The Informativeness of Discretionary LLPs during the Financial Crisis*

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ABSTRACT: Banks' use of accounting discretion in estimating loan loss reserves during the financial crisis period has come under severe criticism. We, however, argue that accounting discretion is potentially more relevant during periods of instability like the financial crisis. We find that discretionary loan loss provisions (LLPs) exhibit a stronger association with stock returns and explain future losses better during the crisis than in surrounding periods. Discretionary LLPs can also explain the Treasury's allocation of TARP funds during the crisis. Finally, the ability of discretionary LLPs to explain future credit losses declined for banks subject to a TARP funding shock. Our results, thus, point to a significant beneficial role for discretion underlying LLPs during the financial crisis. Such a finding is especially important in light of the FASB's new accounting rules promulgated in 2016 that are likely to increase the number of estimates and potentially enhance accounting discretion in these estimates.

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1. Introduction

Loan loss provisions (LLPs) are an important accrual in bank accounting. Conceptually, LLP accruals and related loan loss reserves can be viewed as providing a cushion against expected losses in the loan portfolio. While accounting rules govern the estimation of LLPs and reserves, the application of these rules to loan portfolios requires significant judgment and discretion within the prescribed rules (Financial Stability Forum 2009; Dugan 2009). During the recent financial crisis, there is a consensus that LLPs and reserves were found ex post to be inadequate to cover the credit losses incurred by banks (Huizinga and Laeven 2012; FASB 2012).[1] Such inadequate LLPs and reserves have been alleged to have led to incorrect inferences regarding bank health during the crisis. However, there is debate on whether the rules or the discretion led to under-provisioning.

Huizinga and Laeven (2012) argue that accounting discretion was misused to provide a "*distorted view of the financial health of the banks*" during the financial crisis. Since LLPs decrease both reported income and regulatory capital ratios, banks may have incentives to delay loss provisioning in times of economic stress. Opportunistic loan loss provisioning has also been associated with reduced bank transparency (Bushman and Williams 2015) and contraction in bank lending leading to recession (Beatty and Liao 2011). In contrast, the FASB attributes delayed credit loss recognition to the limitations of the "incurred loss" methodology. In response to the delayed loss recognition issue, the FASB has recently issued an accounting standards update that adopts an "expected loss" methodology (FASB 2016). The new loss reserves methodology requires additional judgments so banks ultimately could have greater discretion under the new methodology. Given the importance of LLPs to market participants and the contrasting views on

[1] Other studies also argue that provisions were too small prior to the financial crisis (e.g., Beatty and Liao 2009; Balla et al. 2012; FASB Summary 2013; Barth and Landsman 2010; Wall 2013).

the reasons underlying the abnormally low LLPs, it is important to examine the informativeness implications of discretionary LLPs during the financial crisis.[2] We are unaware of any such study to date.

During periods like the financial crisis, the implementation of pro-cyclical lending policies leads to significant changes in loan portfolio risk (Dugan 2009; Beatty and Liao 2011; Duchin and Sosyura 2014; Acharya and Mora 2015). In times of change, accounting estimates can be used to convey insiders' private forward-looking information about the riskiness of the loan portfolio at a time when changes in lending policies make historical loss metrics less relevant. A useful analogy to understand this argument is that when traveling down a relatively straight road, the past is a good predictor of the future road conditions. However, when forks on the road appear, the past road history becomes much less informative about road conditions going forward. Consequently, there is a fundamental tension in the informativeness implications of accounting discretion during the financial crisis. Errors in discretionary LLPs either due to an incorrect expectation of future economic conditions or self-interested behavior by managers (incentives to inflate profits were likely highest during the financial crisis (Kerr 2011)) potentially make LLPs less informative to stakeholders. However, lending policy instability during the financial crisis makes accounting discretion potentially beneficial. Our study casts light on this tension by examining the informativeness of LLP's during the financial crisis.

A bank's current credit losses depend on past credit policies and extant economic conditions. Thus, when banks alter their credit policies and/or economic conditions are expected

[2] By informativeness, we refer to discretionary LLPs' association with contemporaneous stock returns (similar to Collins and Kothari 1989, Dechow 1994, Hayn 1995, and Warfield et al. 1994, among others), their association with realized future losses (similar to Altamuro and Beatty 2010 and Beck and Narayanamoorthy 2013) as well as their relevance for managerial and regulatory decision making.

to change, the current level of credit losses may not be an accurate indicator of future credit losses. To isolate the forward-looking information about changes in future credit losses implicit in banks' LLPs, we follow prior research (see, for example, review article Beatty and Liao 2014) by developing an expectation model to control for banks' current level of risk. Since the expected LLP measure is based on an assessment of current risk indicators, the difference between reported and expected LLPs (characterized in the literature as the "discretionary" LLP) becomes a proxy for the bank's information about changes in future credit losses that are implicit in banks' reported LLPs.[3]

We conduct four analyses to examine the informativeness of discretionary LLPs. The first analysis examines the market valuation implications of discretionary LLPs before, during, and after the financial crisis. The second analysis examines the association between discretionary LLPs and realized future losses. While the first analysis of informativeness requires an assumption that the market correctly inferred the "true" provisions, the second analysis directly examines the mapping of discretionary LLPs into future losses, and thus, does not require any market efficiency assumption. Additionally, the second analysis enables an examination of informativeness for private banks. Our third analysis examines the relevance of discretionary LLPs to the Treasury's allocation of government resources to banks during the financial crisis through its Troubled Asset Relief Program (TARP). We argue that TARP funding created a shock to the banking system by altering banks' capital and lending policies, and in our final analysis examine how the TARP funding shock impacted the association between discretionary LLP accruals and banks' future charge-offs.

[3] The model is estimated using the immediate prior quarter's data. The current quarter's financial statement information is combined with the estimated coefficients to compute expected LLPs. Therefore expected LLPs reflect current publicly available loan risk indicators.

Our analysis of valuation implications during the financial crisis focuses on the association between banks' LLPs and stock returns. We first note that the expected LLP accruals are based on current charge-offs and non-performing loan levels. Given the time lag between loan originations and subsequent charge-offs, expected LLP accruals are more closely related to past loan policies, while discretionary LLPs better reflect new lending policies. Prior research (e.g., Acharya and Mora, 2015; Beatty and Liao 2011) indicates that banks' loan policies underwent significant changes during the financial crisis. To the extent that the discretionary LLP accrual component incorporates information about the latest lending policies, its association with stock returns and future realized losses should be elevated during the financial crisis (when banks' lending policies were undergoing substantial change) relative to surrounding periods. However, a reduced association can result if banks abuse their discretion (Huizinga and Laeven 2012). Under such conditions, it is possible that discretionary accruals exhibit a smaller negative association with stock returns and a smaller positive association with future realized losses during the financial crisis period than in the surrounding periods.[4]

The results of our first two tests indicate that discretionary LLPs have a stronger association with banks' contemporaneous security returns (negative) and with future realized losses (positive) during the financial crisis than in the surrounding periods. The association between discretionary LLPs and stock returns during the crisis (–0.303) is more than seven times stronger than the association in the pre-crisis period (–0.037) and more than three times stronger than the association in the post-crisis period (–0.071). The association between discretionary LLPs and future realized credit losses during the crisis is more than double the association in the surrounding periods. These

[4] Note that such a reduced association with stock returns requires the market to be efficient to see through the abuse of discretion. A reduced association with future realized losses, however, does not require any market efficiency assumptions.

results strongly suggest that accounting discretion, on average, was more informative during the crisis.

While we find that the informativeness of discretionary LLP's is elevated during the financial crisis period, the Federal Government introduced a shock to the banking system that consequently altered lending policies. In October of 2008, the U.S. Congress responded to the financial crisis by providing funds to the Treasury that were allocated to banks through the Troubled Asset Relief Program (TARP). Under TARP's Capital Purchase Program (CPP), the Treasury purchased banks' preferred stocks, thus, increasing their capital available to absorb losses (i.e., "bailout" objective). However, subsequent statements by the Treasury Secretary (quoted in Section 2) imply that TARP's CPP would target healthier institutions for funding with the objective of stimulating lending (i.e., "investor focus" objective). Although the specific criteria adopted by the Treasury to select the recipients of TARP funding have never been publicly disclosed, two studies have attempted to infer the selection criteria (Duchin and Sosyura 2012; Bayazitova and Shivdasani 2011).[5] While these two studies disagree on the role of political connections in TARP funding decisions, they both find evidence consistent with the "investor focus" objective in that healthier institutions were more likely to be approved for funding.

Our third analysis evaluates the relevance of discretionary LLP accruals to the Treasury's selection of banks for funding through TARP. To the extent that accounting discretion conveys information regarding the riskiness of the loan portfolio, we should expect a negative association between TARP approval and discretionary LLPs.[6] However, abuses of accounting discretion

[5] "And the lack of transparency that permeated this and other government rescue efforts has only reinforced public perceptions that something untoward has occurred." – Nobel Laureate Joseph Stiglitz testimony before Congressional Oversight Panel on TARP March 4, 2011.

[6] As noted by Beatty and Liao (2014), recent accounting studies have found that security returns are negatively associated with discretionary LLP's. In contrast, earlier studies dating back to Beaver, Eger, Ryan, and Wolfson.

during the crisis would be expected to reduce the association between discretionary LLPs and TARP approval. Our results show that discretionary LLP accruals are indeed negatively associated with TARP funding decisions made by the Treasury.[7] A "one standard deviation" increase in discretionary LLPs reduces the government's likelihood of approving the applications by 7.0%.[8] Together with the finding that expected LLP accruals are insignificant, the results point to the relevance of accounting discretion in conveying risk-relevant information. We also find that both discretionary and expected LLP accruals are positively associated with banks' decisions to apply for CPP funds from TARP, suggesting that weaker banks were more likely to apply to government funding during the financial crisis.[9]

The fourth analysis examines whether the TARP funding shock impacted the informativeness of the components of LLP accruals. A separate analysis of the discretionary and expected LLP accrual components is important in that the TARP funding shock is hypothesized to have asymmetric effects on their relative informativeness. This is because, as argued earlier, the LLP components' ability to reflect changed lending policies differs. However, the capital infusion allowed banks receiving TARP funds to significantly expand their lending and adopt more liberal lending standards (Duchin and Sosyura, 2012; Cornett et al., 2013). This change made their credit policies less consistent with the credit policies in effect before TARP funding. Therefore, we hypothesize that the informativeness of discretionary LLP would be more negatively affected by the TARP funding shock, relative to the informativeness of expected accruals. To test the

(1989) argued that strong banks signaled favorable new about future earnings prospects by accruing larger discretionary LLP's, thus, arguing for a positive association.

[7] Our tests control for self-selection by including the Inverse Mills Ratio (IMR) from our TARP application model.

[8] This effect is more pronounced than many other determinants of TARP funding approval, e.g., beginning allowance and earnings before provisions.

[9] A "one standard deviation" increase in discretionary LLPs improves banks' likelihood of applying for TARP by 3.8%.

asymmetric effect hypothesis, we investigate cross-sectional associations of the accrual components with future charge-offs. Consistent with our hypothesis of asymmetric effects, we find that the TARP funding shock has a more negative effect on the association of future charge-offs with discretionary LLPs than with expected LLPs. In particular, the TARP funding shock reduces the association between discretionary LLPs and future charge-offs by 80%, and larger TARP funds weakens the association to a greater extent.

Our study makes several contributions to the literature. Banks' use of accounting discretion during the financial crisis has been severely criticized (e.g., Huizinga and Laeven 2012; FASB 2012). By documenting the increased informativeness of discretionary LLPs, we first find a positive role for accounting discretion especially during the financial crisis period, where such discretion has been severely criticized. Second, although the association of discretionary LLPs with security returns has been studied during earlier periods, we are unaware of any studies that have examined their relevance to other decision-making contexts. We fill the gap by exploiting the setting of government's investment in banks during the recent financial crisis and showing the relevance of discretionary LLPs to the Treasury's decision to award TARP funds. Third, the presence of the TARP funding shock alters banks' credit policies, thus allowing us to document the existence and magnitude of the dilution in the informativeness of accounting discretion due to the injection of government funds. Overall our results are consistent with discretionary LLPs providing useful information for decision making and thus, support the current accounting practice of allowing managers to exercise discretion in making such estimates.

The remaining sections are organized as follows: In Section 2, we review the extant literature on LLPs and provide the relevant background regarding TARP. Section 3 presents our

hypotheses, followed by Section 4 with a discussion of our research methodology and empirical results. Conclusions and implications are presented in Section 5.

2. Background

2.1 Loan Loss Provisions (LLPs)

Typical accounting accruals in banking include loan loss provisions, impairments, depreciation, deferred taxes, reclassification of securities gains and losses, changes in loans held for sale and changes in interest receivables and payables. Notwithstanding the presence of these other accruals, loan loss provisions (LLPs) have been the predominant focus of banking studies. Beatty and Liao (2014) provide several reasons for this focus on LLPs. First, LLPs, on average, constitute nearly 56% of a bank's total accruals. Second, the focus on a single accrual bypasses significant measurement concerns implicit in the construction of an aggregate discretionary accrual model. Finally, data on LLPs are publicly available, whereas data on the other bank accruals have only recently started becoming available.

Loan portfolios are a major source of both income and risk for banks. Conceptually, LLPs and related loan loss reserves can be viewed as providing a cushion against expected losses in the loan portfolio. While accounting rules govern the estimation of LLPs, the application of these rules to complex transactions requires significant judgment and discretion. In essence, the accounting rules define the boundaries within which accounting discretion plays out. Both the FASB and IASB have long required use of the incurred loss model for loan loss provisioning. However, the complexity of loan portfolios allows substantial scope for discretion within the prescribed rules (Financial Stability Forum 2009; Dugan 2009). Such discretion can have either favorable or adverse implications for the informativeness of LLPs. On the one hand, if discretion is used to convey insiders' private information to outsiders about the riskiness of the loan portfolio, such

discretion can improve the informativeness of LLPs. On the other hand, if discretion is used to obfuscate the true riskiness of the portfolio and further the self-interest of the insiders, then the informativeness of LLPs can be worsened.

Bank researchers have widely used expectation models to identify an expected level of loss provisioning based on current loss experience - charge-offs and non-performing loans (Beatty and Liao 2014). The difference between the reported and expected LLP, thus, represents a change in the bank's future loss expectation relative to its current loss level that has been termed the discretionary LLP. Prior researchers have hypothesized and found that banks' share price/stock return will adjust in response to changes in loss expectations that are embedded in the discretionary LLP component.

Beaver and Engel (1996) partition loan loss reserves into expected and discretionary components and find a positive association between the discretionary component and stock returns, a result consistent with banks using provisions to signal their ability to withstand future loan problems. Using data from the period between 1984 and 1989, Wahlen (1994) finds that future earnings (before provisions) are positively associated with discretionary LLPs. However, Wahlen finds that the association between stock returns and discretionary LLPs changes from positive to negative when controlling for discretionary non-performing loans (NPL) and discretionary charge-offs. Ahmed et al. (1999) use data from 1986 to 1995 and find that security returns are negatively correlated with the discretionary component of LLPs in the post-Basel regime. Thus, they conclude that the market viewed discretionary LLPs more as an expense than as a signal of financial strength. Their findings provide further support for the conclusion that discretionary LLPs in recent years are negatively associated with future earnings before provisions.

To summarize, prior research on the use of accounting discretion in reporting LLPs by banks spans different time periods and provides mixed results regarding the informativeness of discretionary LLPs.[10] As Beatty and Liao (2014) point out, the market valuation of accounting discretion is largely under-researched and thus, they call for further research to understand whether the use of the discretion is self-interested or designed to serve shareholder interests. In addition, the implications of accounting discretion with respect to LLPs for decision-making has been largely under-researched as well.

2.2 Troubled Asset Relief Program (TARP)

The Emergency Economic Stabilization Act of 2008 became effective law on October 3, 2008. One of the Act's provisions was the creation of the Troubled Asset Relief Program (TARP) that contained several major components. One of the main programs initiated under TARP was the Capital Purchase Program (CPP). The motivation for CPP according to the U.S. Treasury is stated below:

> "The Capital Purchase Program (CPP) was launched to stabilize the financial system by providing capital to viable financial institutions of all sizes throughout the nation. Without a viable banking system, lending to businesses and consumers could have frozen and the financial crisis might have spiraled further out of control. Based on market indicators at the time, it became clear that financial institutions **needed additional capital to absorb losses** and restart the flow of credit to businesses and consumers."[11]

Initially the CPP, consistent with the objective of providing capital to absorb losses, appears to have been structured to purchase toxic assets from banks at risk. Such a "bailout plan"

[10] Basel I regulatory capital requirements excluding loan allowances from Tier 1 regulatory capital (effective in 1992) may have been responsible for differences between the results of studies performed during pre- and post-Basel time periods (Beatty and Liao, 2014).

[11] See http://www.treasury.gov/initiatives/financial-stability/TARP-Programs/bank-investment-programs/cap/Pages/overview.aspx.

targeting banks with toxic assets was hotly debated at the time (Scott and Taylor 2009). However, comments by Treasury Secretary Paulson indicate an alternative "investor focus" of CPP toward assisting relatively healthier institutions. One week after the Treasury's CPP announcement, Treasury Secretary Paulson's (2008) statement on October 20, 2008 reads:

> "While many banks have suffered significant losses during this period of market turmoil, many others have plenty of capital to get through this period, but are not positioned to lend as widely as is necessary to support our economy. This program (CPP) is designed to attract broad participation by **healthy institutions** and to do so in a way that attracts private capital to them as well. Our purpose is to increase confidence in our banks and increase the confidence of our banks, so that they will deploy, not hoard, their capital. And we expect them to do so, as increased confidence will lead to increased lending. This increased lending will benefit the U.S. economy and the American people."

When the CPP program was announced on October 14, 2008 by Treasury Secretary Paulson, nine large banks had already agreed to participate.[12] Other Banks desiring TARP assistance were required to submit applications to their primary bank regulator.[13] However, a November 14, 2008 deadline for applications was imposed so that banks had only 30 days to submit their applications for TARP funding.

The CPP applications were subject to a two-stage review process with the first stage performed by each bank's regulator.[14] After receiving the bank regulators' recommendations, the

[12] See http://www.treasury.gov/press-center/press-releases/Pages/hp1207.aspx.
[13] For bank holding companies, the application had to be submitted to both the applicant's holding company supervisor and to the supervisor of the largest insured depository institution controlled by the applicant (http://www.treasury.gov/press-center/press-releases/Documents/faqcpp.pdf).
[14] To expedite the review process given the 30-day deadline for submitting applications, the CPP application forms (https://www.treasury.gov/press-center/press-releases/Documents/applicationguidelines.pdf) only required banks to disclose their risk-weighted assets reported in their most recent FR-Y9 Call Report and the number of preferred shares authorized and available for purchase by the Treasury. Thus, it is apparent that Bank regulators' recommendations would have been based on the information contained in regular Call reports to regulators and the results of prior audits and bank examinations.

Treasury made the final decisions about which firms would be funded. In our sample of 262 public bank holding companies that applied for TARP funding, 219 applications were approved. While the application review process underlying the TARP was well-publicized, the specific criteria used to select applicants for admission into the program were not publicly revealed.

Such mixed signals regarding the eligibility of banks for TARP assistance, combined with a lack of public disclosure regarding the selection criteria, have led to researchers trying to infer selection criteria from empirical tests. Duchin and Sosyura (2012) investigate a variety of factors influencing banks decision to apply for admission to TARP and the government's decision to approve banks' applications. They found that larger banks with better asset quality, higher deposit to asset ratios, more leverage, and higher market risk sensitivity were more likely to apply for TARP. Duchin and Sosyura (2012) conclude that political connections did not influence banks' decision to apply for TARP funding, but did have a significant effect on the government's TARP approval decision.[15] Comparing pre- and post-TARP security return performances, they find that politically-connected TARP participants had significantly lower improvements in returns than did other participants.

Bayazitova and Shivdasani's (2011) results are similar to Duchin and Sosyura (2012) in that banks approved for TARP funding were healthier and had better asset quality. In contrast with Duchin and Sosyura (2012), however, Bayazitova and Shivdasani (2011) do not find their political connection variables to be significant in explaining the Treasury's TARP approval decision. Of particular relevance to this study, the positive association between TARP approval and asset quality in their paper implies that TARP might have an investor focus. Although Bayazitova and

[15] Political connection was proxied by whether or not the bank's headquarters was located in a Congressional district having a representative serving on an important finance sub-committee.

Shivdasani (2011) include total LLPs as an independent variable, neither their study nor Duchin and Sosyura (2012) explicitly examine the role of accounting discretion in the government's investment decision, which we address in this study.

A follow-up study by Duchin and Sosyura (2014) investigates the effects of TARP fund injection on banks' lending policies and their investment risk. Consistent with the government's "investor focus" objective, they find that TARP participants increased their capital ratios. On the other hand, Duchin and Sosyura (2014) argue that after joining TARP, banks increased the risk of loans (as measured by the average loan to income ratio and average interest rates charged) and simultaneously shifted their investment portfolio away from US Treasury bonds toward mortgage-backed securities (MBS). They further argue that this behavior was due to the treatment effect of government subsidies rather than to the selection process used by the government in admitting banks into the program.

3. Hypotheses

3.1 Hypothesis development

Banks take on risks that are opaque and difficult to verify, raising concerns about excessive risk-taking by individual banks and the contribution of individual banks to the risk of the financial system (Bushman 2015). In the banking sector, financial accounting numbers play a unique role in informing various stakeholders about the risk attributes of loan portfolios. Banks are required to disclose a substantial amount of risk information about their loan portfolios including loan loss reserves, loan loss provisions (LLPs), charge-offs, and non-performing loans (NPL). LLPs are widely considered to be more forward-looking and timely than the other metrics (Beaver et al. 1989; Liu and Ryan 2006). However, banks have more discretion in reporting LLPs than in reporting charge-offs and NPL (Liu and Ryan 2006).

Conceptually, a bank's estimated loan loss provisions are comprised of two components:

1. An expected or "normal" level of LLP component based on publicly available loan portfolio risk proxies.
2. A discretionary or "abnormal" LLP component that reflects an adjustment to the expected LLP that reflects the bank's private information about the bank's lending policies and/or future economic conditions and possible managerial opportunism.

A useful way to distinguish between the expected and discretionary LLP components is to recognize that there is a time interval between loan origination and loan default. Expected LLPs are based on current losses (charge-offs) and non-performing loans. Both measures are a consequence of past credit policies in effect at the time of loan origination coupled with the effect of current economic conditions. In contrast, discretionary LLP accruals are predicated on current credit policies and assumptions about future economic conditions. While discretionary LLPs are more forward looking than expected LLPs, their dependence on assumptions about future events makes them vulnerable to estimation error and manipulation. The conflict between increased value relevance due to discretionary LLP's forward-looking nature and decreased value-relevance due to estimation error and/or the misuse of discretion has put it under the spotlight of accounting research.

In developing our hypotheses for the value relevance of LLPs during the financial crisis relative to surrounding periods, we recognize that expected LLPs reflect past lending policies and current conditions whereas discretionary LLPs are based on the banks' current lending policies and assumptions about future economic conditions. During periods of relative stability in lending policies, expected LLPs are strong indicators of future expected credit losses and their valuation

consequences can be priced by the market. In such environments, discretionary LLPs are unlikely to have positive value relevance to the market.[16]

However, as economic conditions change during a financial crisis, banks can alter their lending policies. Prior studies by Acharya and Mora (2015), Beatty and Liao (2011), and Dugan (2009) have shown that banks' credit policies typically become much more conservative during the onset of a financial crisis due to pro-cyclicality. When lending policies and expectations about future economic conditions change, banks' estimates of their future credit losses will change, thus, necessitating potentially large adjustments to their loan loss allowances and LLPs. These adjustments to LLPs are represented in our study by discretionary LLPs. We contend that, during a financial crisis, discretionary LLPs will be more likely to contain value relevant information than during stable periods.

The prediction of greater informativeness during a period of financial crisis relies on the assumption that banks have the ability to make unbiased assessments of future economic conditions and the market recognizes this ability. If banks are unable to make unbiased assessments and/or exploit their discretion by delaying loan loss provisioning during the financial crisis, then discretionary LLPs can become less informative (Huizinga and Laeven 2012). In this situation, the informativeness of discretionary LLP accruals could become weaker during the financial crisis period. Based on the arguments above, our hypotheses H1a and H1b specifically examines the informativeness of discretionary LLPs prior to, during, and after the financial crisis. H1a examines the association of discretionary LLPs with contemporaneous stock returns and H1b examines their association with future realized losses. To draw informativeness conclusions from H1a, we require

[16] In fact, there is the possibility of negative value relevance if banks manipulate LLPs to manage their reported earnings and/or capital ratios.

the market efficiency assumption. However, no efficiency assumption is required for H1b. We state our first two hypotheses in null form as follows:

H1a (Null): The association of discretionary LLPs with stock returns is not significantly different during the financial crisis period than during the periods prior to and after.

H1b (Null): The association of discretionary LLPs with future realized losses is not significantly different during the financial crisis period than during prior and subsequent periods.

As discussed previously, if discretionary LLPs signaled worse-than-expected asset quality as argued by Ahmed et al. (1999), we would see a negative association between discretionary LLPs and contemporaneous stock returns and thus, H1a would be rejected if the association is significantly more negative during the financial crisis.[17] However, to the extent that banks abuse their accounting discretion during the crisis, the association between discretionary LLP accruals and security returns would weaken. Similarly, if the discretionary LLPs more correctly indicated worse-than-expected asset quality during the financial crisis, we expect to see a stronger positive association with future realized losses during this period, rejecting H1b.

Our second hypothesis concerns the characteristics of TARP applicants. We expect that a bank's incentives to participate in TARP and the amount of funds that the bank requests would be directly related to its demands for capital. Such capital demands are shaped by the bank's existing capital and future credit losses that it expects to absorb. From this perspective, we predict that banks with more expected future credit losses should be more likely to apply for TARP capital, leading to our second hypothesis.

[17] Alternatively, if discretionary LLP accruals signal a bank's ability to withstand potential future losses as argued by Beaver (1989), Beaver and Engel (1996), and Wahlen (1994), increased value relevance would imply a positive association. According to the arguments in Beatty and Liao (2014), we believe that this is unlikely in recent years after Basel regulations (see also footnote 10).

H2: Discretionary LLPs are positively associated with the banks' probability of applying for TARP funding.

It is possible that banks knew the TARP assistance criteria and actively managed their LLPs to obtain TARP funds. However, we believe it is unlikely that the TARP assistance program had such an endogenous effect on banks' loan loss provisioning for two reasons. First, banks were not invited to apply for TARP assistance until October 14, 2008, that is, two weeks after the end of the third fiscal quarter of 2008. Since call reports are filed within 30 days after quarter end, banks had only a short time period to manipulate their third quarter LLPs in order to enhance their probability of TARP funding. Second, even if banks had the incentives and the ability to manipulate their LLPs for the explicit purpose of obtaining TARP funds, there would have been uncertainty about the preferred strategy since the Treasury never revealed the selection criteria underlying TARP funding. Under the assumption that the Treasury desired to bailout weak banks, TARP applicants would have incentives to increase their LLPs. However, under the assumption of an "investor focus" objective at Treasury, banks would have incentives to reduce their LLPs.

In our third hypothesis, we consider the association of discretionary LLPs with the Treasury's allocation of resources. Under the maintained assumption that the Treasury implemented the "investor focus" objective in evaluating TARP applicants and viewed LLP's as an indicator of credit risk, we would observe a negative relationship between LLPs and the TARP acceptance.[18] In addition, to the extent that discretionary accruals are more forward-looking than expected LLPs during the financial crisis, discretionary LLPs would exhibit a stronger (negative) association with TARP acceptance than expected LLPs do. However, if the Treasury viewed discretionary LLPs as being subject to significant manipulation during the financial crisis, we

[18] While neither Duchin and Sosyura (2010) nor Bayazitova and Shivdasani (2011) examine the role of discretionary LLP accruals on TARP approval decisions, the loan quality results of both studies appear to be consistent with the "prudent investor focus" being given greater priority than the "bailout" objective.

would fail to observe a significant association between them and TARP approval decisions. These arguments lead to our third hypothesis about the evaluation of TARP applicants by bank regulators and the Treasury:

H3: Discretionary LLPs are negatively associated with TARP approval decisions.

For banks receiving TARP approval, an important issue is whether TARP funding impacted the association between discretionary LLPs and future charge-offs. To the extent that the TARP funding shock altered banks' lending policies, the informativeness of the LLP accruals could be diminished. In particular, we investigate the ability of discretionary LLPs accrued in the pre-TARP period to explain post-TARP charge-offs. An expanded lending capability, which is a stated objective of TARP, encouraged banks to implement less conservative lending policies. This predicted effect is consistent with the evidence in prior research that banks did in fact relax their credit policies (Cornett et al. 2013; Duchin and Sosyura 2014). Thus, we expect banks' post-TARP credit losses to increase relative to the levels expected based on the conservative policies in effect pre-TARP, when LLP accruals were established. Under such conditions, TARP funding would be expected to reduce the association between future credit losses and the discretionary LLP accruals that were established pre-TARP.

In contrast, the TARP funding shock should not have a similar effect on the association between pre-TARP expected LLPs and post-TARP charge-offs. This is because expected LLPs should reflect the charge-off experience that was shaped by historical credit policies rather than by the credit policies in effect immediately before TARP and thus, should be less forward-looking. Thus, TARP funding and consequently, the change in participating banks' credit policies should have a weaker impact on the informativeness of expected LLP accruals relative to that of discretionary LLP accruals. These asymmetric effects are reflected in the following hypothesis:

H4a: TARP participation weakens the association between discretionary LLPs and future credit losses.

H4b: The association with future credit losses is weakened less for expected LLPs than for discretionary LLPs.

While preceding arguments predict that TARP funding will induce lending policy changes that reduce the informativeness of loan loss provisioning, the magnitude of this effect is expected to vary cross-sectionally. *Ceteris paribus*, a bank's ability to expand its lending should increase with the amount of TARP funding received. Thus, banks receiving more TARP funds will have greater capacity to expand their lending. Such expansion, in turn, is expected to result in greater leniency in credit granting policies and higher future credit losses. Thus, the effect predicted by H4a should be more prominent for banks that received proportionately more TARP funds. The Treasury's web-site indicates that TARP funding under CPP varied from $301,000 to $25 billion.[19] The variation in TARP funding was based on the fact that funding was proportional to the successful applicant's (Tier 1) risk-weighted assets and the proportions varied from 1% to 3%.[20] Consideration of the magnitude of TARP funding leads to the following hypothesis:

H5: Banks receiving proportionately more TARP funds exhibited greater declines in the association between discretionary LLPs and future credit losses.

3.2 Discretionary LLP accruals

To test our hypotheses, we disaggregate total loan loss provisions (LLPs) into discretionary and expected components. The first step in obtaining an expected LLP accrual estimates is to regress banks' LLPs on loan portfolio risk metrics and controls using the following regression modified from Beck and Narayanamoorthy (2013).[21]

[19] See https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/bank-investment-programs/cap/Pages/overview.aspx.
[20] See http://www.federalreserve.gov/bankinforeg/tarpinfo.htm.
[21] Since we estimate the model on quarterly basis, time-varying macro-economic indicators are not included. The results are robust to other expected LLP models like Kanagaretnam et al. (2010).

$$LLP_{it} = \alpha_{0t} + \alpha_{1t}CHO_{it} + \alpha_{2t}DNAL_{it} + \alpha_{3t}IND_{it} + \alpha_{4t}COM_{it} + \alpha_{5t}SIZE_{it} + \alpha_{6t}ALLOW_{it-1} + \varepsilon_{it} \quad (1)$$

where *LLP* denotes total loan loss provisions, *CHO* denotes charge-offs, *DNAL* denotes the change in non-accrual loans, *IND* denotes individual non-mortgage loans, *COM* denotes commercial loans, *SIZE* denotes the natural logarithm of total asset, and *ALLOW* denotes beginning-of-period loan losses allowance for firm *i* in quarter *t*.

Equation (1) is estimated on a quarterly basis. We calculate expected LLP (*EXP_LLP*) in quarter *t* using financial statement information from the same quarter and the coefficient estimates of Eq. (1) from quarter *t-1* ($\alpha_{0t} - \alpha_{6t}$). Discretionary LLP (*DIS_LLP*) is then computed as the difference between reported LLP and expected LLP, that is, *DIS_LLP* = *LLP* – *EXP_LLP*. Note that this method allows us to account for the most recent lending policy as well as current risk factors in the estimation of expected LLP, so that discretionary LLPs reflects insiders' private forward-looking information or managerial opportunism.

3.3 Sample selection

We use two samples to examine our hypotheses. We start with all the bank holding companies with non-missing variables from Bank Regulatory database between the first quarter of 2006 and the second quarter of 2010. The stock return tests include only public banks, while the future charge-off tests include both private and public banks. We then focus on a sample of banks that were eligible for CPP participation and were active as of September 30, 2008, the quarter immediate proceeding the administration of CPP.[22] Following Duchin and Sosyura (2012), we drop the first set of nine "too-big-to-fail" banks that were pre-approved for CPP funding at the beginning.[23] Because CPP investments are made at the holding company level, our sample consists

[22] We thank Ran Duchin for generously sharing with us the data on banks and their CPP application information.
[23] Our results are robust to the inclusion of these banks.

of 313 bank holding companies for which TARP application status can be determined. Among the bank holdings companies, 262 banks (83.7%) applied for CPP, and the remaining 51 banks did not submit CPP applications. Among the 262 applicants, 219 applications (83.6%) were approved for the CPP funding. Finally, 193 accepted the investment.

4. Empirical Analyses

In this section, we provide empirical results for the three central questions addressed in this study. First, we evaluate whether discretionary LLPs were more informative during the financial crisis than surrounding periods by examining their association with contemporaneous stock returns as well as future realized losses. We then investigate whether discretionary LLPs are associated with banks' TARP application decision and the Treasury's TARP approval decision. Finally, we examine whether TARP fund infusions reduce the ability of pre-TARP discretionary LLPs to predict post-TARP credit losses.

4.1 Discretionary LLPs and contemporaneous stock returns: Tests of H1a

We assess the value relevance of LLP accruals during the financial crisis by regressing contemporaneous stock returns on discretionary LLPs, expected LLPs, and other earnings components. This design is consistent with prior research on the value relevance of accrual components of earnings (e.g., Beaver and Engel 1996; Subramanyam 1996; Ahmed et al. 1999). Our sample contains 5,204 firm-quarter observations for the 307 bank holding companies that were eligible for CPP participation and had stock return data available from Q1/2006 to Q2/2010. The sample is divided evenly into three periods that cover Q1/2006–Q2/2007 (Period 1: pre-crisis), Q3/2007–Q4/2008 (Period 2: during crisis), and Q1/2009–Q2/2010 (Period 3: post-crisis). Table 1, Panel A provides descriptive statistics of stock returns and earnings components for this sample. On average, banks experience deteriorating profitability over the sample period, as evidenced by

their declining earnings before provisions and growing total LLPs. Despite of the increase in total LLPs, discretionary and expected LLPs exhibit different time-series patterns.[24] Average expected LLPs increase from 0.060 to 0.564 over the sample period, while discretionary LLPs have a greater mean value during the crisis (0.033) than the pre-crisis and post-crisis periods (–0.005 and –0.010). In addition, discretionary LLPs have a large standard deviation (0.211) relative to the mean. As expected, average quarterly stock returns are less negative in the pre- and post-crisis periods.

To test H1a, we estimate OLS regressions of contemporaneous quarterly returns on discretionary LLPs (*DIS_LLP*), expected LLPs (*EXP_LLP*), and earnings before LLPs (*EARN*) for the entire sample period and each of the three subsample periods (see Eq. (2) below).[25]

$$RET_{it} = \beta_0 + \beta_1 DIS_LLP_{it} + \beta_2 EARN_{it} + \beta_3 EXP_LLP_{it} + \epsilon_{it} \quad (2)$$

The results from estimating eq. (2) are presented in Table 1, Panel B. Consistent with Ahmed et al. (1999), the results in Column 1 show that discretionary and expected LLPs are both negatively associated with stock returns over the sample period. Column 1 also illustrates that discretionary LLPs might be more value-relevant than expected LLPs (coefficients = –0.148 vs. –0.023), underscoring the importance of disaggregating total LLPs in our study. Together with earnings before provisions, the LLP components explain 7.0% of the variation in stock returns.

Next, we estimate Eq. (2) for each of the subsample period. Among the three periods, discretionary LLPs have the strongest association with stock returns during the financial crisis, suggesting that the market's valuation of managerial discretion is not consistent over time. As

[24] The average of total LLPs in our study is lower than that reported in Huizinga and Laeven (2012), which is likely due to the use of year-to-date LLPs, whereas our study focuses on quarter-specific LLPs.
[25] To our knowledge, this is the first study on the value-relevance of discretionary loan loss provisions during the financial crisis. It is related to Beatty and Liao's (2014) call for future research on the market valuation of accounting discretion, which can be used for the purpose of management's self-interest or shareholder interests.

banks' lending policies undergo substantial changes during the crisis, discretionary LLPs contain more value-relevant information than previously. In particular, the association of discretionary LLPs with stock returns during the crisis (coefficient = –0.303, *t-statistic* = –3.474) is more than seven times stronger than the association in the pre-crisis period (coefficient = –0.037, *t-statistic* = –0.489) and more than three times stronger than the association in the post-crisis period (coefficient = –0.071, *t-statistic* = –2.128). The differences between the coefficients are statistically significant at the 1% level (χ^2 = 20.40 and 27.02). Similarly, a comparison of the R^2s also indicates that discretionary LLPs explain a greater portion of stock returns during the financial crisis than the surrounding periods. Figure 1 provides a pictorial overview of the enhanced value relevance of discretionary LLPs. The solid line graph demonstrates a significant V pattern with the coefficient on discretionary LLPs being an order of magnitude lower during the crisis. Overall, Table 1 and Figure 1 show that discretionary LLPs contain more value-relevant information during the financial crisis than the surrounding periods, rejecting H1a.

4.2 Discretionary LLPs and future charge-offs: Tests of H1b

We next consider the informativeness of discretionary LLPs by examining their association with future realized losses (i.e., future charge-offs). Following prior studies (e.g., Altamuro and Beatty 2010; Beck and Narayanamoorthy 2013), we estimate OLS regressions of future charge-offs on discretionary LLPs and control variables for the entire sample period and for each of the subsample periods separately (see Eq. (3) below).

$$AVECHO_{it+4} = \gamma_0 + \gamma_1 DIS_LLP_{it} + \gamma_2 ALLOW_{it-1} + \gamma_3 EXP_LLP_{it} + \gamma_4 IND_{it} + \gamma_5 COM_{it} + \gamma_6 SIZE_{it} + \omega_{it} \quad (3)$$

where $AVECHO_{it+4}$ denotes average quarterly charge-offs in the 4-quarter period after quarter *t*, and all other variables are defined previously.

Note that this analysis is different from the value-relevance test above in two aspects. First, this analysis includes both public and private banks, while the focus of the value-relevance test is on public banks. Second, this analysis keeps the first two quarters in each subsample period so that the average charge-off in the next four quarters does not overlap with the subsequent period, while the test above uses all quarters in each subsample period. To control for potential seasonality in credit losses, we use the first two quarters of 2008 as the subsample of financial crisis. The results are almost identical when we use the last two quarters of 2007.

Table 2, Panel A reports summary statistics of the sample for this analysis. In total, we have 5,695 firm-quarter observations, representing 1,165 individual banks. As expected, there is an increasing trend in future charge-offs over the sample period and thus, banks reserve larger amounts of LLPs and allowances after the crisis begins. Banks report the largest amount of discretionary LLPs during the crisis, but the largest amount of expected LLPs after the crisis. In general, the descriptive statistics are similar to those in Table 1, Panel A.

Table 2, Panel B presents estimates of Eq. (3). The coefficients for discretionary LLPs are positive in all three periods as expected. However, the coefficients vary in magnitude as is evident in Panel B of Table 2 and in Figure 1. In fact, discretionary LLP coefficient in the financial crisis period (column 3) is more than twice as large as coefficients in the two surrounding periods (columns 2 and 4). The differences between the coefficients are statistically significant at the 1% level and imply that discretionary LLPs are more informative about future losses during the crisis period, thus, contradicting H1b. The changing informativeness of LLPs as reflected in a mapping into future charge-offs is depicted by the dotted line in Figure 1 with a distinct inverted V pattern. Note that, in contrast to the market return analysis, informativeness is captured by a positive coefficient here. Hence an inverted V pattern for this analysis and a V pattern for the stock return

analysis both represent increased informativeness during the financial crisis, and suggest that accounting discretion is more beneficial in times of change than in times of stability.

4.3 Discretionary LLPs and TARP decisions: Tests of H2 and H3

We then investigate whether discretionary LLPs are related to banks' TARP application decisions and the government's TARP approval decisions in the third quarter of year 2008. H2 predicts that banks with greater discretionary LLPs are more likely to apply for TARP as they expect to absorb a larger amount of credit losses in the future. H3 considers the government's selection of TARP fund recipients. We expect a negative association between discretionary LLPs and the probability of TARP approval, if the government targeted healthier banks with an "investor focus" objective. We expect a positive association if the government selected weaker banks with a "bailout" objective.

Following prior research (e.g., Duchin and Sosyura 2012; Bayazitova and Shivdasani 2012), we focus on banks' reporting of discretionary LLPs in the quarter immediately preceding the administration of CPP (i.e., the third quarter of year 2008) in the tests of H2 and H3. Table 3 compares the summary statistics of the main variables between TARP and non-TARP banks. Average discretionary (expected) LLPs equals 0.009 (0.312) for the entire sample. Table 3 also shows that TARP applicants and non-applicants are similar in many aspects, such as size, age, liquidity, management quality, deposit-to-asset, etc. Compared to the non-applicants, TARP applicants have larger expected LLPs, more future charge-offs, lower earnings before provisions, lower capital adequacy, and higher leverage. However, their difference in discretionary LLPs are not statistically different. This evidence implies that despite of TARP applicants' poorer financial performance, their discretionary LLPs are similar to the non-applicants'. Moreover, Table 3 compares financial conditions between the approved TARP applicants and the rejected ones. In

general, the approved banks are larger, with higher earnings and lower liquidity, located in states with better macroeconomic growth than the rejected banks, indicating that a purpose of the TARP capital might have been to stabilize relatively large and profitable banks that suffered temporary liquidity constraints. In addition, the approved applicants tend to report smaller expected and discretionary LLPs than the rejected ones. In the following year, TARP participants report lower charge-offs than the rejected ones. Overall, the evidence in Table 3 is suggestive of an association between TARP approval and discretionary LLP accruals.

To examine H2 and H3, we modify the TARP application and approval models from Duchin and Sosyura (2012) by distinguishing between expected and discretionary LLP accruals:

$$\begin{aligned} TARP_APPLY = {} & \delta_0 + \delta_1 DIS_LLP + \delta_2 EXP_LLP + \delta_3 ALLOW_{t-1} \\ & + \delta_4 CAP_ADQ + \delta_5 MGT_QLT + \delta_6 EARN + \delta_7 LIQUID \\ & + \delta_8 SENSI_MKT + \delta_9 FORECLOS + \delta_{10} LEV \\ & + \delta_{11} DEPOSIT + \delta_{12} AGE + \delta_{13} SIZE + \delta_{14} POL \\ & + \delta_{15} STA_MARCRO + \nu \,, \end{aligned} \tag{4a}$$

$$\begin{aligned} TARP_APPROVE & \\ & = \rho_0 + \rho_1 DIS_LLP + \rho_2 EXP_LLP + \rho_3 ALLOW_{t-1} \\ & + +\rho_4 MGT_QLT + \rho_5 EARN + \rho_6 LIQUID \\ & + \rho_7 SENSI_MKT + \rho_8 FORECLOS + \rho_9 LEV \\ & + \rho_{10} DEPOSIT + \rho_{11} AGE + \rho_{12} SIZE + \rho_{13} POL \\ & + \rho_{14} STA_MARCRO + \rho_{15} IMR_APP + \tau \,, \end{aligned} \tag{4b}$$

where *TARP_APPLY* denotes an indicator that equals one for the TARP applicants, and zero for the non-applicants; *TARP_APPROVE* denotes an indicator that equals one for the approved TARP applicants, zero for the rejected applicants. *DIS_LLP* denotes discretionary LLPs, *EXP_LLP* denotes expected LLPs, *ALLOW* denotes beginning-of-period loan losses allowance, *CAP_ADQ* denotes capital adequacy, *MGT_QLT* denotes management quality, *EARN* denotes earnings, *LIQUID* denotes liquidity, *SENSI_MKT* denotes sensitivity to market risk, *FORECLOS* denotes foreclosure, *LEV* denotes leverage, *DEPOSIT* denotes the deposit-to-asset ratio, *AGE* denotes firm age, *SIZE* denotes the natural logarithm of total assets, *POL* denotes political campaign

contributions, and *STA_MACRO* denotes changes in the Federal Reserve Bank of Philadelphia's state-coincident indexes from December 2007 to October 2008. We also include the inverse Mills ratio (*IMR_APP*) from estimated eq. (4a) in estimating eq. (4b) to control for banks' self-selection in applying for TARP.

Our second hypothesis (H2) focuses on the association between discretionary LLPs (*DIS_LLP*) and the application for TARP funding, i.e., δ_1 in Eq. (4a).[26] If discretionary LLPs are informative about bank health and banks with more toxic assets were more likely to seek TARP assistance, we expect to see a positive relation between discretionary LLPs and banks' application decision. To the extent that TARP exhibited an "investor focus" objective by targeting healthier banks and discretionary LLPs are informative about bank health, H3 predicts a negative relation between discretionary LLPs and TARP approval, i.e., $\rho_1 > 0$ in Eq. (4b). We control for banks' financial condition and performance by using the standardized CAMELS assessment rating system – the CAMELS rating system.[27] In addition to the six CAMELS factors, we also control for expected LLPs (*EXP_LLP*), firm size (*SIZE*), age (*AGE*), leverage (*LEV*), exposure to the crisis (*FORECLOS*), reliance on deposit (*DEPOSIT*), firms' political connections (*POL*) and macroeconomic growth in banks' headquarter states (*STA_MACRO*).

To correct for any self-selection bias, we also estimate a version of Eq. (4b) with the Inverse Mills Ratio (*IMR_APP*) from the TARP application model. When Eq. (4b) contains *IMR_APP*, capital adequacy (*CAP_ADQ*) is excluded from the second stage model, because prior studies

[26] Duchin and Sosyura (2012) measure asset quality using loan and lease allowance. In this study, we decompose total allowance into discretionary LLPs (*DIS_LLP*), expected LLPs (*EXP_LLP*), and beginning allowance ($ALLOW_{t-1}$), and include all three components of total allowance in the regressions. Bayazitova and Shivdasani (2012) use total LLPs rather than discretionary LLPs as their explanatory variable.

[27] The system obtains its name from the six factors that are evaluated: Capital adequacy (CAP_ADQ), Asset quality (ALLOWt-1), Management quality (MGT_QLT), Earnings (EARN), Liquidity (LIQUID), and Sensitivity to market risk (SENSI_MKT).

show that it affects banks' TARP application decision but not government's approval decision (Bayazitova and Shivdasani 2011; Duchin and Sosyura 2012).

The estimation results are shown in Table 4. Columns 1 reports the effect of discretionary LLPs on the probability of TARP application, i.e., Eq. (4a). Table 4 shows that the coefficient on discretionary LLPs is reliably positive in Column 1 (δ_1 = 1.882, *t-statistic* = 1.801). Column 3 and 5 show the effect of discretionary LLPs on the probability of TARP approval, i.e., Eq. (4b). Column 3 presents the estimates from Eq. (4b) excluding *IMR_APP*, confirming that capital adequacy does not affect TARP approval. The results in Column 5 include *IMR_APP* and exclude capital adequacy. The coefficient on discretionary LLPs is significantly negative (δ_1 = –2.464, *t-statistic* = –3.994). Overall, the evidence indicates that applicants with larger amounts of discretionary LLPs were more likely to apply for TARP funding but less likely to receive TARP capital injections. Our results are consistent with troubled banks applying for government assistance (H2) and the Treasury investing in healthier institutions (H3). In addition, the coefficient on expected LLPs is insignificant in Columns 3 and 5. In contrast to discretionary LLPs, expected LLPs do not appear to influence the government's TARP approval decisions. This evidence suggests that the positive association between total LLPs and TARP approval in Bayazitova and Shivdasani (2012) is likely driven by the discretionary component of LLPs, supporting our research design to decompose LLPs.

To quantify the economic consequences, we report the marginal effects in Columns 2, 4 and 6. A "one standard deviation" increase in discretionary LLPs raises the probability of TARP applications by 3.8%, but reduces the probability of TARP approvals by 7.0%. The marginal effect of discretionary LLPs on TARP approval is economically significant compared to other factors, e.g., earnings and liquidity. In addition, our results show that banks with higher earnings, lower

liquidity, and less beginning allowance are more likely to receive TARP approvals, consistent with Bayazitova and Shivdasani's (2012) finding that TARP funds are not provided to banks with high levels of troubled assets.[28] In summary, the evidence in Table 4 suggests a role of accounting discretion in the context of government decision making.

4.4 TARP participation and future charge-offs: Tests of H4a and H4b

The analyses above indicate that discretionary LLPs are more informative and value-relevant during the financial crisis, and they played an important role in TARP funding approval. We argue that the relation between pre-TARP discretionary LLPs and post-TARP charge-offs is indicative of the management's private information, and thus expect a positive relation between the two constructs. More importantly, TARP provides a quasi-natural experiment to examine the implications of a funding shock on the relation between discretionary LLPs and future charge-offs, because TARP funding can impact bank risk-taking and distress sales afterwards (e.g., Black and Hazelwood 2013; Cornett et al. 2013; Duchin and Sosyura 2014). In addition, TARP fund injections may have differential effects on the informativeness of discretionary LLPs and that of expected LLPs. Thus, we consider whether TARP funding affects the relation between discretionary LLPs and future charge-offs in the following equation.

$$AVECHO_{t+4} = \varphi_0 + \varphi_1 DIS_LLP + \varphi_2 DIS_LLP \times TARP_INJ + \varphi_3 EXP_LLP + \varphi_4 EXP_LLP \times TARP_INJ + \varphi_5 TARP_INJ + Controls + \varsigma \quad (5)$$

where $AVECHO_{t+4}$ denotes average quarterly loan charge-offs in the 4-quarter period after the third quarter of year 2008, *DIS_LLP* denotes discretionary LLPs, *EXP_LLP* denotes expected

[28] Consistent with Bayazitova and Shivdasani (2012), the coefficient on political contributions (*POL*) is insignificant in Table 3. The differing results from Duchin and Sosyura (2012) with respect to political contributions is likely due to our restriction of the sample to bank holding companies since LLPs are more relevant for these institutions.

LLPs, *TARP_INJ* is an indicator that equals one for banks receiving TARP funds and is zero otherwise, and *Controls* denotes a vector of control variables that were included in Eq. (4b).

The coefficient φ_1 (φ_3) reflects the relation between discretionary LLPs (expected LLPs) and future charge-offs for rejected TARP applicants, and φ_2 (φ_4) shows the effect of TARP fund injection on this relation. We expect φ_1 to be positive, because discretionary LLPs are informative about future charge-offs (e.g., see Table 2). A negative (positive) φ_2 implies that TARP fund injection reduces (increases) the predictive power of discretionary LLPs for future charge-offs. Moreover, a TARP fund injection should have a weaker effect on the relation between expected LLPs and future charge-offs (i.e., an insignificant φ_4), because expected LLPs are shaped by historical credit policies rather than by the credit policies in effect immediately before TARP and thus, are less forward-looking.

Table 5 presents the empirical results for testing H4a and H4b. In Column 1, we exclude the TARP fund injection indicator and its interactions with the provisions from Eq. (5). The coefficients on discretionary LLPs and expected LLPs are both significantly positive, but the former coefficient is larger than the latter one. Specifically, each dollar of pre-TARP discretionary LLPs translates into 0.7 cent of post-TARP quarterly charge-offs (*t-statistic* = 6.568), while each dollar of pre-TARP expected LLPs only converts into 0.2 cent of post-TARP quarterly charge-offs (*t-statistic* = 2.841). Column 2 in Table 5 reports the estimates of Eq. (5). Consistent with H4a, φ_1 is significantly positive (φ_1= 0.010, *t-statistic* = 7.351) and φ_2 is significantly negative (φ_2= –0.008, *t-statistic* = –3.837). The sum of φ_1 and φ_2 is statistically significant (*F-statistic* = 3.53). That is, every dollar of discretionary LLPs translates into one cent of post-TARP quarterly charge-offs for the rejected applicants, but only 0.2 cent of post-TARP quarterly charge-offs when the applicants received TARP approval. This is comparable to the relation between expected LLPs

and post-TARP quarterly charge-offs for the approved applicants. This evidence is consistent with discretionary LLPs' being more informative than expected LLPs in predicting future credit losses during the financial crisis. The results also support our third hypothesis (H4b) that TARP funding has a more adverse effect on the ability of discretionary LLPs versus expected LLPs to explain future charge-offs. In addition, the insignificant coefficient on the TARP injection indicator suggests that government funding does not affect the level of future charge-offs; instead, it affects the association of discretionary LLPs with future charge-offs.

4.5 Banks' decision to reject TARP funds

Bayazitova and Shivdasani (2012) argue that banks can have incentives to reject TARP fund infusions, because accepting TARP funds may send an adverse signal to investors, may create a debt overhang problem, and may cause potential government interference. In this section, we conduct additional analyses to examine whether discretionary LLPs are related to banks' decisions to reject TARP funds. Specifically, we estimate the likelihood that a bank rejects TARP fund injections after receiving TARP approvals from the Treasury.

Table 6 presents Probit estimates of banks' TARP rejection decisions. The results show that banks with larger amounts of discretionary and expected LLPs are less likely to reject TARP fund injections, suggesting that both LLP components are factored into the banks' rejection decisions. The marginal effects indicate that a "one standard deviation" increase in discretionary (expected) LLPs reduces the likelihood of TARP fund rejection by 1.4% (2.3%). This is also consistent with Bayazitova and Shivdasani (2012) who find a negative relation between total LLPs, and the likelihood of banks' rejection of TARP funding.

4.6 TARP funding amount: Tests of H5

Previously we hypothesized and found that, compared to the rejected TARP applicants, approved banks had a weaker association between pre-TARP discretionary LLPs and post-TARP credit losses. In this section, we explore whether the amount of TARP funds affected the relation between discretionary LLPs and future credit losses. *Ceteris paribus*, we expect banks receiving more TARP funds to expand their lending and become less selective in evaluating loan applications. Under this assumption, the level of loan risk should increase more for banks receiving greater amounts of TARP funding (i.e., H5). To test this prediction, we regress post-TARP charge-offs on discretionary LLPs. We include an indicator for high versus low amounts of TARP funds that is interacted with both expected and discretionary accruals. The estimates are presented in Table 7. Consistent with H5, we find that the associations between discretionary LLPs and future charge-offs were reduced significantly for banks receiving high TARP funding levels. In contrast, the level of TARP funding has an insignificant effect on the association between expected LLPs and future charge-offs. Furthermore, the insignificant coefficient on the high TARP amount indicator confirms that TARP fund injection has a negative effect on the relation between discretionary LLPs and future charge-offs, rather than the level of future charge-offs *per se*. Overall, the results reported in Table 7 support both H4 and H5.

4.7 Robustness checks

We conduct a battery of robustness tests to check the sensitivity of our main results and to exclude alternative explanations. First, we employ alternative models to partition expected and discretionary accruals. In our main analysis, we use lagged coefficients from the LLPs expectation model to calculate the discretionary LLPs. We estimate Eq. (1) with year fixed effects for the entire sample, and then include the year fixed effects in calculating discretionary LLPs. To account for the possibility that strong and weak banks might have different provisioning procedures, we

interact all variables in Eq. (1) with a dummy variable that measures quartiles of the bank's financial strength (tier 1 capital ratio), and calculate coefficients for each subsample. Our results are robust using all these different discretionary measures. Second, we include the "too-big-to-fail" banks that were included in the CPP initiation date in our sample and the results do not change. To control for geographic differences, we include Federal Reserve districts fixed effects for bank headquarters and the results remain the same.

5. Concluding Remarks

Loan loss allowances reflect an expectation of future losses in the loan portfolio. This expectation of future losses depends both upon credit policies underlying the loan portfolio as well as expected macroeconomic conditions. LLP accruals are the adjustments made to loan loss allowances in every fiscal period to reflect new expectations regarding future loan losses. Extant accounting rules allow bank managers considerable discretion in determining the LLP accruals. Prior studies have argued that banks misused their discretion in setting LLP accruals to manage their earnings and capital during the financial crisis (e.g., Huizinga and Laeven 2012). They argue that as a result, banks' loan loss allowances and LLPs were too small to cover the credit losses ultimately incurred. We partition banks' LLP accruals into expected and discretionary components the financial crisis. We find that discretionary accruals not only have incremental relevance for stock market returns during the financial crisis but such relevance is actually greater than in surrounding time periods., Expanding the sample to include private banks as well, we find that discretionary LLPs have stronger associations with future credit losses than during other time periods.

We then proceeded to examine whether discretionary LLP accruals had relevance to the Treasury in selecting the banks receiving offers of CPP financial assistance from TARP funds.

While TARP was initially viewed as a bailout plan to assist struggling banks, the Treasury's CPP was designed to increase the capital of banks by purchasing their preferred stock. Since this placed the Treasury in the role of an investor, one can also expect that the treasury to behave prudently by selecting healthier, rather than struggling banks to receive CPP funds. Consistent with discretionary LLPs' being informative about bank health, we find that both discretionary and expected LLP accruals were negatively associated with the Treasury's selection of banks to receive TARP funding. In contrast to the TARP approval decision, we do, however, find that banks' decisions to apply for TARP funds were positively associated with discretionary accruals.

After examining the relevance of discretionary accruals to the Treasury's selection of firms to receive TARP funding, we then analyze the effect of TARP participation on the informativeness of LLP accruals in explaining banks' future charge-offs. We hypothesize and find that TARP participation has asymmetric effects on the informativeness of discretionary and expected LLP accruals. Specifically, we find that the association between discretionary accruals and future charge-offs declines dramatically for banks receiving TARP funds, while the informativeness of their expected accruals only declines slightly. Our explanation for this result is that, the lending expansion following the infusion of TARP fund made credit policies and future charge-off levels different from those anticipated by banks pre-TARP. As a consequence, the shock of TARP funding resulted in a reduced association between pre-TARP discretionary LLPs and post-TARP charge-offs.

Our study contributes to the literature by explicitly studying the relevance of discretionary accruals during, prior to and following the financial crisis period. We also document two additional decision-making contexts (banks' decision to apply for TARP assistance and selection of banks by the Treasury to receive government funds) wherein discretionary LLP accruals have relevance

for decision-making. Finally, we are able to provide new evidence regarding the effect of a funding shock on the relevance of accounting estimates. Overall our results strongly suggest that, on average, discretion in bank accounting enhances the relevance of the accounting numbers.

During the time period of our study loss provisioning was based on the "incurred loss" (IC) model underlying GAAP. Under the IC model, credit loss recognition occurs only when the "more likely than not" (50%) probability threshold is reached (FASB 2012). In June 2016, the FASB issued its final standard on accounting for credit losses wherein the existing "incurred loss" (IC) model is replaced by a "current expected credit loss" (CECL) model that becomes effective in December of 2019. Under the CECL model, no probability threshold is specified for the recognition of an impairment allowance (Deloitte and Touché 2016). Rather, the CECL model requires the recognition of all future credit losses at the time of loan origination. The horizon used for such loss estimation is the loan's expected life or holding period if shorter. Since CECL requires additional assumptions about future events, the need for estimates is likely to increase, potentially enhancing accounting discretion. [29] Our research, thus, has the potential to inform practice regarding the beneficial effects of accounting judgment and discretion.

[29] Ernst & Young Forum on Credit Impairment, Minneapolis, June 2016

Appendix. Variable definition

Variable	Definition
DIS_LLP	Discretionary loan loss provisions, which is the residual from estimating Eq. (1)
EXP_LLP	Expected loan loss provisions, which is the predicted value from estimating Eq. (1)
LLP	Provisions (BHCK4230) scaled by average total loans (BHCK2122)
CHO	Loan charge-offs (quarterly adjusted BHCK4635) scaled by average loans (BHCK2122) outstanding for the quarter
DNAL	Change in non-accrual loans (BHCK5526/BHCK2122) during the quarter
IND	Individual non-mortgage loans (BHCK1975) scaled by total loans (BHCK2122)
COM	Commercial loans (BHCK1766) scaled by total loans (BHCK2122)
SIZE	Log of total assets (BHCK2170)
$ALLOW_{t-1}$	Lagged allowance (BHCK3123) scaled by total loans (BHCK2122)
EARN	Earnings (BHCK4340) adjusted by provisions (BHCK4230), scaled by average total loans (BHCK2122), in percentage
RET	Quarterly buy-and-hold stock returns from *CRSP*
$AVECHO_{t+4}$	Average quarterly loan charge-offs in the 4-quarter period after the third quarter of year 2008
TARP_APPLY	Indicator variable that equals to 1 if a bank applied for CPP funds
TARP_APPROVE	Indicator variable that equals to 1 if a bank was approved by the Treasury for CPP funds
TARP_INJ	Indicator variable that equals to 1 if a bank received CPP funds
TARP_REJ	Indicator variable that equals to 1 if a bank was approved but rejected CPP funds
HIGH_TARP$	Indicator variable that equals to 1 if a bank received higher than median amount of TARP funds (scaled by total assets)
CAP_ADQ	Capital adequacy, measured as the tier 1 risk-based capital ratio (BHCK7206)
MGT_QLT	Management quality, measured as the negative of the number of corrective actions that were taken against bank executives by bank regulators between 2006 and 2009
LIQUID	Liquidity, measure as cash (BHCK0010) scaled by total deposits (BHDM6631+ BHDM6636 +BHFN6631+BHFN6636)
SENSI_MKT	Sensitivity to market risk, measured as the absolute difference between short-term assets (BHCK3197) and short-term liabilities (BHCK3296+BHCK3298), scaled by total assets (BHCK2170).
FORECLOS	Valued of foreclosed assets (BHDMF577) scaled by total loans (BHCK2122)
LEV	Total debt (BHCK2948) scaled by total assets (BHCK2170)
DEPOSIT	Total deposits (BHDM6631+ BHDM6636 +BHFN6631+BHFN6636) scaled by total assets (BHCK2170)
AGE	Firm age (RSSD9950) as of 2008
POL	A bank's contributions to political campaign obtained from Federal Election Committee in the past five years prior to 2008
STA_MACRO	Changes in coincident indexes from the beginning to October of 2008 in the state of a bank holding company (Source: Federal Reserve Bank of Philadelphia)
IMR_APP	Inverse Mills ratio from estimating the probit model of firms' CPP application decision as in Eq. (4a)

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Figure 1. The change in informativeness of discretionary LLPs

This figure plots the change in informativeness of discretionary LLPs in the pre-crisis, during-crisis, and post-crisis periods. The coefficients on discretionary LLPs are obtained from Table 1 and Table 2.

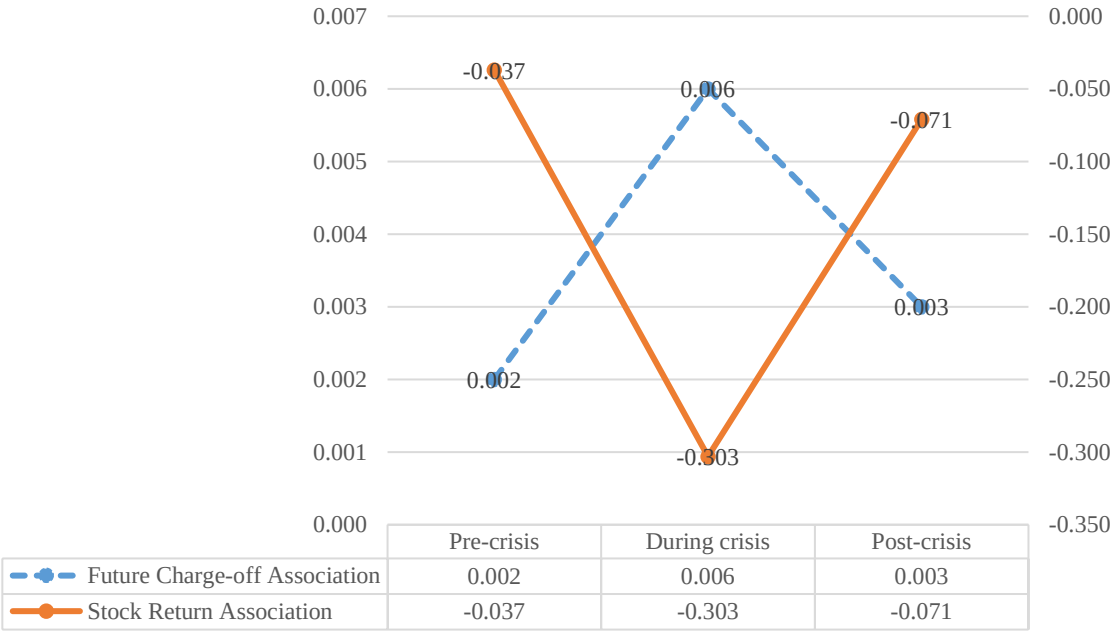

Table 1. The association between discretionary LLPs and contemporaneous stock returns (H1a)

This table reports the association of discretionary LLPs with contemporaneous stock returns. Panel A presents the summary statistics of the sample used to test H1a, which consists of public bank holding companies that were eligible for TARP application and sufficient data available to calculate the variables. Panel B presents the results from estimating Eq. (2). The dependent variables are contemporaneous quarterly stock returns. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* (in the parentheses) are based on standard errors clustered at the firm and quarter levels. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A: Summary Statistics

Variable	Whole Sample Q1/06 to Q2/10 (*N* = 5,204)		Pre–crisis Q1/06 to Q2/07 (*N* = 1,660)		During Crisis Q3/07 to Q4/08 (*N* = 1,773)		Post–crisis Q1/09 to Q2/10 (*N* = 1,771)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
RET	–0.031	0.220	0.004	0.086	–0.075	0.237	–0.021	0.276
EARN	0.290	1.507	0.829	0.573	0.468	1.326	–0.394	1.958
LLP	0.300	0.480	0.055	0.072	0.275	0.400	0.556	0.625
EXP_LLP	0.293	0.406	0.060	0.047	0.241	0.317	0.564	0.504
DIS_LLP	0.006	0.211	–0.005	0.051	0.033	0.183	–0.010	0.306

Panel B: The association between discretionary LLPs and contemporaneous stock returns

Variable	(1) Whole Sample Q1/06 to Q2/10	(2) Pre-crisis Q1/06 to Q2/07	(3) During Crisis Q3/07 to Q4/08	(4) Post-crisis Q1/09 to Q2/10
DIS_LLP	–0.148***	–0.037	–0.303***	–0.071**
	(–3.185)	(–0.489)	(–3.474)	(–2.128)
EARN	0.034***	0.026	0.042***	0.035***
	(5.428)	(1.391)	(3.774)	(4.830)
EXP_LLP	–0.023	–0.166**	–0.020	–0.036
	(–0.472)	(–2.030)	(–0.172)	(–1.307)
Intercept	–0.044**	–0.009	–0.092**	–0.007
	(–2.167)	(–0.256)	(–2.177)	(–0.145)
N	5204	1660	1773	1771
Adj. R^2	0.070	0.032	0.109	0.068
Diff. in the *DIS_LLP* coefficients			(2) vs. (3)	(3) vs. (4)
			$\chi^2 = 20.40$	$\chi^2 = 27.02$
			$p = 0.000$	$p = 0.000$

Table 2. The association between discretionary LLPs and future charge-offs (H1b)

This table reports the association of discretionary LLPs with future charge-offs. Panel A presents the summary statistics of the sample used to test H1b, which consists of both public and private bank holding companies. Panel B presents the results from estimating Eq. (3). The dependent variables are average future charge-offs in the next four quarters. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* (in the parentheses) are based on standard errors clustered at the firm and quarter levels. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Panel A: Summary Statistics

Variable	Whole Sample		Pre-crisis		During Crisis		Post-crisis	
	All 6 Quarters (N = 5,695)		Q1/06 to Q2/06 (N = 1,877)		Q1/08 to Q2/08 (N = 1,870)		Q1/09 to Q2/09 (N = 1.948)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
$AVECHO_{t+4}$	0.003	0.004	0.001	0.001	0.003	0.004	0.005	0.005
$ALLOW_{t-1}$	0.014	0.006	0.012	0.004	0.013	0.005	0.016	0.007
LLP	0.230	0.411	0.053	0.066	0.198	0.315	0.430	0.569
EXP_LLP	0.233	0.348	0.053	0.051	0.187	0.243	0.451	0.462
DIS_LLP	–0.001	0.216	0.001	0.051	0.013	0.192	–0.015	0.313
IND	0.054	0.073	0.060	0.073	0.051	0.069	0.050	0.077
COM	0.152	0.096	0.153	0.096	0.154	0.097	0.148	0.097
SIZE	14.142	1.324	14.079	1.357	14.176	1.329	14.171	1.287

Panel B: The association between discretionary LLPs and future charge-offs

Variable	(1) Whole Sample Q1/06 to Q2/10	(2) Pre-crisis Q1/06 to Q2/06	(3) During Crisis Q1/08 to Q2/08	(4) Post-crisis Q1/09 to Q2/09
DIS_LLP	0.003***	0.002***	0.006***	0.003***
	(3.956)	(2.877)	(26.185)	(66.765)
$ALLOW_{t-1}$	0.238***	0.059***	0.240***	0.327***
	(4.601)	(4.033)	(14.363)	(10.802)
EXP_LLP	0.005***	0.007***	0.006***	0.003***
	(3.954)	(14.505)	(5.625)	(7.006)
IND	–0.005**	0.002***	–0.006***	–0.007***
	(–2.498)	(5.534)	(–9.528)	(–6.538)
COM	–0.002***	–0.000	–0.002***	–0.004***
	(–2.896)	(–0.762)	(–4.758)	(–3.796)
SIZE	0.000***	0.000**	0.000**	0.000**
	(3.529)	(2.532)	(2.475)	(2.314)
Intercept	–0.003***	–0.001***	–0.003***	–0.004***
	(–5.206)	(–7.957)	(–4.079)	(–2.758)
N	5695	1877	1870	1948
Adj. R^2	0.539	0.396	0.534	0.509
Diff. in the *DIS_LLP* coefficients			(2) vs. (3)	(3) vs. (4)
			χ^2 = 31.30	χ^2 = 19.63
			p = 0.000	p = 0.000

Table 3. Summary statistics for TARP Banks

This table presents the summary statistics of the main variables used to test H2–H5. The entire sample consists of all public financial institutions that were eligible for TARP participation and active as of September 30, 2008. Among the 313 financial institutions with necessary data for the computation of the main variables, 262 applied for TARP funding and 219 were approved. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

	Whole Sample (N = 313)		Application = 1 (N = 262)		Application = 0 (N = 51)		Application Sample	Approval = 1 (N = 219)		Approval = 0 (N = 43)		Approval Sample
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.	Mean	Std. Dev.	Mean	Std. Dev.	Mean Diff.
DIS_LLP	0.009	0.168	0.016	0.176	-0.030	0.106	0.046	-0.005	0.144	0.128	0.264	-0.134***
EXP_LLP	0.312	0.336	0.339	0.359	0.172	0.077	0.166**	0.316	0.315	0.455	0.521	-0.139*
$AVECHO_{t+4}$	0.004	0.004	0.005	0.004	0.002	0.002	0.003***	0.004	0.003	0.009	0.006	-0.005***
$ALLOW_{t-1}$	0.013	0.005	0.014	0.005	0.011	0.003	0.003***	0.013	0.004	0.017	0.007	-0.003***
CAP_ADQ	10.751	2.438	10.260	1.863	13.270	3.350	-3.010***	10.236	1.630	10.382	2.788	-0.146
MGT_QLT	-0.278	0.822	-0.279	0.850	-0.275	0.666	-0.004	-0.315	0.912	-0.093	0.366	-0.222
EARN	0.433	0.777	0.375	0.824	0.731	0.344	-0.356**	0.470	0.634	-0.108	1.359	0.578***
LIQUID	3.579	2.024	3.495	2.035	4.010	1.928	-0.515	3.358	1.733	4.191	3.092	-0.833*
SENSI_MKT	13.626	11.051	13.349	10.443	15.053	13.794	-1.704	13.745	10.516	11.328	9.939	2.417
FORECLOS	0.112	0.163	0.117	0.167	0.085	0.140	0.032	0.112	0.160	0.146	0.197	-0.034
LEV	0.910	0.023	0.912	0.022	0.899	0.029	0.013***	0.911	0.021	0.918	0.025	-0.007
DEPOSIT	0.736	0.080	0.737	0.078	0.730	0.092	0.007	0.733	0.075	0.757	0.088	-0.025
AGE	20.703	11.058	20.416	11.200	22.176	10.274	-1.760	20.703	11.467	18.953	9.717	1.750
SIZE	14.715	1.269	14.745	1.302	14.560	1.083	0.185	14.833	1.351	14.301	0.905	0.532*
POL	9.746	43.215	10.778	46.559	4.443	17.427	6.335	12.469	50.575	2.169	10.192	10.300
STA_MACRO	-0.023	0.018	-0.024	0.017	-0.016	0.018	-0.008**	-0.022	0.017	-0.033	0.017	0.010***

Table 4. The effects of discretionary LLPs on TARP applications and approvals

This table presents the results from estimating Eq. (4). The dependent variable in Column 1 is an indicator that equals one for all TARP applicants, and zero for the non-applicants; the dependent variable in Columns 3 and 5 is an indicator that equals one for the approved TARP applicants, and zero for the rejected TARP applicants. Main effects are reported in Columns 1 and 3. Marginal effects in Columns 2, 4 and 6 represent the changes in probability for a standard deviation increase in the variable value. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* are presented in the parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Pr (Application = 1)		Pr (Approval = 1)		Pr (Approval = 1)	
	Main	Marginal	Main	Marginal	Main	Marginal
DIS_LLP	1.882*	3.8%	–1.975***	–6.0%	–2.464***	–7.0%
	(1.801)		(–3.422)		(–3.994)	
EXP_LLP	2.572**	10.3%	0.142	0.9%	0.071	0.4%
	(2.071)		(0.382)		(0.184)	
$ALLOW_{t-1}$	20.032	1.2%	–46.903**	–4.1%	–64.036***	–5.2%
	(0.510)		(–2.081)		(–2.735)	
CAP_ADQ	–0.318***	–9.3%	–0.101	–3.4%		
	(–5.089)		(–1.356)			
MGT_QLT	0.166	1.6%	–0.208	–3.1%	–0.146	–2.0%
	(1.013)		(–0.819)		(–0.584)	
EARN	–0.424	–4.0%	0.290**	4.1%	0.292**	3.9%
	(–1.380)		(2.182)		(2.185)	
LIQUID	0.055	1.4%	–0.086	–3.1%	–0.062	–2.0%
	(0.981)		(–1.644)		(–1.129)	
SENSI_MKT	–0.014	–2.2%	0.005	1.0%	0.014	2.1%
	(–1.630)		(0.406)		(1.160)	
FORECLOS	0.275	0.5%	–0.568	–1.6%	–0.728	–2.0%
	(0.380)		(–0.906)		(–1.148)	
LEV	–5.934	–1.6%	–5.668	–2.2%	–6.335	–2.2%
	(–1.072)		(–0.859)		(–1.087)	
DEPOSIT	–2.863*	–2.7%	–1.916	–2.6%	–1.770	–2.2%
	(–1.849)		(–1.166)		(–1.123)	
AGE	–0.010	–1.1%	0.009	2.2%	0.015	2.2%
	(–0.944)		(0.710)		(1.125)	
SIZE	–0.202	–3.0%	0.152	3.4%	0.168	3.5%
	(–1.331)		(0.996)		(1.098)	
POL	0.003	0.0%	0.002	0.0%	0.003	0.0%
	(0.782)		(0.299)		(0.400)	
STA_MACRO	–1.837	–0.4%	16.650**	4.9%	20.554***	5.6%
	(–0.292)		(2.553)		(2.991)	
IMR_APP					–1.454***	–5.7%
					(–2.757)	
Intercept	14.704**		7.645		7.273	
	(2.122)		(0.977)		(1.161)	
N	313		262		262	
Pseudo R^2	0.320		0.254		0.280	

Table 5. The relation between discretionary LLPs and future charge-offs

This table presents the results of estimating Eq. (5). Future charge-offs represents the average quarterly charge-offs in the 4-quarter period following Q3/2008. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* are presented in the parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)
	Future charge-offs	
DIS_LLP	0.007***	0.010***
	(6.568)	(7.351)
DIS_LLP × TARP_INJ		–0.008***
		(–3.837)
EXP_LLP	0.002***	0.003***
	(2.841)	(2.604)
EXP_LLP × TARP_INJ		–0.001
		(–0.981)
$ALLOW_{t-1}$	0.284***	0.320***
	(6.304)	(4.232)
$ALLOW_{t-1}$ × *TARP_INJ*		–0.097
		(–1.060)
TARP_INJ		0.001
		(0.615)
MGT_QLT	0.000	–0.000
	(0.075)	(–0.539)
EARN	–0.000	–0.000
	(–1.209)	(–1.030)
LIQUID	–0.000**	–0.000***
	(–2.067)	(–3.054)
SENSI_MKT	0.000	0.000
	(0.174)	(0.428)
FORECLOS	–0.000	–0.000
	(–0.405)	(–0.370)
LEV	–0.014	–0.015*
	(–1.647)	(–1.830)
DEPOSIT	0.003	0.002
	(1.248)	(0.695)
AGE	–0.000*	–0.000*
	(–1.756)	(–1.885)
SIZE	0.001***	0.001***
	(3.954)	(4.011)
POL	–0.000	–0.000
	(–0.916)	(–0.830)
STA_MACRO	–0.022**	–0.020**
	(–2.204)	(–2.101)
IMR_APP	–0.002***	–0.002***
	(–3.220)	(–3.515)
Intercept	–0.000	0.002
	(–0.001)	(0.257)
N	313	313
Adj. R^2	0.505	0.552

Table 6. The relation between discretionary LLPs and firms' decision to reject TARP funds

This table presents the results from estimating a Probit regression of TARP rejection on discretionary LLPs. The dependent variable is an indicator that equals one for banks that reject TARP funds, and zero for banks that accepted TARP funds. Main effects are reported in Column 1. Marginal effects in Column 2 represent the changes in probability for a standard deviation increase in the variable value. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* are presented in the parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)
	Pr (Rejection = 1)	
	Main	Marginal
DIS_LLP	–3.165*	–1.4%
	(–1.848)	
EXP_LLP	–2.419*	–2.3%
	(–1.793)	
$ALLOW_{t-1}$	–31.394	0.0%
	(–0.622)	
CAP_ADQ	0.249**	–0.4%
	(2.575)	
MGT_QLT	0.206	1.3%
	(0.745)	
EARN	1.594***	0.5%
	(2.909)	
LIQUID	0.093	3.1%
	(1.313)	
SENSI_MKT	–0.004	0.5%
	(–0.258)	
FORECLOS	0.201	0.0%
	(0.191)	
LEV	6.488	0.1%
	(0.814)	
DEPOSIT	–0.581	0.4%
	(–0.270)	
AGE	0.009	–0.1%
	(0.538)	
SIZE	–0.095	–0.4%
	(–0.447)	
POL	–0.027	–5.1%
	(–0.707)	
STA_MACRO	3.298	0.2%
	(0.389)	
Intercept	–8.464	
	(–0.860)	
N	219	
Pseudo R^2	0.276	

Table 7. The effect of TARP funds on the relation between provisions and future charge-offs

This table presents the results of estimating OLS regressions of future charge-offs on discretionary LLPs, an indicator of high versus low TARP funds, and an interaction between the indicator and discretionary LLPs. Future charge-offs represents the average quarterly charge-offs in the 4-quarter period following Q3/2008. All variables are winsorized at the 1st and 99th percentiles and defined in the Appendix. *t-statistics* are presented in the parentheses. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	(1)	(2)
	Future charge-offs	
DIS_LLP	0.002*	0.006**
	(1.861)	(2.563)
DIS_LLP × HIGH_TARP$		–0.006*
		(–1.923)
EXP_LLP	0.001*	0.002
	(1.874)	(1.598)
EXP_LLP × HIGH_TARP$		–0.001
		(–0.408)
$ALLOW_{t-1}$	0.204***	0.141*
	(4.153)	(1.822)
$ALLOW_{t-1}$ × *HIGH_TARP$*		0.114
		(1.147)
HIGH_TARP$		–0.001
		(–1.021)
MGT_QLT	0.000	–0.000
	(0.090)	(–0.181)
EARN	0.000	0.000
	(1.000)	(1.030)
LIQ	–0.000***	–0.000***
	(–2.751)	(–2.636)
SENSI_MKT	–0.000	–0.000
	(–0.282)	(–0.299)
FORECLOSURE	–0.001	–0.001
	(–0.468)	(–0.532)
LEV	–0.019*	–0.019*
	(–1.923)	(–1.841)
DA_RATIO	0.003	0.003
	(1.062)	(1.130)
FIRAM_AGE	–0.000	–0.000
	(–0.398)	(–0.250)
SIZE	0.001***	0.001***
	(4.148)	(3.968)
POL	–0.000	–0.000
	(–0.870)	(–0.927)
STA_MACRO	–0.019	–0.020*
	(–1.597)	(–1.679)
IMR_APP	–0.006***	–0.005***
	(–4.215)	(–3.904)
Intercept	0.005	0.006
	(0.453)	(0.573)
N	193	193
Adj. R^2	0.462	0.467