sufficiently examined it. This study exploits the bank holding company setting to investigate how subsidiaries use reporting discretion to navigate these competing objectives. I find that while subsidiaries use reporting discretion to smooth their own earnings, they also use reporting discretion to herd around the earnings of internal peers. Through a number of cross-sectional analyses, I find that this herding behavior appears consistent with relative performance evaluation motivations. These results provide new insight into prior mixed findings on the reporting choices of bank holding companies.

Chapter 1 Introduction

Subsidiaries of a firm can use their reporting discretion for several goals, which include reporting earnings comparable to other subsidiaries or reporting smooth patterns of earnings. Prior theoretical work on reporting discretion recognizes tension between these objectives (Holmstrom, 1982; Demski and Sappington, 1974), but empirical work has not sufficiently examined how a subsidiary weighs these objectives in its reporting process. One reason for this omission could be that, in the absence of the knowledge of implicit and explicit benchmarks established by the parent for its subsidiaries, it is difficult to disentangle the reporting objectives of the subsidiary from the economic realities of the organization. Another reason for this omission could be that empirical researchers lack good segment data for subsidiaries. Segment data, even where available, is rarely uniformly comparable due to the potential heterogeneous nature of the various operations of the subsidiaries. In this study, I exploit the bank holding company setting, which provides a number of institutional and economic advantages, to investigate the extent to which subsidiaries use reporting discretion to manage these potentially competing objectives. In particular, I examine how bank holding company subsidiaries use reporting discretion to 1) offset variations in their own earnings, 2) respond to contemporaneous earnings of internal peers, and 3) respond to contemporaneous earnings of external peers. I show that these reporting choices are likely driven by relative performance evaluation considerations.

Bank holding companies (BHCs) are often composed of at least one, but sometimes more, commercial bank subsidiaries, and the BHC structure comes with a number of benefits apart from the ownership and operation of bank subsidiaries (see Section 2.1). In addition to regulatory

requirements at the BHC level, BHC subsidiaries also face their own regulatory reporting and examination requirements, making subsidiary financials uniformly available. The banking business model is also relatively homogenous, despite differences in the lending and depository environments across banks, with loan loss provisions being the major mechanism banks use to exercise reporting discretion. Within a multi-subsidiary setting, the performance of one subsidiary could be endogenous to the performance of its internal peers if the headquarters moves cash between subsidiaries for performance reasons. In my sample, BHCs primarily shift funds from their subsidiaries to the BHC, and rarely from one subsidiary to another, suggesting this form of endogeneity is not a concern (see Sections 3.2 and 4.2.3).

Given the importance of the loan loss provision as a period-end accrual in the banking industry, I operationalize reporting discretion by examining the extent to which loan loss provisions offset variations in pre-provision earnings at the subsidiary level, which is standard in the literature (see Beatty and Liao, 2014, for a review). In addition, I use reporting discretion to examine the extent to which subsidiaries match, or herd around, the earnings of their internal peers (Scharfstein and Stein, 1990).

My sample includes 1,245 subsidiaries from 505 bank holding companies with more than one subsidiary for the period from 2009 through 2018. I begin my analyses by first examining how bank holding companies use their reporting discretion in the loan loss provision to smooth earnings, as prior studies have found mixed results (Collins et al., 1995; Beatty et al., 1995; Beatty et al., 2002; Liu and Ryan, 2006; Bushman and Williams, 2012). My results suggest that reporting discretion in the loan loss provision to smooth earnings is marginally more prominent at BHCs with only one commercial bank subsidiary, compared to BHCs with more than one subsidiary. The

presence of multiple subsidiaries has an effect on BHC-level reporting discretion, and offers insight into why the prior literature has found mixed evidence at the holding company level.

I next turn to the reporting behavior of individual BHC subsidiaries, examining the extent to which they smooth their own earnings and also try to match their peers' earnings. Consistent with prior subsidiary-level findings, I find that subsidiaries use reporting discretion to smooth their own earnings (Beatty and Harris, 2001). When pre-provision earnings are higher relative to a subsidiary's own time-series mean, the subsidiary increases its own loan loss provision. I also find that, in contrast to the smoothing response to its own pre-provision earnings, a subsidiary records *smaller* loan loss provisions when the pre-provision earnings of its internal peers are high. This result suggests that subsidiaries use their reporting discretion to match their internal peers' reported performance. When aggregated to the BHC level, this behavior could lead to the non-smooth earnings documented in prior literature (Beatty et al., 1995; Ahmed et al., 1999).

I include subsidiary level fixed effects, as well as quarter fixed effects, in these above regressions to account for any subsidiary-specific, and time-series, factors that may impact loan loss provisions and all other variables. Still, it is possible that these results are driven not by reporting discretion exercised by the subsidiary, but rather by some unmodeled economic reality faced by the BHC and its subsidiaries. I perform a number of additional analyses to address these potential competing explanations, and show that this herding behavior is likely a result of reporting discretion exercised at the subsidiary level.

I next examine the effect of external peer groups by controlling for the performance of a peer group comprised of banks with similar asset sizes and operations located in a similar geographic region. I find that a subsidiary's loan loss provision has a significant positive relation with the loan loss provisions of this broader set of peers, consistent with Dahl (2013), but has a

relation to the pre-provision earnings of these peers in a direction *opposite* of a subsidiary's response to its internal peers. I also find that the herding result does not hold for randomly assigned internal and external peer groups, suggesting that my herding results are not spurious.

Since I do not have direct data on managerial motives, I exploit various economic features of the BHC setting in an attempt to identify the motivation for the herding behavior. I first test whether the herding behavior appears symmetrically around positive and negative earnings (Desir, 2012; Bratten et al., 2016). I find that my results are asymmetric, with subsidiaries more inclined to match loan loss provisions to negative pre-provision earnings at internal peers than to positive pre-provision earnings. This result implies that subsidiaries take advantage of the poor performance of internal peers to record their own lower levels of earnings, without fear of repercussion from the holding company. This behavior could allow subsidiaries to build future "cookie jar" reserves to boost low earnings in future down quarters, and lends support to the hypothesis that my results reflect reporting discretion at the subsidiary level, and not an unmodeled economic reality of the BHC or subsidiary.

In the absence of explicit information about relevant benchmarks, I perform a number of additional cross-sectional analyses to further support the herding inference and explore the role relative performance evaluation plays in this form of reporting discretion. I find that subsidiaries filing their financial reports later in the reporting cycle respond to the public information of earlier filing internal peers. This result implies that subsidiaries use reporting discretion to herd when a public signal is received about the results at internal peers, consistent with prior literature (Bratten et al., 2016). I also find that within a BHC, smaller subsidiaries are more inclined to match provisions to the negative pre-provision earnings of their larger internal peers. This finding is consistent with prior research that shows that parents spend more time on, and invest more in, the

operations of their larger subsidiaries, reducing the opportunity for reporting discretion at these entities (Chang and Taylor, 1999). I also find that internal capital market considerations are not driving my results. Taken together, these results support the conclusion that the patterns of reporting discretion I observe are driven by relative performance evaluation motives.

These findings provide some of the first tests of theory that look at how subsidiaries weigh their various reporting objectives. They also contribute to the existing bank reporting discretion literature by showing that competing goals underlying the reporting choices of subsidiaries can affect the reporting choices at the overall BHC level. I build on the initial work of Beatty and Harris (2001), who show that subsidiaries use realized gains and losses of securities to respond to both their own earnings and the earnings of their peers. My findings could explain why some studies find that BHCs use reporting discretion in their loan loss provision to smooth earnings while others do not. Tse and Tucker (2009) show that firms herd around bad news of their external peers; I show that similar patterns emerge internally.

The rest of this paper proceeds as follows: Chapter 2 provides institutional background. Chapter 3 develops my hypotheses. Chapter 4 discusses my data. Chapter 5 describes my methodology and results. Chapter 6 concludes.

Chapter 2 Institutional Background

2.1 Bank Holding Companies

A bank holding company, as defined by the Bank Holding Company Act of 1956, is "any company which has control over any bank."[1] These holding companies typically consist of one commercial bank subsidiary, although it is not uncommon for BHCs to consist of a number of commercial bank subsidiaries and other financial institutions (e.g., insurance companies, wealth management companies, and financing companies). While the bank holding company structure comes with increased regulatory scrutiny, the organizational form comes with a number of economies of scale and legal benefits that exist outside of the consolidated operations of their subsidiaries, such as the ability to issue capital, the increased ability to engage in mergers and acquisitions, and the ability to engage in activities (e.g., securities underwriting) and investments not permissible at the bank level (Federal Reserve of St. Louis, 2017).

2.2 Regulatory Capital and Internal Markets

BHCs and their subsidiaries are required to maintain minimum regulatory capital ratios to be considered adequately capitalized by their respective regulators.[2] Due to these regulatory capital requirements, the subsidiaries must manage their own regulatory capital levels as part of their operations. BHCs can manage their own capital requirements, in part, through dividends or

[1] 12 U.S. Code § 1841.Definitions
[2] Regulation Q, 12 CFR 217, §217.10; FDIC, 12 CFR 324, §324.10(a)

transfers of capital from their subsidiaries. These transfers come out of subsidiary equity amounts when the subsidiaries are in a regulatory capital position to do so. Conversely, a BHC is also required to "serve as a source of financial…strength to its subsidiary banks".[3] Holding companies are expected to provide financial support, in the form of capital infusions, when subsidiary banks have failed to manage their own capital levels and are "in a weakened or failing condition". These infusions may come directly out of a BHC's excess capital, or indirectly from stronger performing subsidiaries through capital transfers up to the BHC, which are then allocated back down to those weaker subsidiaries. As a result, transfers between subsidiaries and a BHC are not a "zero-sum" game. A subsidiary may receive a cash infusion from the BHC without taking any cash away from another subsidiary if the BHC has excess cash/capital to do so. The BHC can also transfer cash from all of its subsidiaries to itself.

The ability to transfer capital potentially establishes an internal structure within the BHC where stronger subsidiaries may be required to provide capital up to the BHC to then be reallocated to poorer performing subsidiaries. In my sample, however, these transfers do little, on average, to alter the capital ratios of the subsidiaries (see Section 4.2.3), represent a de minimis average decrease to a subsidiary's balance sheet, and do not always reflect a shift of capital between subsidiaries, but rather an infusion of cash to the BHC from its subsidiaries. In Section 3.2, I develop hypotheses that account for how these transfers can impact my findings.

2.3 Reporting Requirements

Bank holding companies and all of their subsidiaries must submit quarterly financial statements with the FDIC. The subsidiaries file what is known as the Call Report and the bank

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[3] *52 Fed. Reg. 15707, April 30, 1987, effective April 24, 1987*

holding company itself files Form FR Y9-C. These regulatory reporting requirements provide a rich setting for analysis, as the unconsolidated subsidiary financial statements allow for exploration of behaviors at the subsidiary level. Through this detail, it is possible to investigate whether subsidiaries behave in a manner consistent with the operations of internal peers.

2.4 Loan Loss Provision Timing and Calculation

An area where firms have the ability to exercise significant reporting discretion is through period-end accruals. Within the banking industry, one of the most important (and scrutinized) period-end accruals is the loan loss provision, which adjusts the subsidiary's allowance for loan and lease losses. This expense entry represents 13% of recorded total interest expense for financial institutions.[4]

As a period-end accrual, the timing of the entry makes it susceptible to significant discretion in its calculation and reporting (Altamuro and Beatty, 2010; Nicoletti, 2018; Tomy, 2019). The allowance for loan and lease losses is calculated by subsidiaries at the end of the reporting period when pre-provision earnings levels are known to management, which allows subsidiaries to exercise reporting discretion in the loan loss provision to arrive at targeted earnings levels based on this knowledge. The timing of the entry also provides the subsidiary with the ability to respond to information obtained through private or public channels about its internal (or external) peers. Additionally, as this accrual is an estimate based on projected losses in the portfolio, there is opportunity to exercise discretion through various assumptions used in the calculation to arrive at a desired period-end expense.

[4] Averages obtained from the UBPR Peer Group Average Report as of 12/31/2019, FFEIC.gov

Chapter 3 Hypothesis Development

3.1 Earnings Smoothing

Evidence on the use of reporting discretion at the BHC level to smooth earnings is mixed, leaving it an open question if BHC subsidiaries use reporting discretion in their own loan loss provisions to smooth earnings.[5] Beatty and Harris (2001) provide some initial evidence of subsidiaries exercising discretion to smooth earnings, finding that subsidiaries record higher gains on sales of available-for-sale securities when earnings are low. These considerations lead to my first empirical hypothesis:

> *H1: Bank Holding Company subsidiaries use reporting discretion to smooth earnings (i.e., record higher loan loss provisions when pre-provision earnings are high)*

3.2 Peer Evaluation and Endogeneity Concerns

In addition to smooth earnings, subsidiaries are also concerned with being evaluated relative to a peer set (Gibbons and Murphy, 1990; Aggarwal and Samwick, 1999). These comparisons can be to either internal or external sets of peers. While internal relative performance has been modeled using tournament theory, subsidiaries may not have the autonomy to use reporting discretion to win the tournament (Bonacchi et al., 2014; Beuselinck et al., 2019). I therefore test the following empirical hypothesis:

> *H2: Bank Holding Company subsidiaries use reporting discretion to match performance at internal peers (i.e., record lower loan loss provisions when internal peer pre-provision earnings are high)*

[5] While many have shown a positive relation between pre-provision earnings and the loan loss provision, consistent with the earnings smoothing hypothesis (Collins et al., 1995; Beatty et al., 2002; Liu and Ryan, 2006; Bushman and Williams, 2012), others have found an insignificant or negative relation between these two amounts (Beatty et al., 1995; Ahmed et al., 1999). Balboa et al. (2013) consider a non-linear relationship between the provision and earnings to explain these finding.

There is an alternative economic effect that may drive herding behavior. If the BHC moves cash between subsidiaries for performance or capital reasons, the performance of one subsidiary could be endogenous to that of its internal peers. One could argue that in this instance, the poorly performing subsidiary receives help from the BHC and therefore may not need to use reporting discretion to herd around its internal peers. This would likely work against H2.

To illustrate and control for this concern, I first provide descriptive statistics of these transfers in Section 4.2.3 and find that the majority of these transfers are from the subsidiaries *up to* the BHC, and rarely from one subsidiary to another. I also add two measures of inter-BHC transfers as controls for this alternative effect.[6]

Another manifestation of endogeneity when a BHC transfers cash from one subsidiary to others is that the performance of those recipients could be endogenous to the transferring subsidiary's performance, resulting in reverse causality in H2. As just discussed, this is not an empirical concern. In any event, I control for this effect in H7 below, where I examine the smallest and largest subsidiaries of a BHC. Transferring cash from small subsidiaries is unlikely to have a material effect on the performance of other bigger subsidiaries, and reverse causality is unlikely to be a concern in this cross-section.

The existence of a relation between subsidiary provisions and the earnings components of internal peers may also be driven by some correlated omitted variable, such as the performance of an external set of peers, whose inclusion could eliminate the results supporting H2. However, the performance of non-peers should not be a factor in subsidiary reporting discretion. This leads to two additional hypotheses related to peer evaluation and reporting discretion:

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[6] I thus assume that these transfers are exogenous to related subsidiary performance. Explicitly modeling the BHC's choice to initiate internal transfers of cash between its subsidiaries is outside the scope of this paper.

H3: Bank Holding Company subsidiaries use reporting discretion to match performance at internal peers, in addition to any response to external peer performance (i.e., record lower loan loss provisions when internal peer pre-provision earnings are high)

H4: Bank Holding Company subsidiaries do not use reporting discretion to match performance to randomized internal or external peers (i.e., do not record lower loan loss provisions when randomized internal peer pre-provision earnings are high)

3.3 Asymmetric Response

Herding research predicts a symmetric response, showing firms take steps to shield themselves from the bad news of peers by reporting similarly, or imitate good news to dispel any potential negative information about the firm (Desir, 2012). However, the presence of "big bath" motivations may lead subsidiaries to bring forward losses from future periods into a current period where they already expect losses (Moerhle, 2002). Bank holding companies have been shown to use reporting discretion to achieve this goal (Fiechter and Meyer, 2010), and Balboa et al. (2013) suggest that this behavior is consistent with compensation and relative performance incentives. Subsidiaries may thus respond more to negative pre-provision earnings at internal peers, resulting in a one-sided association between a subsidiary's loan loss provision and the pre-provision earnings of its internal peers. This leads to my fifth hypothesis:

H5: Bank Holding Company subsidiaries respond more strongly to negative pre-provision earnings at internal peers (i.e., record larger loan loss provisions when internal peer pre-provision earnings are negative)

The hypotheses above are motivated by herding theories, whose main underlying economic force is relative performance evaluation. As the details of subsidiary compensation, incentive, and promotion plans are limited in my sample, I examine the relative performance evaluation motivation through additional cross-sectional tests.

I start with the observation that late filers are more likely to follow the actions of early filers in an attempt to be viewed comparably to those early filing peers (Bratten et al., 2016). Once the financial information of the first filing subsidiary is available, a late filing subsidiary can respond to this information with closing-entry adjustments to its own loan loss provision to meet its own reporting objective (see Section 2.4). This leads to my first cross-sectional hypothesis:

> *H6: The response to negative pre-provision earnings is one-sided: the last filing subsidiary of a BHC will record a larger loan loss provision to match negative pre-provision earnings at its earlier filing peers*

Subsidiary size also plays a role in subsidiary behavior. Larger subsidiaries, given their size, may be expected to deliver a certain level of earnings for the BHC, and concern themselves less with relative comparison to their smaller subsidiaries. Additionally, the BHC monitors the larger subsidiary more closely, leaving them with less autonomy in reporting discretion than their smaller peers (Chang and Taylor, 1999).

Furthermore, as discussed in the motivation for H2, reverse causality is a potential concern due to internal cash transfers. Transfers from small subsidiaries are unlikely to have a material effect on the performance of larger subsidiaries, and reverse causality is unlikely to be a concern in this situation. This leads to my second and final cross-sectional hypothesis:

> *H7: The response to negative pre-provision earnings is one-sided: the smallest subsidiary of a BHC will record a larger loan loss provision to match negative pre-provision earnings at its larger peers*

Chapter 4 Data and Methodology

4.1 Sample

My sample consists of 1,245 subsidiaries from 505 bank holding companies with reporting periods ending between January 1, 2009 and December 31, 2018. I obtain all financial data from regulatory Call Reports filed with the FDIC by subsidiaries during this time period. I identify subsidiary holding company affiliation through report item RSSD9364, which identifies the "Financial High Holder ID," or the institution that represents the "highest level relation" of the individual bank (Liao et al., 2020). Within each quarter, subsidiaries are grouped by this BHC relation identifier for the purposes of identifying subsidiaries that are part of a bank holding company with more than one subsidiary. I restrict my primary sample to all subsidiaries connected to one or more internal peers through a BHC.[7] I exclude from my main sample banks that are part of a bank holding company with more than ten subsidiaries due to the potential complexities of the interrelations that may exist at these institutions.

4.2 Summary Statistics

4.2.1 Overall Sample

Table 1, Panel A, provides summary statistics on the holding company structure of my sample population. Slightly over half of the subsidiaries are part of a BHC with two commercial bank subsidiaries, with 85% of the sample belonging to BHCs with between two and four bank subsidiaries.

[7] For my analysis in Table 3 of smoothing at the holding company level, I include all BHCs, including bank holding companies with only one subsidiary, resulting in a sample of 5,737 BHCs

Table 1, Panel B, provides summary statistics for the individual subsidiaries in my sample. On average, these subsidiaries recognize positive net income, with *Earnings Before Provision*[8] of 0.006, netted against average *Loan Loss Provisions* of 0.001. These compare to averages of 0.006 and 0.002 in analyses performed by Beatty and Liao (2014), using bank-quarters from 1993 to 2012. Annualized, these also compare to the summary statistics of those in Bushman and Williams (2012), who find average *Earnings Before Provisions (Loan Loss Provisions)* of 0.030 (0.005). Similarly, looking at a subsidiary's internal peer subsidiaries, *Internal Peer Earnings Before Provision* and *Internal Peer Provision* are also 0.006 and 0.001, providing preliminary evidence that there is some level of herding occurring at these subsidiaries. A subsidiary's own level of *Earnings Before Provision* is correlated with *Internal Peer Earnings Before Provision* at a level of 0.37, and its *Loan Loss Provision* is correlated with *Internal Peer Provision* at a level of 0.39 (Table 2). The allowance for loan and lease losses (*Allowance*) in the sample of 0.017 also closely mirrors that in the Beatty and Liao analysis (0.016). Subsidiaries in the sample have an average *Size* of 5.183, smaller than that in the Beatty and Liao analysis, but have a similar ratio of loans to total assets (62.5% to 62.2%).

In my test of Hypothesis 5, I evaluate the incremental impact that negative earnings at internal peers have on a subsidiary's matching behavior. I find that a subsidiary's internal peers incur net losses in 10% of my subsidiary-quarter observations (*Internal Peer Net Loss = 1)* and recognize negative pre-provision earnings in 5% of my subsidiary-quarter observations (*Internal Peer Loss Before Provision = 1).* These percentages vary based on the relative size of the subsidiary, with the internal peers of a BHC's largest subsidiary recording net losses (negative

[8] Refer to the Appendix for definitions and calculations of all variables used in my analyses.

pre-provision earnings) 12% (7%) of the time, compared to only 8% (4%) of the time for the internal peers of a BHC's smallest subsidiaries.

4.2.2 Subsidiary Size Statistics

I evaluate in Hypothesis 7 the impact that relative subsidiary size has on the herding behavior of subsidiaries. While on average, a subsidiary has a relative size (share of the BHC's total assets) of 39%, the largest subsidiaries account for 64% of a BHC's bank subsidiary assets, while the smallest subsidiaries comprise just 24% of total BHC bank subsidiary assets (Difference significant at $p < .01$). *Earnings Before Provision* at the largest subsidiaries (0.006) are also larger than those of their smallest peers (0.005) (Difference significant at $p < .01$).

4.2.3 Internal Capital Transfer Statistics and Endogeneity Considerations

As stated in Section 2.2, a main mechanism through which subsidiary performances could become interlinked is through internal cash transfers between the BHC and its subsidiaries. The BHC initiates such internal cash transfers to manage its own capital needs, as well as to provide financial support when subsidiary banks may be "in a weakened or failing condition".

In find that in my sample, 50% of subsidiary-quarter observations have net cash transfers from the subsidiary *up to* the BHC during the quarter. These transfers represent only a 0.3% decrease, on average, to the total assets of these subsidiaries, and a decrease of only 40 basis points, on average, to the average total capital ratio of 16.8%. Another 40% of subsidiary-quarter observations in my sample have $0 in net transfers between the subsidiary and the BHC. As with those subsidiaries making net transfers *up to* the BHC, these subsidiaries are also well-capitalized, with an average total capital ratio of 19.5%.

The remaining 10% of subsidiary-quarter observations in my sample show subsidiaries receiving net infusions of cash from the BHC during the quarter. These cash transfers represent,

on average, only 0.7% of total assets, which represents just 10% of the average subsidiary-level standard deviation of changes in assets. As with the subsidiaries who have net outflows of cash during a quarter, it does not appear that this influx of cash would meaningfully alter the subsidiary's performance.

In sum, the data shows that in my sample, the majority of capital movement between subsidiaries and BHCs comes in the form of cash movement from the subsidiary *up to* the BHC (50% of subsidiary-quarters), and not cash infusions to subsidiaries (10% of subsidiary-quarters). I conclude that other subsidiaries' performance is not endogenous to a given subsidiary's performance as a result of these cash transfers. The reverse causality concerns in H2 and other hypotheses is mitigated.

Chapter 5 Results

5.1 Subsidiary Reporting Discretion to Smooth Earnings (H1)

To empirically test the earnings smoothing hypothesis, I use an empirical specification consistent with prior literature:

$$\begin{aligned} \textit{Loan Loss Provision}_{i,t} = {} & \beta_1 \textit{Earnings Before Provision}_{i,t} + \beta_2 \textit{Non-Performing Loan Change}_{i,t+1} + \\ & \beta_3 \textit{Non-Performing Loan Change}_{i,t} + \beta_4 \textit{Non-Performing Loan Change}_{i,t-1} + \\ & \beta_5 \textit{Non-Performing Loan Change}_{i,t-2} + \beta_6 \textit{Capital}_{i,t-1} + \beta_7 \textit{Transfers}_{i,t} + \\ & \beta_8 \textit{BHC Transfers}_{i,t} + \beta_9 \textit{Size}_{i,t-1} + \beta_{10} \textit{Loan Change}_{i,t} + \beta_{11} \textit{Allowance}_{i,t-1} + \\ & \beta_{12} \textit{Chargeoff}_{i,t} + \beta_{13} \textit{GDP Change}_{i,t} + \delta \textit{Subsidiary Fixed Effects}_i + \\ & \lambda \textit{Quarter Fixed Effects}_t + \varepsilon_{i,t} \qquad (1) \end{aligned}$$

Loan Loss Provision represents the period-end expense accrual recorded by the subsidiary (*i*) to adjust the balance of its allowance for loan and lease losses (*Allowance*). *Earnings Before Provision* represents the pre-tax earnings of the subsidiary, excluding the *Loan Loss Provision* expense. The earnings smoothing hypothesis suggests a positive relation between these two covariates.

I control for a number of subsidiary-level variables previously shown to influence the *Loan Loss Provision*. *Non-Performing Loan Change* captures a measure of the credit quality of the portfolio, and the losses that exist within the portfolio during the current quarter (*t*), the previous two quarters (*t-1* and *t-2*), and the following quarter (*t+1*). I control for subsidiary total risk based capital ratios (*Capital*) and asset size (*Size*), which have been shown to influence loan loss provisions. To control for concerns around internal transfers of capital (See Sections 3.2 and 4.2.3), I include both *Transfers,* which captures the amount of capital transferred between the subsidiary and the BHC during a quarter, and *BHC Transfers*, which measures the average amount of capital movement between a BHC and all of its bank subsidiaries during a quarter. *Loan Change* captures any mechanical increases to the *Loan Loss Provision* driven by the mere presence of more loans on the Balance Sheet. *Allowance* and *Charge-Offs* control for two components that directly affect

the *Loan Loss Provision* expense. The *Allowance* has a negative relation with the *Loan Loss Provision,* as the larger the beginning balance of the *Allowance*, the less *Loan Loss Provision* expense will need to be recorded to obtain the desired period-end levels. *Charge-offs* have a positive relation to the *Loan Loss Provision*, as any amounts charged off during the quarter reduce the *Allowance*, and amounts that were not previously reserved for are recorded as a direct *Loan Loss Provision* expense. *GDP Change* controls for macroeconomic conditions faced by each subsidiary based on the counties in which the subsidiary has operations.

I also include subsidiary-level fixed effects to control for any firm specific factors. My results should therefore be interpreted as within-subsidiary, and not across-subsidiary, effects. With regard to potential time series variability, I include quarter-level fixed effects to control for any time-variant factors that may affect my results. This allows for my results to be interpreted as showing within-quarter, and not across-quarter, effects.

Table 3 provides a few preliminary, though mixed, insights about the earnings smoothing hypothesis at the BHC level, which help guide my primary analyses. First, in Column 1, the coefficient on *Earnings Before Provision* is significant and negative for the pooled sample of all bank holding companies, indicating the opposite of earnings smoothing at the BHC level. Column 2 tests whether there is a difference in this behavior between bank holding companies with one versus many subsidiaries. I find no significant coefficient on the interaction term (*Earnings Before Provision* × *Single Bank Holding Company)*.[9] These findings suggest that there are alternative earnings management motivations outside of earnings smoothing that are occurring at the individual subsidiary level of holding companies.

[9] With the inclusion of only BHC-level fixed effects, I find a significant positive coefficient on this interaction term, suggesting BHCs with only one subsidiary are more inclined to try to smooth earnings

Columns 3 and 4 of Table 3 introduce the effects of external peer group earnings on the reporting discretion of BHCs. These results show a significant positive relation between loan loss provisions of a BHC and both the pre-provision earnings and provisions of its peers. This result implies that there exists a relation between provisions within the banking industry, consistent with prior literature (Dahl, 2013), as well as a potential expectation that BHCs are inclined to smooth earnings when the industry performs well.

Table 4 provides the results of estimating Equation 1 at the subsidiary level. Column 1 presents the results of the test of H1. The significant positive *Earnings Before Provision* coefficient (0.028) suggests that subsidiaries will record larger provisions when their own pre-provision earnings are high relative to their time-series mean (subsidiary-level fixed effects). The results also reflect a within-quarter, and not across-quarter, effect that controls for variability in provisions and all other variables over time (quarter fixed effects). This is consistent with subsidiaries exercising reporting discretion to smooth their own earnings. Economically, a one standard deviation increase in average *Earnings Before Provision* results in a 12.0% increase to the *Loan Loss Provision*, and a 10% increase in *Earnings Before Provision* results in a 1.2% increase in the *Loan Loss Provision.*[10] I conclude that subsidiaries use reporting discretion to smooth their own earnings.

[10] This finding is greater than that of Collins et al. (1995), who find a standard deviation increase in annual earnings before provision leads to a 2.5% increase in the provision, though their sample dates back prior to 1991. Similarly, Liu and Ryan (2006) find that being in the high income (above median) group in their sample results in a 1% increase in provision.

5.2 Response of Subsidiaries to the Performance of their Peers

5.2.1 Response of Subsidiaries to the Performance of Internal Peers (H2)

In my test of H2, I modify Equation 1 to include the primary covariates of interest that relate to the overall level of earnings, and components of earnings, at a BHC subsidiary's internal peers – *Internal Peer Net Income, Internal Peer Earnings Before Provision,* and *Internal Peer Provision*. I calculate these variables as the sum of the value of this variable across all related BHC subsidiaries, less the value of subsidiary *i,* divided by the sum of the lagged total loans of all related BHC subsidiaries, less the loans at subsidiary *i:*

$$Other\ Sub\ X_{i,t} = \sum_{i}^{n} \frac{X_{n,t} - X_{i,t}}{Loans_{n,t-1} - Loans_{i,t-1}}$$

Where X takes the value of *Net Income, Earnings Before Provision*, or *Loan Loss Provision*. As noted in Section 4.2.3, I view the *Internal Peer Earnings Before Provision* as exogenous to a given subsidiary's provision, which validates the inclusion of this regressor.

Columns 2 through 4 of Table 4 present the results of the test of H2. The significant negative coefficient (-0.053) in Column 2 suggests that subsidiaries herd around income levels of their internal peers – when related subsidiary net income is high (relative to its time-series mean), a subsidiary will record lower levels of provision to minimize decreases to its own pre-provision earnings. Within the framework of the herding literature, this result suggests subsidiary managers are concerned with how they are viewed relative to their holding company peers.

Economically, a one standard deviation increase in *Internal Peer Net Income* leads to a reduction in the *Loan Loss Provision* of 23%. Taken together with the coefficient on *Earnings Before Provision*, these two coefficients result in a reduction in the *Loan Loss Provision* of 8.6% as the result of a one standard deviation increase in these two measures, eliminating the impact of

the earnings smoothing result found in Column 1. This net result suggests that subsidiaries are more responsive to the incentives of relative performance evaluation than they are to their own desire for smooth earnings.

Column 3 of Table 4 shows a significant negative coefficient on *Internal Peer Earnings Before Provision* (-0.024). As with the *Internal Peer Net Income* result, this result suggests that subsidiaries respond to the pre-provision level of earnings of their internal peers in a direction opposite the earnings smoothing hypothesis, but consistent with the direction suggested by the herding literature. Subsidiaries respond to higher levels of pre-provision earnings at their internal peers by taking smaller provisions. In an environment where these subsidiaries may be communicating with each other during the reporting period, or sending signals to each other about their earnings prior to their final accruals (Alonso et al., 2008), these subsidiaries respond by attempting to match each other's performance. Economically, a one standard deviation increase in *Internal Peer Earnings Before Provision* leads to a 8.6% decrease in *Loan Loss Provision*.[11]

In Column 4, I add a measure to capture the provisions of internal peers (*Internal Peer Provision*). Each subsidiary manages its provisions around the related performance of its internal peers, and therefore, the internal peer provision may be endogenous. With this caution, I find a significant positive coefficient (0.122). This result suggests that as its internal peers book larger provisions, so too will the subsidiary of interest, even after controlling for determinants of the provision at the subsidiary level. Here, a one standard deviation increase in *Internal Peer*

[11] These results are consistent with the prior literature that looks at the behavior of firms matching the actions of those within their industry or peer group. Tse and Tucker (2009) show that 60% of follower firms issue earnings warnings following a similar announcement by a peer firm. Similarly, Bratten et al. (2016) find that follower firms report earnings per share $0.28 lower when the industry leader reports losses, and that followers are 5% more likely to beat earnings when the leader beats its earnings target compared to a "neutral" announcement.

Provision represents a 27% increase in *Loan Loss Provision.* Importantly, even with the inclusion of *Internal Peer Provision* as an additional covariate, the significant result on *Internal Peer Earnings Before Provision* remains. I conclude from these results that herding around the earnings of internal peers is an important objective for these subsidiaries.[12]

5.2.2 Response of Subsidiaries to the Performance of External Peers (H3)

Columns 5 and 6 of Table 4 introduce measures of external peer performance to capture the effect that external peer groups have on subsidiary behavior. In Column 5, the significant negative coefficient (-0.088) on *External Peer Net Income* is consistent with the hypothesis that subsidiaries will herd around the earnings of their peers. Column 6 breaks *External Peer Net Income* out into its component pieces, *External Peer Earnings Before Provision* and *External Peer Provision*. Where the coefficient on *Internal Peer Earnings Before Provision* in Columns 3 and 4 was significantly negative, the coefficient on *External Peer Earnings Before Provision* is significant and positive. The direction of this coefficient is more in line with the smoothing behavior seen in Section 5.2, and perhaps reflects that, on the whole, banks in the industry have a first order priority to smooth earnings. From these results I conclude that, even after the inclusion of external peer group performance, the motivation to match earnings of internal peers is still an important objective for these subsidiaries. Consistent with prior findings, I also conclude that provisions across both internal and external peers provide a relevant benchmark for subsidiaries (Dahl, 2013).

[12] Recall that all the results are within-subsidiary, not across-subsidiary, effects due to the presence of subsidiary-level fixed effects.

5.3 Response of Subsidiaries to the Performance of Random Peers (H4)

I next further confirm my herding results using a falsification analysis. In Table 5, Columns 1 and 2, the insignificant coefficients on the *Randomized Internal Peer* variables suggests that there is no economic relation between subsidiaries and their unrelated peers. Column 3 adds *Randomized External Peer* variables, and similarly finds insignificant coefficients on these variables as well, suggesting that the identity of the peer group matters (Albuquerque, 2009).

5.4 Response of Subsidiaries to Positive and Negative Earnings of Internal Peers (H5)

Table 6 presents the results of the test of H5. In Column 1, on the interaction term *Internal Peer Earnings Before Provision* × *Internal Peer Loss Before Provision*, I find a significant negative coefficient (-0.044). This result suggests that subsidiaries respond more strongly to pre-provision earnings of internal peers when those pre-provision earnings are negative.

Column 2 repeats this analysis with the inclusion of the external peer group earnings measures. The negative coefficient on *Internal Peer Earnings Before Provision* is again significant, suggesting that subsidiaries are responsive to the pre-provision earnings of their internal peers, particularly when those earnings are negative, even after the inclusion of external peer performance measures. Economically, the result in Column 1 represents an incremental increase to the *Loan Loss Provision* of 16% when negative pre-provision earnings of internal peers decrease by one standard deviation.

The coefficient on the interaction term, *Internal Peer Provision* × *Internal Peer Loss Before Provision* in both Column 1 and Column 2 is insignificant. Contrary to the positive coefficient on *Internal Peer Provision,* which indicates that provisions tend to move together, this result suggests that negative pre-provision earnings at internal peers may be driven by more

than just loan losses (i.e. goodwill impairment or fair value write-downs). This result provides further support for the conclusion that the herding behavior is driven by reporting discretion and not by an unmodeled economic reality of the BHC and its subsidiaries.

5.5 Cross-Sectional Evaluation of Potential Herding Motivations

5.5.1 Impact of Reporting Date on Herding Behavior (H6)

In my first cross-sectional test of H5, I look at whether reporting discretion is indicative of relative performance motives, testing whether or not the response to negative pre-provision earnings differs across the timing of when subsidiaries file their financial statements. Using the reporting date from the subsidiaries' filings, I identify the subsidiaries within a BHC who file their financials First (Last) based on which subsidiary filed their financials in the fewest (most) number of days from period-end. I then assign an indicator variable for those subsidiaries that file first (*First Filer = 1)* and last (*Last Filer = 1*). Due to the nature of the report file date information, which updates any time an amended filing is made to reflect the date of the most recent filing, I exclude from this analysis the subsidiaries of any BHC where the days to file for any one of its subsidiaries exceeds 31 days. A filing date greater than 31 days would indicate that an amendment was made to that filing, and would no longer capture the original filing date.

Columns 1 – 3 of Table 7 report the results for the Last Filers within a holding company, while Columns 4 – 6 report results for the First Filers. The median days to file for the Last (First) Filers is 28 (22) days, which suggests a not insignificant number of days between filing for those who file last to potentially make changes to their period-end accruals. Column 2 shows a significant negative coefficient (-0.192) on the interaction term *Internal Peer Earnings Before Provision* × *Internal Peer Loss Before Provision*. This result suggests that those subsidiaries who file their financial statements last among those in the BHC respond more strongly to negative pre-

provision earnings at their internal peers when those peers have already publicly disclosed that information. On the other hand, this coefficient in Column 5 is not significant, suggesting that those filing first may not have the full information set to respond to the negative pre-provision earnings of their peers, or that that information is not as relevant to their decision-making process.

The coefficient on *Internal Peer Provision × Internal Peer Loss Before Provision* for both groups is insignificant, indicative of no additional herding around provisions when internal peers report negative pre-provision earnings. These results also further support the implication that my results reflect reporting discretion at the subsidiary level for relative performance evaluation purposes, and not some unmodeled economic reality of the BHC and its subsidiaries.

5.5.2 Relative Subsidiary Size (H7)

I next test whether or not the response to negative pre-provision earnings differs across the smallest and largest subsidiaries of a BHC. To determine the smallest and largest subsidiaries, I calculate the *Relative Size* of each subsidiary, calculated as the average of total assets over the prior 4 quarters, divided by the average of total BHC assets over the that same time. I then rank subsidiaries by *Relative Size*, with the subsidiary with the smallest (largest) share of BHC assets identified as *Smallest Subsidiary = 1 (Biggest Subsidiary = 1).*

Table 8 presents the results of the test of H7. Columns 1 – 3 report the results of the regressions for the smallest subsidiaries, while Columns 4 – 6 report the results for the largest subsidiaries. Column 2 reports a significant negative coefficient (-0.044) on the interaction term *Internal Peer Earnings Before Provision × Internal Peer Loss Before Provision*. This result suggests that the smallest subsidiaries of a holding company are likely to respond more strongly

to pre-provision earnings of internal peers when those pre-provision earnings are negative.[13] By contrast, this coefficient is not significant in Column 5. This result suggests that larger subsidiaries are less inclined (or able) to herd around losses at their smaller counterparts.

The coefficient on *Internal Peer Provision* × *Internal Peer Loss Before Provision* for both groups is insignificant, indicative of no additional herding around provisions when internal peers report negative pre-provision earnings. Taken together, these findings can be interpreted as the smaller subsidiaries using more discretion to decrease earnings when their larger subsidiaries have negative pre-provision earnings. As in Table 6, the inclusion of *External Peer Earnings Before Provision* and *External Peer Provision* (Columns 3 and 6) does not alter the behavior of the subsidiaries in response to internal peer performance in a meaningful way, and supports the conclusion that this reporting discretion is driven by relative performance considerations.

5.6 Robustness Tests

I perform a number of robustness checks to test the strength of my findings. First, in place of *Earnings Before Provision,* I use a measure of the quarter over quarter change in earnings, finding no significant differences in my results (e.g., the coefficient on the interaction term *Internal Peer Earnings Before Provision* × *Internal Peer Loss Before Provision* is -0.045 and significant, the same as in Table 6, Column 2). Second, I rescale my income variables by total assets, as opposed to total loans, with no change to my overall results. Third, and finally, I alter my peer groups to reflect only asset size peers, as well as state peers, with no qualitative change to my conclusions.

[13] Note that the performance of other larger subsidiaries can be considered exogenous to the smaller subsidiary's performance, as discussed in Sections 3.2 and 4.2.3.

Chapter 6 Conclusion

In this paper, I find that while bank holding company subsidiaries record larger loan loss provisions when pre-provision earnings are high relative to their time-series mean (consistent with earnings smoothing), they also respond to the performance of internal peers in the holding company by recording higher loan loss provisions when the pre-provision earnings of internal peers are low, relative to their time-series mean. Through a number of cross-sectional tests, I find that this behavior appears to be driven by relative performance evaluation considerations, as opposed to other potential herding motivations or unmodeled economic realities faced by the holding company and its subsidiaries. These findings explain some of the prior mixed results on earnings smoothing at the bank holding company level, and illustrate the importance of examining reporting choices at the individual subsidiary level.

Appendices

Appendix: Variable Definitions

Variable	Unit of Observation	Definition	Source
Loan Loss Provision	Subsidiary (*i*), Bank Holding Company (*b*), Quarter (*t*)	Loan Loss Provision is the value of the Loan Loss Provision, obtained from item RIAD4230 on the call report, scaled by total loans (RCON2122)	Call Report (see also Beatty and Liao 2014)
Earnings Before Provision	Subsidiary (*i*), Bank Holding Company (*b*), Quarter (*t*)	Earnings before Provision represents pre-tax earnings, excluding the Loan Loss Provision. The value is calculated as items RIAD4301 + RIAD4230 from the subsidiary's call report, and scaled by total loans	Call Report (see also Beatty and Liao 2014)
Iternal Peer Net Income	Subsidiary (*i*), Quarter (*t*)	Internal Peer Net Income is equal to (Sum of BHC subsidiary net income less net income from subsidiary *i*)/(Sum of BHC subsidiary total loans less total loans of subsidiary *i*). Subsidiaries of a BHC are identified as subsidiaries who share a top level holding company identified by RSSD9364 in regulatory filings.	Call Report
Internal Peer Earnings Before Provision	Subsidiary (*i*), Quarter (*t*)	Internal Peer Earnings Before Provision is equal to (Sum of BHC subsidiary Earnings Before Provision less Earnings Before Provision from subsidiary *i*)/(Sum of BHC subsidiary total loans less total loans of subsidiary *i*). Subsidiaries of a BHC are identified as subsidiaries who share a top level holding company identified by RSSD9364 in regulatory filings.	Call Report
Internal Peer Provision	Subsidiary (*i*), Quarter (*t*)	Internal Peer Provision is equal to (Sum of BHC subsidiary Loan Loss Provision less the Loan Loss Provision from subsidiary *i*)/(Sum of BHC subsidiary total loans less total loans of subsidiary *i*). Subsidiaries of a BHC are identified as subsidiaries who share a top level holding company identified by RSSD9364 in regulatory filings	Call Report
Randomized Internal Peer Net Income	Subsidiary (*i*), Quarter (*t*)	Randomized Internal Peer Net Income is a randomly assigned value of Internal Peer Net Income to Subsidiary *i* in quarter *t* from the population of Internal Peer Net Income that exists in the sample. All random values are assigned without replacement.	Generated
Randomized Internal Peer Earnings Before Provision	Subsidiary (*i*), Quarter (*t*)	Randomized Internal Peer Earnings Before Provision is a randomly assigned value of Internal Peer Earnings Before Provision to Subsidiary *i* in quarter *t* from the population of Internal Peer Earnings Before Provision that exists in the sample. All random values are assigned without replacement.	Generated
Randomized Internal Peer Provision	Subsidiary (*i*), Quarter (*t*)	Randomized Internal Peer Provision is a randomly assigned value of Internal Peer Provision to Subsidiary *i* in quarter *t* from the population of Internal Peer Provision that exists in the sample. All random values are assigned without replacement.	Generated
Internal Peer Net Loss (1/0)	Subsidiary (*i*), Quarter (*t*)	Internal Peer Net Loss is an indicator variable equal to 1 if Internal Peer Net Income is less than zero during the quarter, and equal to 0 if Internal Peer Net Income is greater than or equal to zero	Call Report
Internal Peer Loss Before Provision (1/0)	Subsidiary (*i*), Quarter (*t*)	Internal Peer Loss Before Provision is an indicator variable equal to 1 if Internal Peer Earnings Before Provision is less than zero during the quarter, and equal to 0 if Internal Peer Earnings Before Provision is greater than zero	Call Report
External Peer Earnings Before Provision	Subsidiary (*i*), Quarter (*t*)	External Peer Earnings Before Provision represents the average earnings before provision of subsidiaries, quarterly, within a subsidiary's peer group, constructed by asset size and OCC district. Banks are assigned an asset size peer group based on FDIC classifications, which include: Assets < $100M, Assets between $100M and $300M, Assets between $300M and $1B, Assets between $1B and $3B, Assets between $3B and $10B, and Assets > $10B. OCC Districts are broken up geographically into 4 regions: Central, Southern, Northeastern, and Western. Banks are assigned into one of 24 potential peer groups based on size and geographic region.	Call Report, Summary of Deposits
External Peer Provision	Subsidiary (*i*), Quarter (*t*)	External Peer Provision represents the average provision of subsidiaries, quarterly, within a subsidiary's peer group, constructed by asset size and OCC district. Banks are assigned an asset size peer group based on FDIC classifications, which include: Assets < $100M, Assets between $100M and $300M, Assets between $300M and $1B, Assets between $1B and $3B, Assets between $3B and $10B, and Assets > $10B. OCC Districts are broken up geographically into 4 regions: Central, Southern, Northeastern, and Western. Banks are assigned into one of 24 potential peer groups based on size and geographic region.	Call Report, Summary of Deposits
Randomized External Peer Earnings Before Provision	Subsidiary (*i*), Quarter (*t*)	Randomized External Peer Earnings Before Provision is a randomly assigned value of External Peer Earnings Before Provision to Subsidiary *i* in quarter *t* from the population of External Peer Earnings Before Provision that exists in the sample. All random values are assigned without replacement.	Generated
Randomized External Peer Provision	Subsidiary (*i*), Quarter (*t*)	Randomized External Peer Provision is a randomly assigned value of External Peer Provision to Subsidiary *i* in quarter *t* from the population of External Peer Provision that exists in the sample. All random values are assigned without replacement.	Generated

$Non-Performing\ Loan\ Change$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Non-Performing Loan Change is calculated as the sum of all non-performing loans by loan type, scaled by total loans (RCON2122) in the current quarter minus total non-performing loans, scaled by total loans, in the prior quarter.	Call Report (see also Beatty and Liao 2014)
$Capital$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Capital is the subsidiary's Total Risk Based Capital Ratio, calculated as Total Capital (RCON3792 or RCOA3792) divided by Total Risk Weighted Assets (RCONA223 or RCOAA223)	Call Report
$Transfers$	Subsidiary (i), Quarter (t)	Transfers is the sum of the components of a subsidiary's changes in Bank Equity Capital (RIADB509, RIADB510, RIAD4356, RIAD4470, RIAD4460, and RIAD4415) scaled by Total Equity (RCON3792 or ROCA3792) during a quarter, and approximates the movement of capital between the subsidiary and its BHC.	Call Report
$BHC\ Transfers$	Subsidiary (i), Quarter (t)	BHC Transfers is calculated as the average value of Transfers for all subsidiaries in a given BHC, and represents average transfer activity of the BHC and its subsidiaries during a quarter.	Call Report
$Size$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Size is calculated as the natural log of total assets (RCON2170) at quarter-end	Call Report
$Loan\ Change$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Loan Change is calculated as total loans (RCON2122) scaled by lagged total assets (RCON2170) minus total loans scaled by lagged total assets in the prior quarter	Call Report (see also Beatty and Liao 2014)
$Allowance$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Allowance is the Allowance for Loan Loss (RCON3123) scaled by total loans (RCON2122)	Call Report (see also Beatty and Liao 2014)
$Charge-Offs$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	Charge-Offs is the total loan charge-offs during the quarter (RIAD4635) scaled by total loans (RCON2122)	Call Report (see also Beatty and Liao 2014)
GDP	Subsidiary (i), Bank Holding Company (b), Quarter (t)	GDP is a measure of GDP faced by a subsidiary's customers, calculated as the weighted average of the GDP of the counties where a subsidiary has a branch location. Weights are allocated to subsidiary branches by dividing the deposits at the branch (obtained from the subsidiary's annual Summary of Deposits filing) by total subsidiary deposits. GDP figures, by county, are obtained from the Bureau of Labor Statistics. GDP is scaled by 1,000,000.	Summary of Deposits and Bureau of Labor Statistics
$GDP\ Change$	Subsidiary (i), Bank Holding Company (b), Quarter (t)	GDP Change is calculated as GDP in the current quarter (see definition of GDP above) minus lagged GDP, divided by lagged GDP	Summary of Deposits and Bureau of Labor Statistics
$Single\ Bank\ Holding\ Company\ (1/0)$	Bank Holding Company (b), Quarter (t)	Single Bank Holding Company is an indicator variable equal to 1 if the number of commercial bank subsidiaries connected to the top level holding company identifier (RSSD9364) is equal to 1. This indicator variable equals zero if the number of commercial bank subsidiaries is greater than 1.	Call Report
$Relative\ Size$	Subsidiary (i), Quarter (t)	Relative Size is equal to (Average Assets for prior 4 quarters at subsidiary i)/(Sum of BHC Average Assets for prior 4 quarters). Subsidiaries of a BHC are identified as subsidiaries who share a top level holding company identified by RSSD9364 in regulatory filings.	Call Report
$Smallest\ Subsidiary\ \ (1/0)$	Subsidiary (i), Quarter (t)	*Smallest Subsidiary* is an indicator variable equal to 1 if a subsidiary in a BHC has the smallest trailing 4-quarter total assets of all subsidiaries in the BHC (Relative Size). This variable is 0 if the subsidiary does not have the smallest Relative Size of all subsidiaries in the BHC.	Call Report
$Biggest\ Subsidiary\ \ (1/0)$	Subsidiary (i), Quarter (t)	*Biggest Subsidiary* is an indicator variable equal to 1 if a subsidiary in a BHC has the smallest trailing 4-quarter total assets of all subsidiaries in the BHC (Relative Size). This variable is 0 if the subsidiary does not have the biggest Relative Size of all subsidiaries in the BHC.	Call Report
$First\ Filer\ (1/0)$	Subsidiary (i), Quarter (t)	First Filer is an indicator variable equal to 1 if the subsidiary filed its financial report first out of the subsidiaries within its BHC. The order of filing firms within a BHC is determined by the number of days after period-end each subsidiary filed its financial report. This variable is 0 if the subsidiary is not the first filer in the BHC.	Call Report
$Last\ Filer\ (1/0)$	Subsidiary (i), Quarter (t)	Last Filer is an indicator variable equal to 1 if the subsidiary filed its financial report last out of the subsidiaries within its BHC. The order of filing firms within a BHC is determined by the number of days after period-end each subsidiary filed its financial report. This variable is 0 if the subsidiary is not the last filer in the BHC.	Call Report

Tables

Table 1: Descriptive Statistics for Subsidiary-Level Measures for 1,245 Subsidiaries from 505 Multi-Bank Holding Companies, from 2009 to 2018

Panel A provides descriptive statistics for the subsidiary structure of the Bank Holding Companies. Panel B provides the descriptive statistics for the subsidiary-level variables. All continuous variables are winsorized at the 1st and 99th percentile by quarter-end date. All variables are defined in the Appendix.

For presentation purposes, this table appears on the next page

Panel A:

Number of BHCs	505
Number of Subsidiaries	1,245

Number of BHC Subsidiaries	Percent of Sample
2	54%
3	20%
4	11%
5	5%
6	4%
7	2%
8	1%
9	1%
10	2%

Panel B:

	N	Mean	St. Dev	Min	25%	Med	75%	Max
Loan Loss Provision$_{i,t}$	25,043	0.001	0.003	-0.010	0.000	0.000	0.001	0.050
Earnings Before Provision$_{i,t}$	25,043	0.006	0.006	-0.052	0.004	0.006	0.008	0.045
Internal Peer Net Income$_{i,t}$	25,043	0.005	0.006	-0.052	0.003	0.005	0.007	0.061
Internal Peer Earnings Before Provision$_{i,t}$	25,043	0.006	0.005	-0.037	0.004	0.006	0.008	0.075
Internal Peer Provision$_{i,t}$	25,043	0.001	0.003	-0.014	0.000	0.001	0.001	0.037
Internal Peer Net Loss$_{i,t}$ (1/0)	25,043	0.104	0.305	0.000	0.000	0.000	0.000	1.000
Internal Peer Loss Before Provision$_{i,t}$ (1/0)	25,043	0.049	0.215	0.000	0.000	0.000	0.000	1.000
External Peer Earnings Before Provision$_{i,t}$	25,043	0.006	0.002	-0.007	0.005	0.006	0.006	0.032
External Peer Provision$_{i,t}$	25,043	0.001	0.001	-0.002	0.000	0.001	0.002	0.015
NPL Change$_{i,t}$	25,043	0.000	0.008	-0.045	-0.002	0.000	0.001	0.063
Capital$_{i,t-1}$	25,043	0.178	0.087	0.071	0.131	0.155	0.193	0.972
Size$_{i,t-1}$	25,043	5.178	1.261	2.529	4.350	4.984	5.784	11.202
Loan Change$_{i,t}$	25,043	-0.001	0.043	-0.345	-0.021	-0.001	0.019	0.276
Allowance$_{i,t-1}$	25,043	0.017	0.010	0.000	0.011	0.014	0.019	0.094
Chargeoffs$_{i,t}$	25,043	0.001	0.003	-0.001	0.000	0.000	0.001	0.039
GDP Change$_{i,t}$	25,043	0.009	0.015	-0.086	0.003	0.009	0.016	0.318
Transfers$_{i,t}$	25,043	-0.007	0.044	-0.248	-0.017	-0.001	0.000	0.584
BHC Transfers$_{i,t}$	25,043	-0.007	0.031	-0.212	-0.016	-0.006	0.000	0.534

Table 2: Spearman/Pearson Correlation Matrix for Subsidiary-Level Pre-Provision Earnings and Provision Measures using Quarterly Data for 1,245 Subsidiaries from 505 Multi-Bank Holding Companies, from 2009 to 2018

This table provides the Spearman (Pearson) correlations above (below) the diagonal. ***, **, * denotes correlations significantly different from zero at the 0.01, 0.05, and 0.10 level. Correlations are calculated on the subsidiary-level quarter-end values. All variables are defined in the Appendix.

	Loss Loss Provision$_{i,t}$	Earnings Before Provision$_{i,t}$	Internal Peer Earnings Before Provision$_{i,t}$	Internal Peer Provision$_{i,t}$
Loss Loss Provision$_{i,t}$	1.000	0.007	-0.048***	0.401***
Earnings Before Provision$_{i,t}$	-0.017***	1.000	0.429***	-0.026***
Internal Peer Earnings Before Provision$_{i,t}$	-0.061***	0.373***	1.000	0.015**
Internal Peer Provision$_{i,t}$	0.390***	-0.058***	-0.022***	1.000

Table 3: The Effect of Bank Holding Company Pre-Provision Earnings, and External Peer Pre-Provision Earnings and Provisions on Bank Holding Company Loan Loss Provisions using Quarterly Data for 5,737 Bank Holding Companies, from 2009 to 2018

This table uses the quarter-end bank holding company-level values for all variables. All variables are analogous to those defined in the Appendix at the subsidiary level. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

	Prediction	Loan Loss Provision$_{b,t}$			
Earnings Before Provision$_{b,t}$	+	-0.022*	-0.043**	-0.041**	-0.048**
		(-1.972)	(-2.224)	(-2.207)	(-2.402)
Single Bank Holding Company$_{b,t}$	+/-		-0.001***	-0.000***	0.000
			(-4.498)	(-3.405)	(0.258)
Earnings Before Provision$_{b,t}$	+		0.023	0.018	0.025
× Single Bank Holding Company$_{b,t}$			(1.359)	(1.079)	(1.424)
External Peer Earnings Before Provision$_{b,t}$	+/-			0.056**	0.160***
				(2.488)	(2.826)
External Peer Provision$_{b,t}$	+			0.434***	0.414***
				(12.204)	(11.557)
External Peer Earnings Before Provision$_{b,t}$	+/-				-0.113**
× Single Bank Holding Company$_{b,t}$					(-2.248)
External Peer Provision$_{b,t}$	+/-				0.031
× Single Bank Holding Company$_{b,t}$					(1.029)
Observations		172,029	172,029	172,029	172,029
Adjusted R-squared		0.620	0.621	0.625	0.625
Controls		Yes	Yes	Yes	Yes
BHC Fixed Effects		Yes	Yes	Yes	Yes
Quarter Fixed Effects		Yes	Yes	Yes	Yes
S.E. Clustering		BHC, Quarter	BHC, Quarter	BHC, Quarter	BHC, Quarter

Table 4: The Effect of Own Subsidiary and Internal (External) Peer Pre-Provision Earnings and Provisions on Loan Loss Provisions using Quarterly Data for 1,245 Subsidiaries from 505 Multi-Bank Holding Companies, from 2009 to 2018

This table uses the quarter-end subsidiary-level values for all variables. All variables are defined in the Appendix. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

For presentation purposes, this table appears on the next page

	Prediction	Loan Loss Provision					
Earnings Before Provision$_{i,t}$	+	0.028**	0.037***	0.032***	0.034***	0.036***	0.029***
		(2.610)	(3.419)	(2.946)	(3.178)	(3.319)	(2.986)
Internal Peer Net Income$_{i,t}$	-		-0.053***				
			(-5.324)				
Internal Peer Earnings Before Provision$_{i,t}$	-			-0.024**	-0.023**	-0.022**	-0.022**
				(-2.269)	(-2.258)	(-2.219)	(-2.210)
Internal Peer Provision$_{i,t}$	+				0.122***	0.121***	0.115***
					(8.118)	(8.151)	(8.341)
External Peer Net Income$_{i,t}$	+/-					-0.088***	
						(-5.429)	
External Peer Earnings Before Provision$_{i,t}$	+/-						0.021
							(1.103)
External Peer Provision$_{i,t}$	+						0.427***
							(7.673)
NPL Change$_{i,t+1}$		0.020***	0.019***	0.020***	0.018***	0.018***	0.017***
		(4.340)	(4.412)	(4.357)	(4.225)	(4.242)	(4.225)
NPL Change$_{i,t}$		0.060***	0.058***	0.060***	0.056***	0.056***	0.055***
		(6.775)	(7.002)	(6.822)	(6.917)	(6.944)	(6.972)
NPL Change$_{i,t-1}$		0.024***	0.023***	0.024***	0.022***	0.022***	0.021***
		(4.601)	(4.729)	(4.654)	(4.603)	(4.637)	(4.561)
NPL Change$_{i,t-2}$		0.015***	0.014***	0.015***	0.014***	0.014***	0.013***
		(4.616)	(4.600)	(4.658)	(4.459)	(4.479)	(4.367)
Transfers$_{i,t}$		0.003**	0.003***	0.003**	0.003***	0.003***	0.003***
		(2.516)	(3.144)	(2.663)	(3.039)	(3.064)	(2.775)
BHC Transfers$_{i,t}$		-0.000	-0.002*	-0.001	-0.002**	-0.002**	-0.002**
		(-0.519)	(-1.836)	(-0.714)	(-2.176)	(-2.216)	(-2.348)
Capital$_{i,t-1}$		-0.001	-0.000	-0.001	-0.000	-0.000	-0.000
		(-0.395)	(-0.234)	(-0.370)	(-0.137)	(-0.100)	(-0.066)
Size$_{i,t-1}$		0.000	0.000	0.000	0.000	0.000	0.000
		(0.737)	(0.701)	(0.770)	(0.559)	(0.768)	(0.641)
Loan Change$_{i,t}$		0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
		(3.517)	(3.051)	(3.504)	(3.434)	(3.600)	(3.641)
Allowance$_{i,t-1}$		-0.094***	-0.094***	-0.094***	-0.093***	-0.093***	-0.092***
		(-6.718)	(-6.718)	(-6.698)	(-6.796)	(-6.811)	(-6.706)
Chargeoffs$_{i,t}$		0.680***	0.669***	0.679***	0.658***	0.656***	0.649***
		(14.615)	(14.593)	(14.618)	(14.375)	(14.347)	(14.090)
GDP Change		-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002*
		(-2.690)	(-2.530)	(-2.529)	(-2.246)	(-2.041)	(-1.757)
Observations		25,043	25,043	25,043	25,043	25,043	25,043
Adjusted R-squared		0.613	0.618	0.613	0.621	0.622	0.627
Subsidiary Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
S.E. Clustering		Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr

Table 5: The Effect of Own Subsidiary, Randomized Internal Peer, and Randomized External Peer Pre-Provision Earnings and Provisions on Loan Loss Provisions using Quarterly Data for 1,245 Subsidiaries from 505 Multi-Bank Holding Companies, from 2009 to 2018

This table uses the quarter-end subsidiary-level values for all variables. All variables are defined in the Appendix. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

	Prediction	Loan Loss Provision$_{i,t}$		
Earnings Before Provision$_{i,t}$	+	0.028**	0.023**	0.028**
		(2.608)	(2.349)	(2.611)
Randomized Internal Peer Earnings Before Provision$_{i,t}$	**NS**	-0.003	-0.003	-0.004
		(-0.924)	(-0.881)	(-1.019)
Randomized Internal Peer Provision$_{i,t}$	**NS**	-0.003	-0.003	-0.004
		(-0.662)	(-0.588)	(-0.901)
External Peer Earnings Before Provision$_{i,t}$	+/-		0.023	
			(1.171)	
External Peer Provision$_{i,t}$	+		0.460***	
			(7.844)	
Random External Peer Earnings Before Provision$_{i,t}$	**NS**			0.006
				(0.985)
Random External Peer Provision$_{i,t}$	**NS**			0.006
				(0.788)
Observations		25,043	25,043	25,043
Adjusted R-squared		0.613	0.619	0.613
Controls		Yes	Yes	Yes
Subsidiary Fixed Effects		Yes	Yes	Yes
Quarter Fixed Effects		Yes	Yes	Yes
S.E. Clustering		Subsidiary, Quarter	Subsidiary, Quarter	Subsidiary, Quarter

Table 6: The Effect of Internal Peer Positive and Negative Pre-Provision Earnings, and Provisions, on Subsidiary Loan Loss Provisions using Quarterly Data for 1,245 Subsidiaries from 505 Multi-Bank Holding Companies, from 2009 to 2018

This table uses the quarter-end subsidiary-level values for all variables. All variables are defined in the Appendix. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

	Prediction	Loan Loss Provision$_{i,t}$	
Earnings Before Provision$_{i,t}$	+	0.034***	0.029***
		(3.232)	(3.001)
Internal Peer Earnings Before Provision$_{i,t}$	-	-0.014	-0.012
		(-1.352)	(-1.201)
Internal Peer Provision$_{i,t}$	+	0.135***	0.126***
		(5.680)	(5.667)
Internal Peer Loss Before Provision$_{i,t}$	+/-	0.000	0.000
		(0.613)	(0.544)
Internal Peer Earnings Before Provision$_{i,t}$	-	-0.044*	-0.047**
× Internal Peer Loss Before Provision$_{i,t}$		(-1.915)	(-2.180)
Internal Peer Provision$_{i,t}$	+/-	-0.051	-0.045
× Internal Peer Loss Before Provision$_{i,t}$		(-1.308)	(-1.188)
External Peer Earnings Before Provision$_{i,t}$	+/-		0.022
			(1.124)
External Peer Provision$_{i,t}$	+		0.426***
			(7.656)
Observations		25,043	25,043
Adjusted R-squared		0.622	0.627
Controls		Yes	Yes
Subsidiary Fixed Effects		Yes	Yes
Quarter Fixed Effects		Yes	Yes
S.E. Clustering		Subsidiary, Quarter	Subsidiary, Quarter

Table 7: The Effect of Subsidiary Filing Order and Internal Peer Positive and Negative Pre-Provision Earnings, and Provisions, on Subsidiary Loan Loss Provisions using Quarterly Filing Data for 649 Subsidiaries from 311 Multi-Bank Holding Companies, from 2009 to 2018

Columns 1 – 3 (4 – 6) of this table tests the relationship between *Internal Peer Earnings Before Provision/Internal Peer Provision* and subsidiary level loan loss provisions (*Loan Loss Provision*) for the Last (First) filing subsidiary in a BHC. This table uses the quarter-end subsidiary-level values for all variables. All variables are defined in the Appendix. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

		Loan Loss Provision$_{i,t}$					
	Prediction	Last Filer = 1			First Filer = 1		
Earnings Before Provision$_{i,t}$	+	0.004	0.005	0.004	-0.022	-0.022	-0.021
		(0.225)	(0.242)	(0.215)	(-0.411)	(-0.424)	(-0.408)
Internal Peer Earnings Before Provision$_{i,t}$	-	-0.021	-0.004	-0.003	0.009	0.021	0.021
		(-1.238)	(-0.348)	(-0.293)	(0.508)	(1.112)	(1.119)
Internal Peer Provision$_{i,t}$	+	0.139***	0.130**	0.125**	0.136***	0.142***	0.142***
		(2.735)	(2.176)	(2.068)	(3.792)	(3.034)	(3.016)
Internal Peer Loss Before Provision$_{i,t}$	+/-		-0.001	-0.001		0.000	0.000
			(-1.676)	(-1.634)		(1.383)	(1.360)
Internal Peer Earnings Before Provision$_{i,t}$	-		-0.192**	-0.198**		0.005	0.009
× Internal Peer Loss Before Provision$_{i,t}$			(-2.645)	(-2.703)		(0.099)	(0.160)
Internal Peer Provision$_{i,t}$	+/-		-0.070	-0.068		-0.024	-0.024
× Internal Peer Loss Before Provision$_{i,t}$			(-0.578)	(-0.563)		(-0.237)	(-0.231)
External Peer Earnings Before Provision$_{i,t}$	+/-			0.016			-0.048
				(0.319)			(-1.132)
External Peer Provision$_{i,t}$	+			0.193*			-0.002
				(1.887)			(-0.014)
Observations		3,015	3,015	3,015	3,031	3,031	3,031
Adjusted R-squared		0.616	0.619	0.620	0.576	0.577	0.576
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
S.E. Clustering		Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr

Table 8: The Effect of Subsidiary Size and Internal Peer Positive and Negative Pre-Provision Earnings, and Provisions, on Subsidiary Loan Loss Provisions using Quarterly Data for 1,036 subsidiaries from 490 Multi-Bank Holding Companies, from 2009 to 2018

Columns 1 – 3 (4 – 6) of this table tests the relationship between *Internal Peer Earnings Before Provision/Internal Peer Provision* and subsidiary level loan loss provisions (*Loan Loss Provision*) for the Smallest (Biggest) subsidiary in a BHC. This table uses the quarter-end subsidiary-level values for all variables. All variables are defined in the Appendix. T-statistics are in parentheses. ***, **, * denotes coefficient estimates significantly different from zero at the 0.01, 0.05, and 0.10 level.

		Loan Loss Provision$_{i,t}$					
	Prediction	Smallest Subsidiary = 1			Biggest Subsidiary = 1		
Earnings Before Provision$_{i,t}$	+	0.015	0.015	0.011	0.027	0.027	0.024
		(1.156)	(1.074)	(0.762)	(1.528)	(1.542)	(1.389)
Internal Peer Earnings Before Provision$_{i,t}$	-	-0.001	0.005	0.006	-0.025	-0.018	-0.015
		(-0.152)	(0.529)	(0.727)	(-1.227)	(-1.103)	(-0.960)
Internal Peer Provision$_{i,t}$	+	0.141***	0.152***	0.145***	0.080***	0.082***	0.073***
		(8.915)	(7.314)	(6.846)	(5.109)	(8.045)	(7.201)
Internal Peer Loss Before Provision$_{i,t}$	+/-		0.000	-0.000		0.000	0.000
			(0.013)	(-0.058)		(0.068)	(0.071)
Internal Peer Earnings Before Provision$_{i,t}$	-		-0.044**	-0.042*		-0.024	-0.032
× Internal Peer Loss Before Provision$_{i,t}$			(-2.157)	(-2.020)		(-0.465)	(-0.622)
Internal Peer Provision$_{i,t}$	+/-		-0.038	-0.032		-0.012	-0.005
× Internal Peer Loss Before Provision$_{i,t}$			(-0.726)	(-0.621)		(-0.301)	(-0.126)
External Peer Earnings Before Provision$_{i,t}$	+/-			0.025			0.033
				(0.615)			(1.355)
External Peer Provision$_{i,t}$	+			0.441***			0.370***
				(4.323)			(6.066)
Observations		9,447	9,447	9,447	9,714	9,714	9,714
Adjusted R-squared		0.575	0.575	0.578	0.682	0.682	0.688
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
S.E. Clustering		Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr	Sub, Qtr

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